

# **Appendix A**

## **BIOLOGICAL ASSESSMENT**



**Morganza to the Gulf of Mexico Risk Reduction Project  
Biological Assessment (BA)  
Errata Sheet  
Updated March 21, 2013**

**It is the USACE determination that there will be No Affect to Threatened or Endangered Species or their Critical habitat due to the Morganza to the Gulf Risk Reduction Project .**

**Errors found in body of BA**

The project area has also changed since the preparation of this BA (RPEIS figure 1-1). Originally, offshore sediment was being considered as a borrow source. Offshore sediment is no longer being considered. Due to the elimination of offshore sediment, the project area has changed in the fact that it does not extend as far south. There is potential for some areas referenced in this BA to no longer be within the project area. Please reference the RPEIS for an updated project area and description.

**BA Pages 1, 6, 7:** The bald eagle and brown pelican have been delisted as threatened and/or endangered. Although still protected under the Migratory Bird Treaty Act (MBTA), and still known to be present in the project area, these species are no longer protected under the Endangered Species Act (ESA). Therefore, the bald eagle and brown pelican sections of this BA can be disregarded.

**BA Pages 1, 7, 8:** Due to the elimination of offshore sediment use, whales are extremely unlikely to exist within the revised project area (RPEIS figure 1-1). Typically, no threatened or endangered species of whales occur in the nearshore waters of the Gulf of Mexico with the exception of the occasional sighting of right whales and humpback whales. However, these sightings are extremely rare.  
<http://www.offshoreoperators.com/marinedebris/Protected-Species-In-GOM-NOAA.pdf>

## Environmental Supporting Documentation

<p><b>C-1</b> Environmental Data Collection and Analyses</p>	<p><b>C-2</b> Cost Effectiveness and Incremental Analyses of Mitigation Plans (for Federal Project)</p>	<p><b>C-3</b> Statistical Comparison of Land Loss in the Subbasins: Wetland Loss Analysis for a Deltaic Area in Coastal Louisiana</p>	<p><b>C-4</b> Threatened and Endangered Species Biological Assessment (for Federal and applicant projects)</p>	<p><b>C-5</b> Cultural Resources: State Historic Preservation Officer Correspondence</p>	<p><b>C-6</b> Fish and Wildlife Coordination Act Report (for Federal project)</p>
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This assessment addresses threatened and endangered species that could be affected by the alternatives to provide hurricane protection for Terrebonne and Lafourche Parishes. In response to a Corps' March 19, 1996 request, the National Marine Fisheries Service (NMFS) listed the threatened Gulf sturgeon and five species of endangered or threatened sea turtles [green (threatened), Kemp's ridley (endangered), hawksbill (endangered), leatherback (endangered), and loggerhead (threatened)] that occur in the northern Gulf near the study area. Four species of baleen whales (northern right, sei, finback, and humpback) and one species of toothed whale (sperm whale) are also listed by NMFS as possibly in the Gulf of Mexico near the study area. All are currently listed as endangered. There is no proposed or designated critical habitat for these species in Louisiana. The Fish and Wildlife Service (FWS) noted the bald eagle (threatened), brown pelican (endangered), piping plover (threatened), and Kemp's ridley sea turtle (endangered) as possibly being in or near the study area and under their responsibility. On July 10, 2001, FWS designated critical habitat for the piping plover within the extreme southern portions of the study area. No other critical habitat has been designated in the project area by FWS or NMFS.

The American alligator is listed as threatened due to similarity of appearance. This species is found in waterbodies throughout the fresh to brackish portions of the study area. Louisiana has implemented a commercial harvest season for alligator as its population has risen well above a level of concern. None of the action alternatives would have adverse impacts to the alligator population. Therefore, alligator will not be discussed further in this Biological Assessment.

All the whale species are uncommon to rare in the Gulf of Mexico except for the sperm whale (Burkardt 1996; DOI 1994), which is found in deeper waters and are not likely to be affected, even indirectly, by any of the alternatives studied in detail.

The assessment on sea turtles relies heavily on information from the 1995 Biological Assessment: Impacts of Navigation Channel Hopper Dredging on Threatened and Endangered Species in Louisiana (Baird 1995). Information on sea turtles along coastal Louisiana is generally sparse. Historical and recent occurrences of the Kemp's ridley, loggerhead, green, leatherback, and hawksbill turtles in the vicinity of the three coastal Louisiana channels is summarized, and the potential impacts are discussed.

### PROJECT DESCRIPTIONS

The Corps of Engineers, New Orleans District (Corps) and the Terrebonne Levee and Conservation District (formerly South Terrebonne Tidewater Management and Conservation District, STTMCD) have formulated potential plans for the purpose of hurricane protection for areas of Terrebonne and Lafourche Parishes Louisiana. The strategy for an overall hurricane protection system for Terrebonne Parish was to provide flood control and wetlands protection at the same time. The plan envisions as its primary feature, a levee/flood wall, from the western side of Terrebonne Parish, traversing the southern portion of the parish and connecting with the south Lafourche hurricane protection system at Larose. The Feasibility Report/EIS provides details on these plans.

### GENERAL BIOLOGY

#### **GULF STURGEON (*Acipenser oxyrinchus desotoi*)**

The Gulf sturgeon has been a recognized subspecies of the Atlantic sturgeon since 1985 and inhabits the Atlantic and Pacific oceans and certain freshwaters of the United States. According to Barkuloo (1988) this fish is found in most major river systems from the Mississippi River to the Suwannee River that connect to the Gulf of Mexico and in the central and eastern Gulf of Mexico. They are found mostly in the eastern rivers of the Gulf of Mexico near Florida. Particularly important are the Apalachicola and Suwannee Rivers in Florida.

Gulf sturgeon is an anadromous species, laying eggs in freshwater, moving to the Gulf of Mexico at 3-4 years of age during the fall and winter, and returning to freshwater each spring as river temperatures rise to 16 to 23 C. Wooley and Crateau (1985) found Gulf sturgeon in the Apalachicola River downstream from Jim Woodruff Lock and Dam (river km 171) from May through September. They seemed to concentrate in a large scour hole below the lock, moving very little from the area. The

area consisted of sand and gravel substrate, with water depths of 6.0 to 12.0 meters and velocities of 0.6 to 0.9 meters/second. The fish begin to migrate back to estuaries when river temperatures dip below 23 C Wooley and Croteau (1985).

Food of the Gulf sturgeon consists primarily of crab, amphipods, annelids, lancelets, and, brachiopods (Mason and Clugston 1993). However, they do not eat once they enter the rivers in the spring. It remains unclear why most subadult and adult Gulf sturgeon feed in the marine environment for a relatively short time and enter freshwater where they do not feed (USFWS and Gulf States Marine Fisheries Commission 1995).

The Gulf sturgeon can easily attain length over 2 m and live nearly 30 years. Huff (1975) found that mature females ranged in age from 8-17 years and that mature males ranged from 7 to 21 years. Chapman found that mature Gulf sturgeon produce an average of 403,000 eggs. Eggs are demersal and adhesive. Timing, location, and habitat requirements for Gulf sturgeon spawning are not well documented.

The Gulf sturgeon was virtually extirpated throughout its range at the turn of the 20th century. Overexploitation, damming of rivers and other forms of habitat destruction, incidental catch, and water quality deterioration are listed as some of the causes of their decline (Huff 1975; Barkuloo 1988; McDowall 1988; and Birstein 1993).

#### **KEMP'S RIDLEY SEA TURTLE (*Lepidochelys kemp*)**

Almost all Kemp's ridley nesting occurs on a single beach at Rancho Nuevo, Mexico, about 30 kilometers south of the Rio Grande. There is some sporadic nesting along the Texas coast. Females arrive in small aggregations known as arribadas from mid-April through August (Rabalais and Rabalais 1980). Based on returns of females tagged on the nesting beach, most adult ridleys move to major foraging grounds to the south in the Campeche-Tabasco region and some move to the northern Gulf of Mexico (Chavez 1969). Members of this genus are usually found in water with low salinity, high turbidity, high organic content, and where shrimp are abundant (Zwinnenberg 1977). Such conditions occur where major rivers enter the Gulf.

Stomach analysis of specimens collected in shrimp trawls off Louisiana includes crabs (*Callinectes*), gastropods (*Nassarius*), and clams (*Nuculana*, *Corbula*, and probably *Mulinia*), as well as mud balls, indicating feeding near a mud bottom in an estuarine or bay area (Dobie et al. 1961). Although considered primarily carnivorous benthic feeders (Ernst and Barbour 1972), jellyfish have also been reported as part of their diet (Fritts et al. 1983). Presence of fish such as croaker and spotted seatrout in the gut of stranded individuals in Texas may suggest that turtles feed on the bycatch of shrimp trawlers (Landry 1986).

Precise data regarding the total number of Kemp's ridleys occurring in the Gulf of Mexico are not available. Trends in turtle populations are identified through monitoring of their most accessible life stages on the nesting beaches, where hatchling production and the status of adult females can be directly measured. Population declines of the ridley have been attributed to egg stealing on the localized nesting beach, capture of diurnal nesting females, and fishing and accidental capture in shrimp trawls (Fuller 1978; Pritchard and Marquez 1973).

Film taken in 1947 documented over 40,000 nesting females in a single day during an arribada at Rancho Nuevo (Carr 1963). Bi-national protection and monitoring by Mexico and the United States has occurred on the nesting beach since 1978. Arribadas of up to 200 females have rarely been observed since the beginning of monitoring (U.S. Fish and Wildlife Service [USFWS] and NMFS 1992). Nest production plummeted to only 702 nests in 1985, but has been steadily increasing since that time (Byles, pers. comm.). Over 1,500 nests were observed during the 1994-nesting season, representing the highest nesting year since monitoring was initiated. While these data need to be interpreted cautiously due to expanded monitoring efforts since 1990, an estimated 107,687 hatchlings were released from Rancho Nuevo in 1994, compared to 45,000 to 80,000 from 1987 through 1991 (Byles, pers. comm.). In 1998, there were over 3,700 nests and 183,000 hatchlings; the number of nest declined slightly in 1999 with only 3,600, but hatchlings set a new record with over 225,000 (LSUCES 1999; LSUCES 2000).

Documented evidence and anecdotal accounts suggest a recent upward trend in the Kemp's ridley population. However, the Recovery Plan for the Kemp's ridley sea turtle (*Lepidochelys kemp*) (USFWS and NMFS, 1992) has identified a recovery criteria of 10,000 nesting females in one season as a prerequisite for a determination that Kemp's ridleys can be downlisted to a threatened status. Considering 58 percent of all adult females appear to nest in any one year, and each female lays an estimated 2.7 nests, 1,500 nests documented in 1994 represents less than 1,000 adult female Kemp's ridleys in the entire population. This is less than 2.5 percent of nesting females observed in one day in 1947, and only 5 percent of the downlisting criterion identified in the Recovery Plan.

#### **LOGGERHEAD SEA TURTLE (*Caretta caretta*)**

The loggerhead is found in temperate and subtropical waters worldwide. The principal nesting range of the loggerhead is from Cape Lookout, North Carolina, to Mexico. The majority (90 percent) of the reproductive effort in the coastal United States occurs along the south-central east coast of Florida (Hildebrand 1981). Nesting in the northern Gulf outside of Florida occurs primarily on the Chandeleur Islands and to a lesser extent on adjacent Ship, Horn, and Petit Bois Islands in

Mississippi and Alabama (Ogren 1977). Loggerhead eggs were collected from Grand Isle, Louisiana, 50 years ago (Hildebrand 1981). Ogren (1977) reported a historical reproductive assemblage of sea turtles, which nested seasonally on remote barrier beaches of eastern Louisiana, Mississippi, and Alabama. This included Bird, Breton, and Chandeleur Islands in Louisiana.

Loss or degradation of suitable nesting habitat may be the most important factor affecting the nesting population in Louisiana (Ogren 1977). Overall loss of nesting beaches, hatchling disorientation from artificial light, drowning in fishing and shrimping trawls, marine pollution, and plastics and Styrofoam have led to the decline of loggerheads.

Loggerhead turtles are considered turtles of shallow water, less than 50 meters deep (Rabalais and Rabalais 1980). Juvenile loggerheads are thought to utilize bays and estuaries for feeding, while adults prefer waters less than 50 meters deep (Nelson 1986). During aerial surveys of the Gulf of Mexico, the majority (97 percent) of loggerheads were seen off the east and west coasts of Florida (Fritts 1983). Most were observed around mid-day near the surface, possibly related to surface basking behavior (Nelson 1986). Although loggerheads were seen off the coast of Louisiana and Texas, they were 50 times more abundant in Florida than in the western Gulf. The majority of the sightings were in the summer (Fritts et al. 1983). Loggerheads migrate west along with shallow coastal waters, as indicated by telemetry data from an individual tagged in the Mississippi Delta moving to Corpus Christi (Solt 1981).

Loggerheads are frequently observed near offshore oil platforms, natural rock reefs, and rock jetties in Texas. Large numbers of stranded turtles were observed inshore of such areas (Rabalais and Rabalais 1980). Oyster fishermen have reported large turtles near oyster reefs in Louisiana. In a recent tracking study, loggerheads spent more than 90 percent of the time underwater, tended to avoid colder water, and spent much of the time in the vicinity of oil and gas structures (Renaud and Carpenter, in preparation).

Food of loggerheads consists of mollusks, crabs, shrimp, sea urchins, sponges, squid, basket stars, jellyfish, and even mangrove leaves in the shallows (Caldwell et al. 1955; Hendrickson 1980; Nelson 1986). Presence of fish species such as croaker in stomachs of stranded individuals may indicate feeding on the by-catch of shrimp trawling (Landry 1986). They appear to be well adapted for feeding on mollusks with a heavy jaw and head (Hendrickson 1980). Caldwell et al. (1955) suggest that the willingness of the loggerhead to consume any type of invertebrate food permits its range to be limited only by the presence of cold water. In shallow Florida lagoons, loggerheads were found during the morning and evening, leaving the area during mid-day when temperatures reached 31 C. At dusk, turtles moved to a sleeping site and remained there until morning, possibly in response to changes in light or water temperature (Nelson 1986).

#### **GREEN SEA TURTLE (*Chelonia mydas*)**

The green turtle has worldwide distribution, concentrated primarily between 35° North and 35° South latitude. Green turtles tend to occur in waters that remain warmer than 20 C; however, there is evidence that they may be buried under mud in a torpid state in waters to 10 C (Ehrhart 1977; Carr et al. 1979). This species migrates between feeding and nesting areas, often over long distances (Carr and Hirth 1962). It is a large sea turtle with carapace length in adults commonly reaching one meter (NMFS and USFWS 1991).

In the United States' Atlantic waters, green turtles nest in small numbers in the U.S. Virgin Islands and Puerto Rico, and in larger numbers along the east coast of Florida. Estimates of age at sexual maturity range from 20 to 50 years (Balazs 1982; Frazer and Ehrhart 1985) and they may live over 100 years Zug et al. (1986).

During their first year of life, green sea turtles are thought to feed mainly on invertebrates, with adults preferring an herbivorous diet and frequenting shallow water flats for feeding (Fritts et al. 1983). The adult turtle feeds primarily on seagrasses (i.e., *Thalassia testudinum* and turtle grass), which have a high fiber content and low forage quality (Bjorndal 1981a) and algae (Bjorndal 1985). The Caribbean green turtle is considered by Bjorndal (1981b) to be nutrient-limited, resulting in low growth rate, delayed sexual maturity, and low annual reproductive effort. This low reproductive effort makes recovery of the species slow once the adult population numbers have been severely reduced (Bjorndal 1981). In the Gulf of Mexico, principal "feeding pastures" are located in the upper west coast of Florida (Hirth 1971). Nocturnal resting sites may be a considerable distance from feeding areas, and distribution of the species is generally correlated with grassbed distribution, location of resting beaches, and possibly ocean currents (Hirth 1971).

Immediately after hatching, green turtles swim past the surf and other shoreline obstructions, primarily at depths of 20 centimeters or less below the water surface, and are dispersed both by vigorous swimming and surface currents (Frick 1976; Balzas 1980). The whereabouts of hatchlings to juvenile size (35 centimeters) is uncertain. In the Hawaiian Archipelago, juveniles greater than 35 centimeters in length, as well as subadults, feed and rest in shallower coastal areas than adults. Hawaiian adult and immature turtles come inshore at certain undisturbed sites to bask or rest (Balzas 1980). Green turtles tracked in Texas waters spent more time on the surface, with fewer submergences at night than during the day, and a very small percentage of the time was spent in the Federally maintained navigation channels. The tracked turtles tended to utilize jetties, particularly outside of them, for foraging habitat (Renaud et al. 1993).

Most green turtle populations have been depleted or endangered because of direct exploitation or incidental drowning in

trawl nets (King 1981). Defunct green turtle fisheries in Louisiana and Texas indicate it was more common in areas where it is now rare (Rebel 1974, in Fritts et al. 1983). In Texas in the 1800's, the green turtle fishery was the first to appear and disappear. Animals were captured from April to November, primarily when they were returning to diurnal feeding areas from nocturnal resting places in deeper waters of bays (Hildebrand 1981). Green turtles in Texas still inhabit the same seagrass meadows as at the turn of the century, although in reduced numbers (Hildebrand 1981). In Florida, the nesting population was nearly extirpated within 100 years of the initiation of commercial exploitation (King 1981).

#### **LEATHERBACK SEA TURTLE (*Dermochelys coriacea*)**

The leatherback is the largest sea turtle and is highly migratory, is the most pelagic of all sea turtles (NMFS and USFWS 1992), and is commonly occurring in continental shelf waters (Pritchard 1971; Hirth 1980; Fritts et al. 1983). It is a temperate zone form with a tropical nesting range (Ross 1981). Distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al. 1983). General decline of this species is attributed to exploitation of eggs (Ross 1981).

Nesting of leatherback turtles is nocturnal with nesting in the United States in the Gulf of Mexico (Florida) from April to late July (Pritchard 1971; Fuller 1978; Fritts et al. 1983). The Pacific coast of Mexico supports the worlds largest known concentration of nesting leatherbacks. There is very little nesting in the United States and no nesting has been reported from Louisiana (Gunter 1981). A small number nest on the west coast of Florida from April to late July (Pritchard 1971; Fuller 1978; Fritts 1983).

Leatherback turtles feed primarily on jellyfish and other coelenterates. They will also ingest plastic bags and other plastic debris, which is commonly generated by oil drilling rigs and production platforms in coastal Louisiana (Fritts et al. 1983).

#### **HAWKSBILL SEA TURTLE (*Eretmochelys imbricata*)**

The hawksbill turtle is the second smallest sea turtle being somewhat larger than the Kemp's ridley. Nesting females average about 87 cm in curved carapace length (Eckert 1992). The adults are easily recognized by their thick carapace scutes, usually with radiating brown and black streaks on an amber background, and a jagged posterior margin on the carapace. The name of the turtle is derived from the tapered beak and narrow head.

These turtles generally live most of their life in tropical waters such as the warmer parts of the Atlantic Ocean, Gulf of Mexico and the Caribbean Sea (Carr 1952 and Witzell 1983). Florida and Texas are the only states where hawksbills are sighted with any regularity (NMFS and USFWS 1993). They are extremely rare in Louisiana waters.

Hawksbills nest throughout their range, but most of the nesting occurs on restricted beaches, to which they return each time they nest. The hawksbill breeds and nests in a diffuse rather than colonial nesting pattern in warm waters between 25° North and 25° South latitude (Rebel 1974). These turtles are some of the most solitary nesters of all the sea turtles. Depending on location, nesting may occur from April through November (Fuller et al. 1987). These turtles prefer to nest on clean beaches with greater oceanic exposure than those preferred by green sea turtles, although they are often found together on the same beach. The nesting sites are usually on beaches with a fine gravel texture. Hawksbills have been found in a variety of beach habitats ranging from pocket beaches only several yards wide formed between rock crevices to a low-energy sand beach with woody vegetation near the waterline. These turtles tend to use nesting sites where vegetation is close to the waters edge. They do not nest in Louisiana.

Mating takes place offshore near the nesting sites. Males rarely come ashore. Mature females come to shore at night to prepare nests at the upper part of the beach. Females nest several times a season and have up to 200 eggs per clutch (NMFS and USFWS 1993). Each female may not reproduce every year. Young turtles dig out of nests and go to sea in search of food. Large numbers of young are normally lost to predation. Since the juvenile mortality rate is high, rapid growth and adult longevity tend to make most turtle populations consist of mainly larger turtles.

Juvenile hawksbills are normally found in waters less than 15 meters in depth. Areas around coral reefs, shoals, lagoons, lagoon channels and bays with marine vegetation that provides both protection and plant and animal food. The hawksbill can tolerate muddy bottoms with sparse vegetation unlike the green turtles.

The hawksbill was once thought to be a generalist or opportunistic feeder but studies now indicate that the primary food source is comprised of sponges and other encrusting organisms. Other organisms found in the diet are now believed to be incidental organisms living in association with the sponges which are being used for food (Meylan 1988). Adults forage around reefs up to 100 meters in depth and are not usually in shallow waters less than 20 meters in depth. Juveniles forage in shallow waters near the shallowest coral reefs. Offshore behavior of the turtles is not well understood. Both single and mated pairs of adult turtles and juveniles as well have been observed in all seasons in the Caribbean. It is thought they are foraging on the live bottom sponges in the area.

The hawksbill is probably a diurnal species and only feeds in daylight in captivity. These turtles go through a pelagic feeding phase as hatchlings and are normally associated with seaweed mats. During this phase the juveniles feed on the shallow

reefs until they reach a length of 15-25 centimeters. As the turtles mature, they move from pelagic feeders to benthic feeders. With this change in feeding habits the foraging territory is moved further and further from shore to the deeper waters as the turtle improves its capability for deep dives.

### SEA TURTLES IN THE GULF OF MEXICO

Inshore areas of the Gulf of Mexico appear to be important habitats for the Kemp's ridley. Members of this genus are characteristically found in waters of low salinity, high turbidity, high organic content, and where shrimp are abundant (Zwinnenberg 1977, Hughes 1972). Adults tagged at Rancho Nuevo were recaptured off coastal Louisiana and in Vermilion Bay, and animals have been reported from Vermilion Parish to Terrebonne Parish (Pritchard and Marquez 1973; Chavez 1969; Keiser 1976; Zwinnenberg 1977; Dobie et al. 1961). Ridleys are commonly captured by shrimpers off the Texas coast and in heavily trawled areas of the Louisiana and Alabama coast (Pritchard and Marquez 1973; Carr 1980).

Kemp's ridley has been labeled the "Louisiana turtle" by Hildebrand (1981) and is thought to be the most abundant turtle off the Louisiana coast (Viosca 1961; Gunter 1981). The highly productive white shrimp-portunid crab beds of Louisiana from Marsh Island to the Mississippi Delta, south of the study area are thought to be the major feeding grounds for subadult and adult ridley (Hildebrand 1981). The current patterns in the Gulf of Mexico could aid in transport of individuals, where small turtles would enter the major clockwise loop current of the western Gulf of Mexico, carrying individuals north and east along Texas, Louisiana, and other northern Gulf areas (Pritchard and Marquez 1973; Hildebrand 1981).

Beginning in April 1994, unprecedented numbers of dead sea turtles beached along the coasts of Louisiana and Texas. During 1994, a total of 174 turtles, including 134 Kemp's ridleys, stranded in Louisiana. An additional 488 turtles stranded on offshore Texas beaches during 1994, including almost 243 Kemp's ridley turtles and 190 loggerheads. The apparent cause of most of the strandings was the simultaneous occurrence of an intensive pulse of shrimping in an area of high Kemp's ridley abundance during 1994. Information regarding whether the abundance of sea turtles in the northern Gulf was a seasonal anomaly, or represents the current status of sea turtles in nearshore waters, is not available. The Louisiana Sea Turtle Stranding and Salvage Network (LA-STSSN) registered 373 sea turtles stranded on Louisiana beaches from 1990 through 1994. Of these, 268 were Kemp's ridleys, and 41 were unidentified (Koike 1995).

Stomach content analyses on sea turtles stranded in Texas suggest that, in all years, most mortalities occur in nearshore waters. Stomach contents of Kemp's ridleys along the lower Texas coast also showed a predominance of nearshore crabs and mollusks, as well as fish, shrimp and other foods considered to be shrimp fishery discards (Shaver 1991). Over 150 Kemp's ridleys have been intentionally live-captured by research gillnets in 1993 and 1994 at Sabine Pass by Texas A&M University scientists conducting research for the Corps of Engineers. This illustrates the availability of ridleys to human interactions in north Texas waters.

Findings of ongoing research conducted by NMFS scientists support the likelihood that the nearshore waters of Texas and Louisiana provide important developmental habitat for young loggerheads and Kemp's ridley sea turtles. Ogren (1988) suggests that the Gulf Coast from Port Aransas, Texas, through Cedar Key, Florida, represents the primary habitat for subadult ridleys in the northern Gulf of Mexico. One hundred and thirty turtles have been tracked by NMFS Galveston Lab staff since 1980, including 91 ridleys tracked since September 1988 with Corps support. Preliminary analysis of data collected suggests that subadult Kemp's ridleys occupy shallow, warm, nearshore waters in the northern Gulf of Mexico until cooling waters force them offshore or south along the Florida Coast (Renaud, pers. comm.) Juvenile ridleys are usually found in waters of 9 meters or less, and all ridleys are generally found in water depths less than 18 meters (Renaud, draft in-house report transmitted December 8, 1994).

In addition to the NMFS studies, satellite transmitters have been applied to approximately 50 adult female Kemp's ridleys over the last decade to identify the movements of the females after leaving the nesting beach in Rancho Nuevo, Mexico (Byles, unpublished data). While most female ridleys head south towards the Bay of Campeche after leaving the beach, two out of eight turtles headed into nearshore Texas waters during one year's study. In 1994, of four turtles that were tagged, three went south and one went as far north as the vicinity of the mouth of the Mississippi River (Byles, pers. comm.) Clearly, reproductively active Kemp's ridleys, which are directly required for the recovery of the population, are found within the U.S. Gulf of Mexico, and are as vulnerable to human impacts as sub-adults.

Loggerhead turtle strandings have been reported in Louisiana from Cameron (Fuller 1986) as well as Holly Beach in August, and Isles Dernieres in July (SEAN 1980). A tagged loggerhead was recaptured near Grand Isle at Belle Pass (Lund 1974). More recently, LA-STSSN registered 45 loggerheads stranded on Louisiana beaches from 1990 through 1994. This represented 12 percent of the sea turtles stranded, second only to the Kemp's ridley.

Studies conducted on loggerheads stranded on the lower Texas coast (south of Matagorda Island) have indicated that stranded individuals were feeding in nearshore waters shortly before their death (Plotkin et al. 1993). Recent capture and telemetry studies of sea turtle movements along the northern Gulf of Mexico showed usage of the nearshore areas near jetties and channels. Kemp's ridleys were captured most frequently, and loggerheads were the second most frequently captured in Texas and Louisiana waters.

Historical sightings of green turtles by fishermen in Louisiana occurred gulfward of Isles Dernieres and Timbalier Islands in spring, summer, and fall. Recent sightings have been reported from the northwest areas of Terrebonne Bay in summer and off Belle Pass in fall (Fuller 1986). A green turtle also has been reported from the Chandeleur Islands (Viosca 1961). A green turtle was found in June on Grand Terre near Fort Livingston (SEAN 1980). No green turtles were observed during an aerial survey in Louisiana or Texas in 1979, possibly due to low abundance as well as identification problems. Green turtle stranding records, and turtle fishing records from Louisiana and Texas combined, are one-third that reported from Florida (Fritts et al. 1983). LA-STSSN registered 10 green turtles stranded on Louisiana beaches from 1990 through 1994. This represented 2.7 percent of the sea turtles stranded.

Historical sightings of leatherback turtles have been reported in Louisiana from Terrebonne Bay and Timbalier Bay. Sightings were noted by helicopter pilots in National Marine Fisheries Service statistical zones 12, 14 and 17 in January, March, and April (Fuller 1986). These zones include the area off Isles Dernieres and Timbalier Islands (Area 14) and off Cameron (Area 17). Leatherback turtles have been reported in aerial surveys off Marsh Island in April. They were observed in waters of a depth of 20 meters and 330 meters, approximately 55 and 190 kilometers from shore, respectively (Fritts et al. 1983). Low numbers of leatherback turtles reported by fishermen in coastal Louisiana may reflect low numbers in the area, or lack of fishing in areas where the species would occur (Fuller 1986). Only eight leatherbacks were stranded on Louisiana beaches from 1990 through 1994.

While there have been no sightings of hawksbill turtles in the proposed area of work, one was reported from a gillnet catch in Cameron Parish, Louisiana, in the 1986 survey of Louisiana coastal waters by the National Marine Fisheries Survey (Fuller et al. 1987). This supports the general belief that hawksbills are scarce in Louisiana waters. The stranding network data from 1990 through 1994 reported only one hawksbill stranding in Louisiana.

The LA-STSSN data (1990-1994) shows that of the reported 373 turtles stranded in Louisiana, approximately 60 percent were in Cameron Parish and 26 percent were in Jefferson Parish. Strandings in Lafourche Parish were somewhat frequent (eight percent), but the number of strandings in Terrebonne Parish was low (one percent). It should be noted that because of differences in beach access and coastline irregularities, reports are likely to reflect these influences.

#### **PIPING PLOVER (*Charadrius melodus*)**

Piping plovers breed in northern latitudes in three geographic regions and winter along the south Atlantic and Gulf coasts, including coastal Louisiana. Overwintering populations in Louisiana occur on beaches, sandflats, and dunes in Cameron Parish in the west and Jefferson Parish (Grand Terre Island and Grand Isle) in the east in 1987 (USFWS 1988). Numbers are highly variable, based on recent census data provided by Steve Shively of the Louisiana Department of Wildlife and Fisheries. They do occur on the Isle Dernieres barrier island chain in Terrebonne Parish. Historically, piping plovers also have been reported from Calcasieu, Vermilion, East Baton Rouge, and Orleans parishes. Not much is known about their nonbreeding habitat.

Piping plovers begin arriving at the northern United States and southern Canada breeding grounds in mid-April (Prindiville 1986). They are known to nest with least tern, arctic terns, and common terns (USFWS 1985; Cairns 1977). They breed in open, sparsely vegetated habitats that are slightly raised in elevation. Egg laying occurs in May with clutch size equaling four and 1-2 chicks fledging at about four weeks old (Haig and Oring 1985). The adults leave nesting grounds in late July-early August, with the juveniles following a few weeks later (Wiens 1986). Birds normally return to the same breeding area (Haig 1987), but occasionally they go to other areas (Haig and Oring 1988).

Primary prey for wintering plover includes polychaete marine worm, various crustaceans, insects, and occasionally bivalve mollusks. Chicks feed on smaller sizes of these same foods shortly after they hatch.

There were just over 2,000 breeding pairs in 1986-1987. This number is not comparable to historical numbers because data is lacking. Piping plovers can apparently live five years or somewhat longer (Wilcox 1957). In 1990 there were an estimated 1,840 breeding pairs (FWS 1991).

Critical habitat has been designated for piping plovers in both their breeding and wintering grounds. Their designated critical habitat identifies specific areas that are essential to the conservation of the species. The primary constituent elements for piping plover wintering habitat are those habitat components that support foraging, roosting, and sheltering, and the physical features necessary for maintaining the natural processes that support these habitat components. Constituent elements are found in geologically dynamic coastal areas that contain intertidal beaches and flats (between annual low tide and annual high tide) and associated dune systems and flats above annual high tide. Important components (or primary constituent elements) of intertidal flats include sand and/or mud flats with no or very sparse emergent vegetation. Adjacent un-vegetated or sparsely vegetated sand, mud, or algal flats above high tide are also important, especially for roosting plovers.

#### **BROWN PELICAN (*Pelecanus occidentalis carolinensis*)**

The eastern brown pelican is found along the Atlantic coast from North Carolina to Florida and along the Gulf coast to northern South America; it also ranges along the Pacific coast from southern Mexico to Columbia. It was extirpated from Louisiana in the late 1950's and early 1960's (McNease et al. 1984) primarily because of organochlorine pesticides in the

food chain. They were reintroduced into Louisiana from Florida from 1968 to 1980 and nesting populations were established on North Island in the Chandeleur Islands and Queen Bess Island in Barataria Bay, southeast of the study area (Hinggen et al. 1985). Additional nesting colonies were later established on Isles Dernieres, south of the study area and natural expansion has established colonies on Mississippi River mud lumps, on Grand Gosier Island in the Chandeleur Islands (McNease et al. 1992), and Baptiste Collette. In 1993-1994, about 20,000 fledglings were produced in Louisiana and in 1995 the number rose to 16,000 (LDWF data).

Eastern brown pelicans begin to breed when they are 3 to 5 years old (Blus and Keahey 1978). They live to be about 20 years old (Clapp et al. 1982). They begin nesting in Louisiana during February with eggs normally laid for three months and up to six months. Clutch size is usually three eggs. In Louisiana, about 1.6 young are fledged from each nest (LDWF data). Production of young fledglings requires about 18 weeks (Schreiber 1979). The principal source of eastern brown pelican nesting failure is direct and indirect human interference with nesting colonies (Clapp et al. 1982). Pelicans disperse southward and probably winter south of the United States (Schreiber and Schreiber 1983).

The pelicans forage primarily in shallow estuarine waters (Schreiber 1978) and in ocean waters within 32 km of shore. Food consists mainly of gulf menhaden, mullet, and other species of forage fish (Krantz 1968) normally less than 25 cm. They plunge-dive from heights of up to 20 m to capture prey with their bill and pouch (Schreiber et al. 1975) in the top 1 m of water (Schnell et al. 1983).

#### **BALD EAGLE (*Haliaeetus leucocephalus*)**

The bald eagle (*Haliaeetus leucocephalus*) is a raptor that is found in various areas throughout the United States and Canada. Populations experienced drastic declines from the 1940's to the 1970's (Grier 1982), but populations are on the rebound. The ban on the use of DDT in the United States in 1972 resulted in higher productivity nationwide (Peterson 1986). In 1995, the bald eagle was downlisted from an endangered status to a threatened status in most of the lower 48 states, including Louisiana. This species prefers habitat near large rivers, lakes, and estuaries and occurs throughout Louisiana. From 1989 to 1995 the number of nests and number of young produced has been steadily increasing (LDWF data) such that 157 eagles were produced in 1995. There are at least 30 documented (i.e., present and historical) bald eagle nest locations within the study area, all are in the northern portion (where larger trees are found) as would be expected and most are in subbasin A, west of Bayou du Large.

Bald eagles begin nesting in September with the peak egg laying in December. Clutch size ranges from 1-3 eggs and fledging takes 10-12 weeks (Murphy et al. 1989). The birds then tend to move north up to 1,000 miles. The main basis of the bald eagle diet is fish (DeGraff et al. 1980), but they will feed on other items such as birds and carrion depending upon availability of the various foods. Eagles require roosting and nesting habitat, which in Louisiana consists of large trees in fairly open stands (Anthony et al. 1982).

Bald eagles can be disturbed by human activity, including recreation (Boyle and Samson 1985; Stalmaster and Kaiser 1998). McGarigal et al. (1991) found that eagles generally avoid foraging within a 400-meter radius around areas with human boating activities (McGarigal et al. 1991).

#### **FINBACK WHALE (*Balaenoptera physalus*)**

The finback whale is the second largest baleen whale. It feeds primarily on krill and small schooling fish. In the western north Atlantic they occur from Greenland south to the Gulf of Mexico and the Caribbean Sea (Leatherwood et al. 1976). They may occur year-round in the Gulf of Mexico; however, no finbacks were sighted during aerial surveys conducted in 1980-1981 (Fritts et al. 1983a).

Finbacks have stranded in the Gulf of Mexico along the coasts of Florida, Louisiana, and Texas. Standing records for Louisiana include Isles Dernieres off Terrebonne Parish in 1915, Pelican Island on the western edge of Breton Sound in 1917, near Sabine Pass in 1924, the Chandeleur Islands in 1928, and in the marsh west of Venice in 1968 (Lowery 1974). A whale that stranded in Mississippi Sound in 1967 was originally reported as a finback but was later determined to be a sei whale.

#### **HUMPBACK WHALE (*Megaptera novaeangliae*)**

Humpback whales occur in all oceans. They are a coastal species and feed primarily on krill and fish. The western north Atlantic stock is migratory. Their summer range is from Cape Cod to Iceland, and their winter calving grounds are in the Caribbean Sea (Schmidly 1981).

The only recent record for the Gulf of Mexico is of an individual sighted in 1962 at the mouth of Tampa Bay (Layne 1965).

#### **RIGHT WHALE (*Eubaleana glacialis*)**

Right whales occur in the temperate waters of the north Atlantic, the north Pacific, and the southern hemisphere. In the western north Atlantic, right whales are distributed from Iceland to Florida and the Gulf of Mexico (Leatherwood 1976).

They have been recorded only twice from the Gulf of Mexico and their status is questionable. Two right whales were reported off New Pass, Florida in 1963, and in 1972 one washed ashore near Freeport, Texas (Schmidly 1981).

#### **SEI WHALE (*Balaenoptera borealis*)**

Sei whales occur in all oceans, but are rare in tropical and polar seas. They are widely distributed in nearshore and offshore waters of the western north Atlantic from the Gulf of Mexico and the Caribbean Sea to Nova Scotia and Newfoundland (Leatherwood et al. 1976).

Records from the Gulf of Mexico are limited to strandings near Campeche, Mexico and the coasts of Louisiana and Mississippi. The record from Louisiana is of an individual that stranded near Fort Bayou on the western edge of Breton Sound in 1956. The record from Mississippi is of the specimen originally reported as a finback whale. This whale entered Mississippi Sound in 1967 and subsequently died near the entrance to the harbor at Gulfport, Mississippi (Gunter and Christmas 1973). The authors believed this occurrence would not have been possible except for the deep navigation channel leading into Gulfport.

#### **SPERM WHALE (*Physeter catodon*)**

Sperm whales were once quite numerous in the Gulf of Mexico, enough so to justify full-scale commercial whaling operations (Lowery 1974). Although no longer common in the Gulf of Mexico, the species has been observed on several occasions in recent years off the mouth of the Mississippi River by fishermen and personnel on exploratory research vessels of the NMFS (Lowery 1974). Sperm whales were observed 229 miles off the coast of Louisiana in 1980 by Fritts et al. 1983a.

Three strandings along the coast of Louisiana have been reported. An individual stranded near Sabine Pass in 1910, another stranded in 1960 at the mouth of the Mississippi River near Pass a Loutre, and a third stranded on the central coast of Louisiana in Terrebonne Parish in 1977 (Schmidly 1981).

#### **IMPACTS ON THREATENED AND ENDANGERED SPECIES**

Recent research has shown that sea turtles are virtually absent from the nearshore waters of the northern Gulf from December through March (Renaud et al. 1995) and would not ever be present far enough inland to be directly impacted by any of the alternatives. This leaves only the possibility of indirect and/or cumulative impacts to sea turtles. Hawksbill and leatherback sea turtles are very unlikely to occur near the study area. Green and loggerhead sea turtles are unlikely to occur, but Kemp's ridley sea turtles may be found in coastal waters near the study area during the summer. Sea turtles (Kemp's ridley) are known to occur in the nearshore environment of the Gulf of Mexico some 15 km (9 miles) south of the closest possible work areas along Highway 57. Therefore, dredging and other construction activities would not be expected to impact areas occupied by Kemp's ridley sea turtle.

Whales are extremely unlikely to be found anywhere near the study area. No adverse impacts would be expected to whales with any of the alternatives.

Piping plover do overwinter in southern most portion of the study area but not within the actual impact area of the recommended plan so they would not be adversely impacted.

Eastern brown pelicans occur in the study area, particularly immature pelicans. Nesting does occur on Racoon Island, which is within the study area. The species also feeds and roosts in the study area. At this time, no adverse impacts are anticipated. As each segment of the levee alignment undergoes detail design, a supplemental NEPA document will revisit this determination.

Bald eagles nest in northern Terrebonne and Lafourche Parishes, primarily west of Bayou du Large. Construction activities within 3,000 feet of bald eagles could be disruptive to feeding and nesting and should be avoided from October through mid-May. Cutting of bald eagle nest trees, or damaging its root system, is strictly prohibited at any time. As each segment of the levee alignment undergoes detail design, a supplemental NEPA document will revisit this determination. As part of this, an aerial survey may be conducted to determine the presence of undocumented eagle nests.

#### **CONCLUSIONS**

Neither of the two action alternatives would have adverse impacts upon threatened and endangered species, provided that work areas do not expand to the south of the study area and that the precautions noted above for bald eagle are followed.

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**C-1 C-2 C-3 C-4 C-5 C-6**

**Appendix B**

**Final Fish and Wildlife  
Coordination Act Report**



# United States Department of the Interior

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



March 27, 2013

Colonel Edward R. Fleming  
District Commander  
U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Colonel Fleming:

The Fish and Wildlife Service (Service) has prepared a Fish and Wildlife Coordination Act Report on the U.S. Army Corps of Engineers' (Corps) Mississippi River and Tributaries – Morganza to the Gulf of Mexico, Louisiana, Post-Authorization Change (PAC) report. That PAC report is being prepared to quantify costs and impacts of the Morganza, Louisiana, to the Gulf of Mexico Project (MTG) authorized under the 2007 Water Resources Development Act. That PAC report also examines the feasibility, costs, and impacts associated with two levee height alternatives, both of which are located on the alignment selected in the 2002 Feasibility Report. The PAC alternatives would protect against flooding from a 1 percent annual chance of occurrence storm (100-year frequency) and a 3 percent annual chance of occurrence storm (35-year frequency). The 100-yr frequency protection system has been chosen as the Tentatively Selected Plan. The PAC report will programmatically evaluate most project features; however, feasibility level evaluations are desired for the “constructable” features which include levee reaches F1, F2, and G1, plus the Houma Navigation Canal (HNC) Lock Complex and the Bayou Grand Caillou Floodgate.

Since the release of the 2002 Feasibility Report, additional levee reaches have been added to both the eastern and western ends of the proposed MTG levee system. This Coordination Act Report provides an assessment of direct impacts for all project features and indirect impacts for only the constructable features.

Given that indirect impacts remain unquantified for features other than the constructable features, this Coordination Act Report does not fulfill the requirements of the Fish and Wildlife Coordination Act and does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of that Act, for those programmatically evaluated project features. However, for the constructable features, direct and indirect impact analyses have been completed. For those project features, this Coordination Act Report does fulfill the requirements of the Fish and Wildlife Coordination Act and does constitute the final report of the Secretary of the Interior as required by Section 2(b) of that Act.

To the greatest degree possible within the very limited time-line, this report addresses comments provided by the National Marine Fisheries Service (NMFS) and the Louisiana Department of

Wildlife and Fisheries on the Service's Draft Fish and Wildlife Coordination Reports, dated May 2012, and December 6, 2012 (Appendix A).

Study area habitats and affected fish and wildlife resources have been described in the April 2002 draft Fish and Wildlife Coordination Act reports, and are incorporated herein by reference.

### Direct Wetland Impacts

Programmatic-level estimates of wetland impacts due to project construction have been estimated using 2008 National Wetland Inventory (NWI) data and levee footprint shapefiles provided by the Corps. Historic marsh loss rates (1985-2009) have been applied to 2008 marsh acreages to account for anticipated marsh loss between 2008 and the date of levee reach construction. Based on the Corps-provided construction schedule, and using the medium sea level rise (SLR) scenario, our programmatic-level assessment indicates that construction impacts of the 100-year frequency protection plan would result in a loss of 520 acres of bottomland hardwood forest, 599 acres of cypress swamp, and 2,993 acres of marsh.

Table 1. Summary of construction related direct wetland impacts

Low SLR Scenario				Medium SLR Scenario				High SLR Scenario			
Levee Reach	Hwds (acres)	Swamp (acres)	Marsh (acres)	Levee Reach	Hwds (acres)	Swamp (acres)	Marsh (acres)	Levee Reach	Hwds (acres)	Swamp (acres)	Marsh (acres)
Barrier	202	547	209	Barrier	202	547	209	Barrier	202	547	208
A	81	13	362	A	81	13	361	A	81	13	361
B	0	0	182	B	0	0	182	B	0	0	182
E-1	0	0	94	E-1	0	0	94	E-1	0	0	94
E-2	0	0	39	E-2	0	0	39	E-2	0	0	39
F-1	0	0	359	F-1	0	0	359	F-1	0	0	358
F-2	0	0	147	F-2	0	0	147	F-2	0	0	146
G-1	0	0	165	G-1	0	0	165	G-1	0	0	165
G-2	0	0	53	G-2	0	0	53	G-2	0	0	52
G-3	0	0	43	G-3	0	0	43	G-3	0	0	43
H-1	0	0	112	H-1	0	0	112	H-1	0	0	112
H-2	0	0	187	H-2	0	0	186	H-2	0	0	186
H-3	0	0	103	H-3	0	0	102	H-3	0	0	102
I-1	0	0	83	I-1	0	0	83	I-1	0	0	83
I-2	0	0	86	I-2	0	0	86	I-2	0	0	86
I-3	0	0	91	I-3	0	0	90	I-3	0	0	90
J-1	0	0	84	J-1	0	0	84	J-1	0	0	83
J-2	0	0	103	J-2	0	0	103	J-2	0	0	103
J-3	0	0	26	J-3	0	0	26	J-3	0	0	25
K	0	0	139	K	0	0	139	K	0	0	138
L	0	0	212	L	0	0	212	L	0	0	212
LG	51	0	30	LG	51	0	30	LG	51	0	30
LL	187	39	89	LL	187	39	89	LL	187	39	89
Subtotal	520	599	2,996	Subtotal	520	599	2,993	Subtotal	520	599	2,985
TOTAL			4,115	TOTAL			4,113	TOTAL			4,105

Given the resolution of the NWI data, habitat type misclassification errors, and post 2008 habitat changes, the Service believes that the NWI data is not sufficiently accurate for future feasibility impact assessments in forested wetlands subject to development. The Service recommends that future feasibility impact analyses for MTG levee segments should utilize current aerial imagery and associated ground truthing to determine the types and acreage of those forested habitat

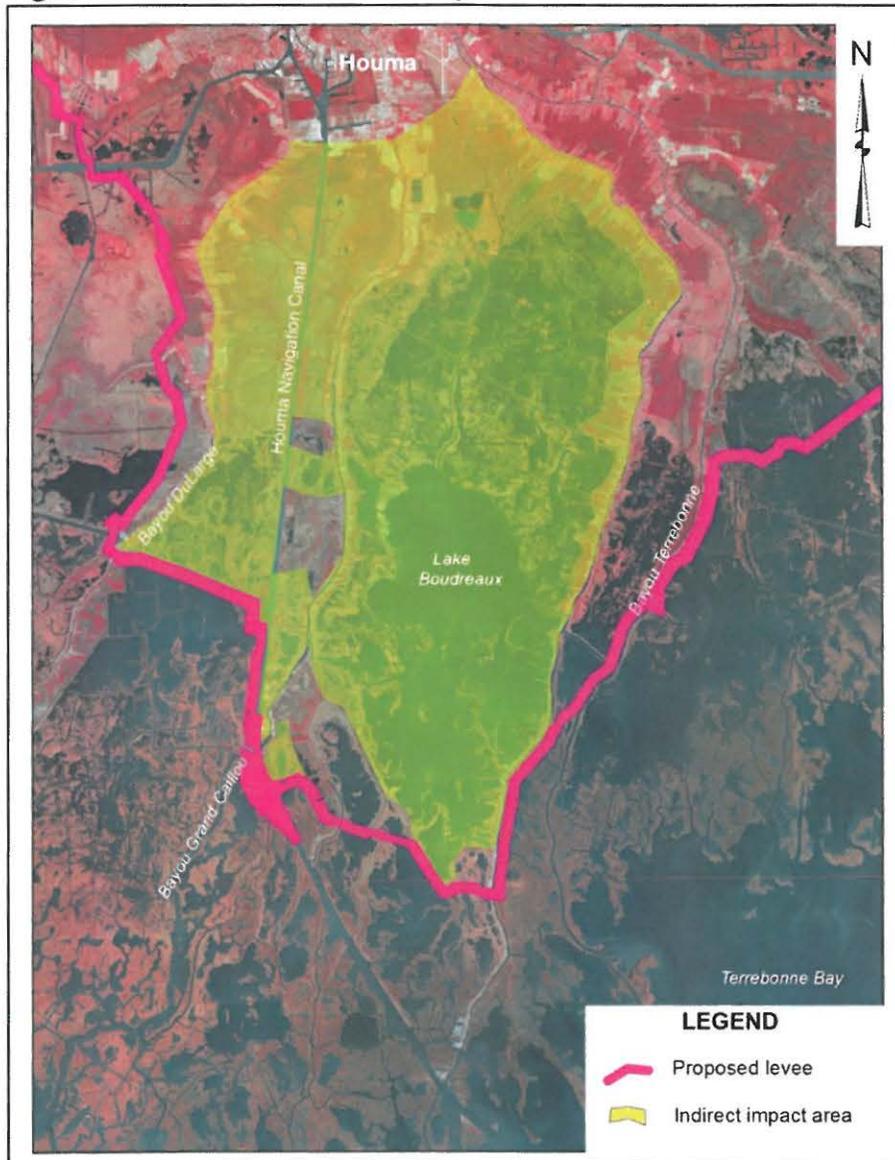
impacts. Because direct impacts for the constructable features are primarily marsh habitats, we believe that those acreage estimates are of sufficient detail for a feasibility level analysis. Construction impacts by marsh habitat type are provided in Appendix B.

The constructable features alone would result in the direct loss of 257 acres of fresh and intermediate marsh, and 414 acres of brackish marsh (under the medium SLR scenario). Using the Wetland Value Assessment methodology version 1.1 (WVA), those direct impacts would result in the loss of 392 average annual habitat units (AAHUs).

Indirect Impacts

The HET determined that indirect impacts for the constructable features would potentially occur throughout the entire Lake Boudreaux Basin, and in wetland areas north of the lock and adjoining the HNC (Figure 1).

Figure 1. Potential areas affected by constructable features



Indirect impacts were also determined using the WVA. The analysis of structure operations was based upon the March 2013 Operation Plan provided by the Corps (see Appendix C). Loss of fisheries access is the most significant indirect impact. The study schedule did not allow use of methods other than the WVA for assessing impacts to fisheries access or other potential indirect impacts. Because predicted salinities at the end of the project life under the low sea level rise (SLR) scenario were not provided to the Habitat Evaluation Team (HET), indirect impacts under the low SLR scenario could not be estimated. Hence, indirect impacts are available for only the medium and high SLR scenarios. According to the March 2013 Operation Plan, gates associated with the HNC Lock and Bayou Grand Caillou floodgates would be closed for high stages caused by tropical storm events, and for high salinities which threaten drinking supplies taken from the Gulf Intracoastal Waterway in Houma. The frequency and duration of gate closures is expected to increase due to area-wide stage and salinity increases caused by relative SLR. To quantify the percent of time gates would be open, 2003 through 2011 HNC at Dulac stage and salinity data, salinity data from the Louisiana Universities Marine Consortium (LUMCON), and National Hurricane Center data on the duration of Tropical Storm Watches in the project area were compiled into a master spreadsheet and evaluated. Annual percent time open for the HNC, the Bayou Grand Caillou (BGC) Floodgate, and Group 2 and Group 3 structures (identified in the March 2013 Operation Plan) are provided (Table 2).

Table 2. Percent time open for constructable features and other floodgates based on the March 2013 structure operation plan under the medium and high SLR scenarios.

<b>Med SLR</b>	<b>2020</b>	<b>2023</b>	<b>2025</b>	<b>2036</b>	<b>2057</b>	<b>2062</b>	<b>2071</b>	<b>2077</b>	<b>2085</b>
<b>HNC</b>	0.724	0.723	0.719	0.699	0.652	0.624	0.567	0.549	0.455
<b>BGC</b>	0.993	0.992	0.991	0.985	0.949	0.930	0.849	0.811	0.696
<b>Grp 2*</b>	0.987	0.986	0.985	0.977	0.797	0.652	0.357	0.185	0.061
<b>Grp 3*</b>	0.976	0.973	0.967	0.898	0.349	0.208	0.066	0.028	0.004

<b>High SLR</b>	<b>2020</b>	<b>2025</b>	<b>2034</b>	<b>2045</b>	<b>2052</b>	<b>2058</b>	<b>2061</b>	<b>2068</b>	<b>2085</b>
<b>HNC</b>	0.719	0.706	0.681	0.610	0.518	0.205	0.202	0.000	0.000
<b>BGC</b>	0.991	0.987	0.967	0.885	0.762	0.345	0.343	0.000	0.000
<b>Grp 2*</b>	0.985	0.980	0.929	0.492	0.140	0.029	0.009	0.001	0.000
<b>Grp 3*</b>	0.966	0.924	0.629	0.118	0.019	0.002	0.001	0.000	0.000

\* Group 2 and 3 structures identified in the March 2013 plan (Appendix C)

By the end of the project life, under the high SLR scenario, all gates would be closed 100 percent of the time. Should conditions occur that would prompt such a complete system closure, it is unknown how water levels within the system would be managed and the potential for substantial additional indirect impacts to marshes and fish and wildlife resources might occur.

Because permitted operation plans for existing area floodgates allow gate closures for high stages caused by non-tropical events, the HET assumed that a foreseeable future change (FFC) in the March 2013 operation plan could be proposed whereby MTG floodgates would be operated in a similar manner. Consequently, the HET also quantified indirect impacts under such a plan (Table 3).

Under this FFC operation plan, there is almost complete closure of the constructable feature gates by the end of the project life under the medium SLR scenario (Table 3). If this were to occur, it is unknown how water levels within the system would be managed and the potential for substantial additional indirect impacts to marshes and/or fish and wildlife resources might occur. Should project sponsors later wish to modify the proposed operation plan to close the constructable features due to stage alone (independent of storm surge effects), as per the FFC plan, then a revised assessment of indirect impacts and additional compensatory mitigation would be required.

Table 3. Percent time open for constructable features and other floodgates based on the FFC structure operation plan under the medium and high SLR scenarios.

<b>Med SLR</b>	<b>2020</b>	<b>2023</b>	<b>2025</b>	<b>2036</b>	<b>2057</b>	<b>2062</b>	<b>2071</b>	<b>2077</b>	<b>2085</b>
<b>HNC</b>	0.716	na	0.706	0.653	0.247	0.143	0.045	0.020	0.003
<b>BGC</b>	0.976	na	0.967	0.898	0.349	0.208	0.066	0.028	0.004
<b>Grp 2*</b>	0.987	0.986	0.985	0.977	0.797	0.652	0.357	0.185	0.061
<b>Grp 3*</b>	0.976	0.973	0.967	0.898	0.349	0.208	0.066	0.028	0.004

<b>High SLR</b>	<b>2020</b>	<b>2025</b>	<b>2034</b>	<b>2045</b>	<b>2052</b>	<b>2058</b>	<b>2061</b>	<b>2068</b>	<b>2085</b>
<b>HNC</b>	0.706	0.672	0.462	0.082	0.019	0.001	0.000	0.000	0.000
<b>BGC</b>	0.000	0.924	0.629	0.118	0.028	0.002	0.001	0.000	0.000
<b>Grp 2*</b>	0.985	0.980	0.929	0.492	0.140	0.029	0.009	0.001	0.000
<b>Grp 3*</b>	0.966	0.924	0.629	0.118	0.019	0.002	0.001	0.000	0.000

\* Group 2 and 3 structures identified in the March 2013 plan (Appendix C)

Stage data from the HNC at Dulac gage was used to determine when storm-related gate closures would be needed. Because this gage is 3.5 miles north of the proposed lock site and because high tides are likely to be lower there than at the more gulfward lock site, the above percent time open values could be lower if data from the lock site were available. The group 3 floodgates and water control structures are located primarily on the eastern side of the MTG system. Because stages are generally higher on the eastern side of the system, the above estimates may underestimate closure duration (and overestimate time gates are open) for those gates. During future feasibility analyses of those features, recent stage data is needed from gages in the vicinity of those east side structures to properly assess the duration of MTG east side gate closures associated with current and future sea level rise.

Schedule-related constraints precluded acquisition of some data, utilization of other data sets, and refinement of data inputs, thus leading to increased levels of uncertainty. For example, the WVAs for the enclosed marshes require the input of baseline and future salinities. Model-predicted baseline salinities were much lower than observed salinities in some areas. Consequently, the HET compiled salinity data from a variety of sources and time periods to use as substitute baseline salinities. Model-predicted tidal discharge values were also obtained for project water control structures to assess whether HNC Lock closures (with all other structures open) resulted in increased discharges elsewhere. Although compensatory flow increases at other structures were noted, there was not sufficient time to analyze that data nor utilize it in the assessment of fisheries access impacts.

To help capture the range of uncertainties, the HET analyzed indirect impacts under a low and high impact scenario. Under the low impact scenario, indirect benefits associated with predicted salinity reductions north of the lock serve to reduce indirect impacts due to reduced fisheries access. Under the high impact scenario, salinity reduction benefits were removed leaving only fisheries impacts.

Under the high SLR scenario, the complete loss of marshes throughout the study area would reduce the value of the study area as habitat for estuarine-dependent fisheries. Consequently, the project-induced fisheries access impacts are substantially less significant under the high SLR than under the medium SLR scenario (Table 4).

Table 4. Indirect impact estimates for the constructable features.

Operation Scenario	Best Case Scenario AAHUs		Worse Case Scenario AAHUs	
	Med SLR	High SLR	Med SLR	High SLR
March 2013 Operation Plan "plan as is"	-215.69	-287.09	-576.78	-331.00
March 2013 Operation Plan with "foreseeable future change"	-374.73	-379.58	-750.36	-430.10

Impacts associated with changes in water quality or changes in wetland loss rates due to extensive periods of gate closure were not incorporated into the indirect impacts analysis. However, the HET did discuss changing wetland loss rates due to extensive future gate closures. Deprivation of suspended sediment inputs during storm events was considered as a possible adverse impact. Given that storms have recently had a very detrimental impact on marshes within portions of the areas affected by the constructable features, and that most of the affected wetlands were already isolated by existing hydrologic barriers, protection from storm surge impacts could provide some wetland benefits. Given that there may be both positive and negative impacts associated with wetland enclosure (of the areas affected by the constructable features), and because there was not sufficient data nor adequate predictive tools to adjust historic wetland loss rates, the HET decided to leave future with-project wetland loss rates unchanged.

#### Threatened and Endangered Species

Regarding project-related impacts to Federally-listed threatened and/or endangered species, the Service has reviewed the Biological Assessment (BA) contained in Appendix A of the January 2013 Draft Environmental Impact Statement. In a letter to the Service dated March 25, 2013, the conclusion of that BA was clarified to read "there would be No Affect to Threatened or Endangered Species or their critical habitat due to the Moganza to the Gulf Risk Reduction Project." The Service concurs with this determination for the species under our preview (i.e., the piping plover).

Although the bald eagle (*Haliaeetus leucocephalus*) has been removed from the List of Endangered and Threatened Species, it remains protected under the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.) and the Bald and Golden Eagle Protection Act (54 Stat. 250, as amended, 16 U.S.C. 668a-d). Within the reach E-1 levee footprint, an inactive

bald eagle nest (nest number 226) was present as late as 2008. A field survey conducted during July 2012 revealed that the nest no longer exists. Other nest trees may exist near the barrier and Lockport to Larose reaches. When those and/or other project features move into the feasibility stage, the project sponsors should solicit Service input regarding the need to conduct surveys for the presence of bald eagle nests in the project vicinity. Additionally, on-site personnel should be informed of the possible presence of nesting bald eagles in the vicinity of the project boundary, and should identify, avoid, and immediately report any such nests to this office. If a bald eagle nest is found, one may go to the Service’s web site to obtain guidance on avoiding impacts (<http://www.fws.gov/southeast/es/baldeagle/>).

**Mitigation of Impacts**

The constructable features (levees and control structures) would result in the direct loss of 671 acres of marsh and a loss of 392 Average Annual Habitat Units (AAHUs) over the project life (Table 5). Assuming that the project sponsors select the March 2013 operation plan with high impact scenario (Table 4) as the likely indirect impact scenario, the total acreage of marshes needed to mitigate both direct and indirect impacts is 2,740. Because of differences in land loss rates, average water depths, and other factors, mitigation ratios are specific to a particular study area polygon. Polygons B13, B15, and C17 (Figure 2) are the study area polygons used to generate the mitigation ratios for FM/INT marsh, BR marsh, and SAL marsh, respectively.

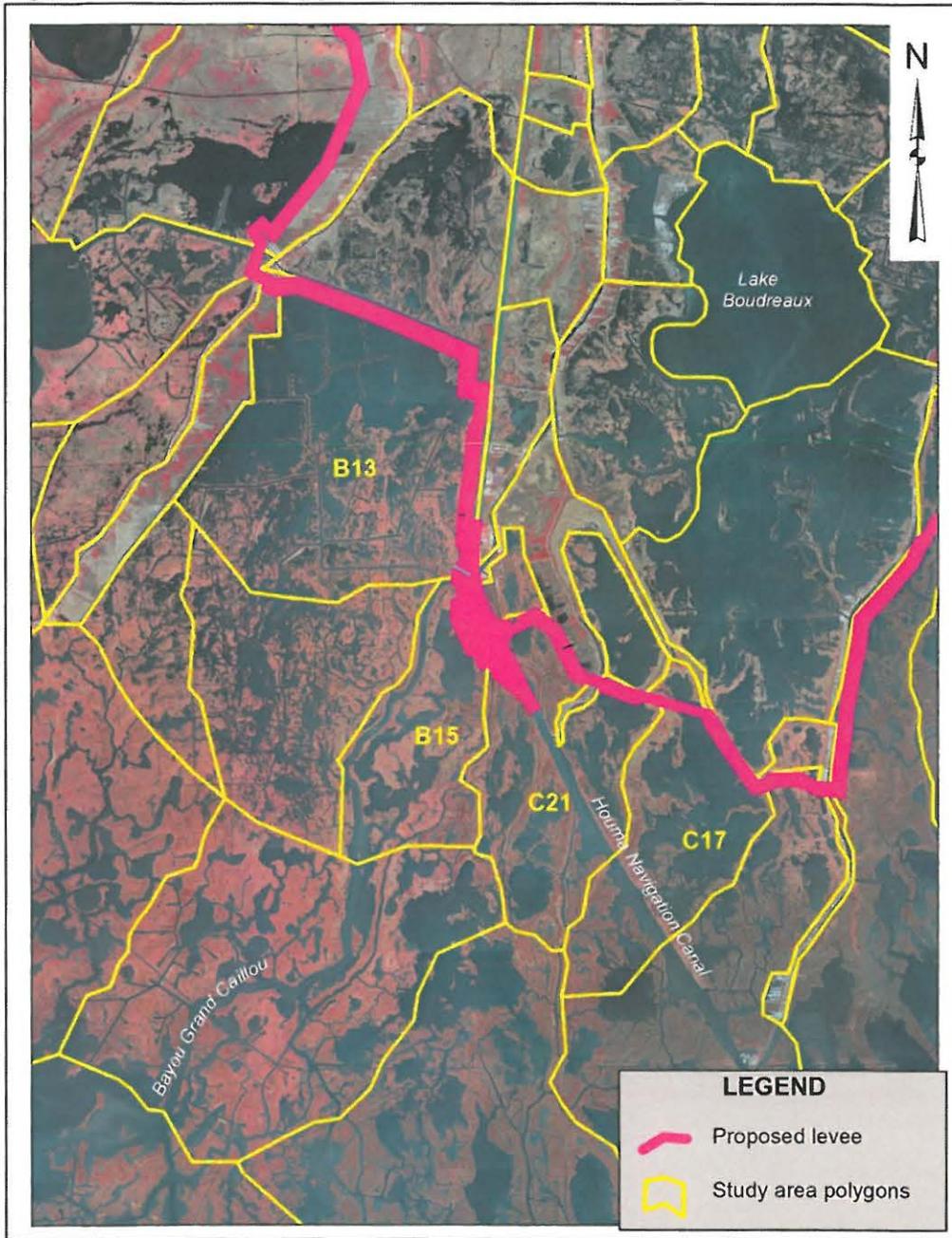
Table 5. Direct and indirect impacts of constructable features, and mitigation requirements.

Habitat Type	Direct Impacts		Indirect Impacts*	TOTAL Impacts	Mitigation Ratio <sup>+</sup>	Marsh Creation Mitigation
	acres	AAHUs	AAHUs	AAHUs	(acres/AAHUs)	acres
FM marsh	26.4	-12.74	-39.73	-52.47	3.46	182
INT marsh	230.11	-28.04	-353.96	-382.00	3.46	1,322
BR marsh	414.12	-350.98	-41.33	-392.31	2.21	867
SAL marsh	0	0	-141.76	-141.76	2.61	370
<b>TOTAL</b>	<b>670.63</b>	<b>-391.76</b>	<b>-576.78</b>	<b>-968.54</b>		<b>2,740</b>

\* March 2013 Operation Plan, high impact estimate  
 + acres of marsh creation needed to generate one AAHU

Should project sponsors wish to construct mitigation elsewhere, mitigation ratios for those areas will need to be determined. Note that all assessments of impacts and mitigation needs were conducted under the medium SLR scenario.

Figure 2. Study area polygons where mitigation is being considered.



Because of the complexity and scope of this study, many details regarding the design and operation of project features must be addressed during the post-authorization phase; hence, precise estimates of project-related impacts/benefits associated with all project features cannot be provided until the designs of all project features are finalized. Because designs for several critical floodgates have not yet been completed, the assessment of local and system-wide hydrology effects cannot yet be concluded and additional hydrologic impact assessments will be needed.

Extensive coordination between the Corps and the Service will be required throughout the post-authorization phase to ensure that impacts to coastal wetlands and associated fish and wildlife resources are avoided and minimized to the greatest degree possible and that adequate and effective mitigation measures are implemented to compensate for unavoidable impacts. Substantial direct wetland losses will result from construction of project features. Consequently, avoidance and minimization of direct wetland impacts should be pursued to the greatest extent practicable. The Service does not oppose the implementation of the constructable features and provides the following recommendations to avoid and/or minimize project impacts on fish and wildlife resources, and for mitigating unavoidable impacts to those resources.

1. The Post Authorization Change Report, in keeping with the project's Congressional Authorization, should clearly reiterate that features of the Tentatively Selected Plan will be designed to maintain existing freshwater inflows from the Atchafalaya River via the Gulf Intracoastal Waterway. Those designs shall accommodate restoration needs determined via future restoration planning, to the extent possible. The Service also recommends that the Corps provide the Service with the opportunity to review and comment on model assumptions and input data prior to initiating the modeling analyses necessary to complete those tasks. Tasks should include the following:
  - a. Future design of the Grand Bayou Floodgate should accommodate southward freshwater flows.
  - b. Construction of Reach L and K levees should avoid use of material dredged from Grand Bayou Canal and from the Cutoff Canal so that saltwater intrusion via those channels is not increased.
  - c. The eastern Gulf Intracoastal Waterway (GIWW) floodgate should have the smallest possible cross-section to reduce the loss of Atchafalaya River freshwater to the Barataria Basin and to retain that freshwater within the Terrebonne Basin.
  - d. The design of the west GIWW floodgate should avoid stage increases west of that structure and should be capable of passing Atchafalaya River freshwater flows, especially during periods of high Atchafalaya River stages, without any loss of flow.
  - e. The two environmental water control structures along Falgout Canal should be designed and operated to only discharge freshwater southward and not to allow northward flow of saltwater into Falgout Canal.
2. The Corps should coordinate closely with the Service and other fish and wildlife conservation agencies throughout the pre-construction engineering and design phase of project features including levees, floodgates, and environmental water control structures to ensure that those features are designed, constructed and operated consistent with wetland restoration purposes and associated fish and wildlife resource needs, and to update and finalize impacts and to develop an adequate mitigation plan.
3. Operational plans for floodgates and water control structures, excluding the Falgout Canal environmental structures, the HNC Lock Complex, and the east GIWW floodgate, should be developed to maximize the open cross-sectional area

for as long as possible. Operations to maximize freshwater retention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible and such actions are recommended by the natural resource agencies. Development of water control structure operation manuals or plans should be done in coordination with the Service and other natural resource agencies.

4. To the greatest extent possible, the Bayou Grand Caillou floodgate should remain open during HNC Lock Complex saltwater closure periods to maintain water exchange in this natural bayou and thereby reduce or avoid impacts to fish access.
5. The location of the Barrier Reach, Reach A, and the Larose to Lockport levees should be modified to reduce direct wetland impacts and enclosure of wetlands, to the degree possible. Features such as spoil bank gapping or other measures should also be added to avoid impacts to enclosed wetlands due to unintentional impaired drainage. The Corps should coordinate with the Service and other natural resource agencies to develop the best approach for avoiding drainage impacts.
6. Estimates of all direct and indirect project-related wetland impacts, including those associated with fisheries impacts and/or changes in freshwater inflows and distribution, should be refined during the engineering and design phase, including indirect impacts associated with the constructable features should the changes be made in the March 2013 structure operation plan (Appendix C).
7. To determine acreage of forested habitat types impacted by future levee construction activities, those acreages should be obtained by digitizing current aerial imagery and ground truthing, rather than through use of 2008 NWI data.
8. To the greatest degree practical, the hurricane protection levees and borrow pits should be located to avoid and minimize direct and indirect impacts to emergent wetlands. Efforts should be made to further reduce those direct impacts by hauling in fill material, using sheetpile for the levee crest, deep soil mixing, or other alternatives. Borrow pit construction should also avoid the following:
  - a. avoid inducing wave refraction/diffraction erosion of existing shorelines
  - b. avoid inducing slope failure of existing shorelines
  - c. avoid submerged aquatic vegetation
  - d. avoid increased saltwater intrusion
  - e. avoid excessive disturbance to area water bottoms
  - f. avoid inducing hypoxia

A plan for monitoring borrow pit dissolved oxygen concentrations should also be developed to assess if hypoxia occurs in pits used for levee construction (provided construction is not from a navigation channel) and in pits needed for mitigation construction. Recommended hypoxia monitoring is as follows:

Measure specific conductance, temperature, dissolved oxygen, and pH in at least one location in the borrow pit. A calibrated multiparamter probe should be used. The sites(s) should be profiled at 5 to 10-ft intervals,

depending on depth and conditions, from the water bottom to the surface. Samples should be collected one time during each of the months of April, September, and October, and twice a month, about 2 weeks apart, during May through August. Sampling frequency should be increased to twice monthly during September and October as necessary.

9. When organic soils must be removed from the construction site, that material should be used to create or restore emergent wetlands to the greatest extent practicable. If that is not practicable, then use of that material to improve borrow pit habitat quality (e.g., construct bank slopes, reduce depths, etc.) should be examined.
10. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.
11. Avoid adverse impacts to bald eagle nesting locations and wading bird colonies through careful design of project features and timing of construction. Surveys prior to construction should be undertaken by the construction agency to ensure no nesting birds are within 1,000 feet of any proposed work. If nesting birds are found within 1,000 feet of any proposed work sites, the Service and the Louisiana Department of Wildlife and Fisheries should be contacted for procedures to avoid impacts.
12. Full, in-kind compensation (quantified as AAHUs) should be provided for unavoidable net adverse impacts on forested wetlands, marsh, and associated submerged aquatic vegetation, including any additional losses identified during post-authorization engineering and design studies. Mitigation planning, including site selection and design, should be closely coordinated with the Service and other interested natural resource agencies. To help ensure that the proposed mitigation features meet their goals, the Service provides the following recommendations.
  - a. Mitigation measures should be constructed concurrently with the features that they are mitigating (i.e., mitigation should be completed no later than 18 months after levee construction has begun). Completion of mitigation means that initial fill elevations have been achieved. If mitigation is provided via an in-lieu fee program, completed mitigation would be achieved when credits were purchased from an approved mitigation bank.
  - b. If mitigation is not implemented concurrent with levee construction, the amount of mitigation needed should be reassessed and adjusted to offset temporal losses of wetland and Essential Fisheries Habitat functions.
  - c. Proposed mitigation in the open water area south of Falgout Canal (in subunit B13) should be coordinated with ongoing Corps Regulatory Branch mitigation plans to avoid conflicts with other permitted activities.
  - d. In coordination with the Service and other fish and wildlife conservation agencies, the Corps should address the Environmental Protection Agency's 12 requirements for each mitigation measure (Appendix D).
  - e. Mitigation performance should be assessed using the final performance criteria currently being developed by the Corps and natural resource

- agencies for the Hurricane Storm Damage Risk Reduction Study.
- f. The Service and other fish and wildlife conservation agencies should be consulted in the development of plans and specifications for all mitigation features and any monitoring and/or adaptive management plans.
  - g. Unavoidable impacts to wetlands within Mandalay National Wildlife Refuge should be mitigated on the refuge.
  - h. The acreage of marsh created to mitigate project impacts should meet or exceed the marsh acreage projected by the Habitat Evaluation Team for target year 5. If deficiencies occur in year 5 acres, additional mitigation shall be provided.
  - i. The Corps should remain responsible for marsh mitigation until the mitigation is demonstrated to be fully compliant with success and performance criteria. At a minimum, this should include compliance with the requisite vegetation, elevation, acreage, and dike gapping criteria.
  - j. To avoid shortfalls in marsh creation acreage, the contractor should be required to guarantee the creation of at least the target acreage of marsh platform, or excess acres should be created.
  - k. The acreage of marsh created for mitigation purposes, and adjacent affected wetlands, should be monitored over the project life to evaluate project impacts, the effectiveness of compensatory mitigation measures, and the need for additional mitigation should those measures prove insufficient.
  - l. Dredged material borrow pits, including those utilized to create marsh for mitigation purposes, should be carefully designed and located to minimize anoxia problems and excessive disturbance to area water bottoms, and to avoid increased saltwater intrusion.
  - m. If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the Fish and Wildlife Coordination Act for mitigation lands.
13. Additional information is needed by the Service to complete the required evaluation of project effects and fulfill our reporting responsibilities under Section 2(b) of the Fish and Wildlife Coordination Act. Much of that information will not be available until engineering and design of the project features has progressed. To help ensure that sufficient information is provided, the Service recommends that the Corps perform the following tasks during the engineering and design phase.
- 1. Provide additional information on anticipated construction techniques and their associated wetland impacts, such as additional dredging to install floodgates and water control structures, dredging temporary by-pass channels, and the method for disposing organic surface soils that are unsuitable for levee construction.
  - 2. Provide final locations and designs for borrow sites used in levee construction.
14. Funding should be provided for full Service participation in the post-authorization

engineering and design studies, and to facilitate fulfillment of its responsibilities under Section 2(b) of the Fish and Wildlife Coordination Act.

15. The Corps should obtain a right-of-way from the Service prior to conducting any work on Mandalay National Wildlife Refuge, in conformance with Section 29.21-1, Title 50, Right-of-Way Regulations. Issuance of a right-of-way will be contingent on a determination that the proposed work will be compatible with the purposes for which the Refuge was established.
16. All construction or maintenance activities (e.g., surveys, land clearing, etc.) on Mandalay National Wildlife Refuge (NWR) will require the Corps to obtain a Special Use Permit from the Refuge Manager; furthermore, all activities on that NWR must be coordinated with the Refuge Manager. Therefore, we recommend that the Corps request issuance of a Special Use Permit well in advance of conducting any work on the refuge. Please contact the Refuge Manager (985/853-1078) for further information on compatibility of flood control features, and for assistance in obtaining a Special Use Permit. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by the NWR.
17. If mitigation lands are purchased for inclusion within a NWR, those lands must meet certain requirements. A summary of some of those requirements was provided in Appendix C to our May 2012 Coordination Act Report. Other land-managing natural resource agencies may have similar requirements that must be met prior to accepting mitigation lands; therefore, if an agency is proposed as a manager of a mitigation site, they should be contacted early in the planning phase regarding such requirements.
18. The Corps should contact the Louisiana Department of Wildlife and Fisheries prior to conducting any work on Point au Chien Wildlife Management Area (985-594-5494).

To fully evaluate indirect impacts of MTG structure operations on enclosed wetlands and fisheries access, the Service provides the following recommendations regarding information needed to conduct a full assessment of indirect project impacts and benefits.

1. Because stages are generally higher along the more exposed MTG east side, historic stage data (in NAVD88) from locations near proposed MTG east-side floodgates should be provided to the Service to facilitate prediction of future closure durations for floodgates along the MTG east side.
2. Hydraulic model runs to predict salinities at target-year 50 year were conducted for the medium and high sea level rise scenarios, but not for the low sea level rise scenario. Model runs should also be conducted to predict salinities at target year 50 for the low sea level rise scenario.
3. Conduct fish passage modeling during the preconstruction engineering and design

phase if determined necessary through continuing coordination with interested resource agencies. At a minimum, this should consist of Particle Tracking Method.

Given that design and evaluation of most project features has been at a programmatic level, the Service cannot fulfill its Coordination Act responsibilities at this time. For the constructable features, we hope to complete the assessment of impacts in time for inclusion in the Final Environmental Impact Statement. To complete those assessments, we may require additional funding during the next several months. Estimates of those funding needs should be coordinated in advance with the Service, and should be based on the nature and complexity of issues associated with the project design and implementation.

Provided that the above recommendations are included in the feasibility report and related authorizing documents, the Service does not oppose further planning and implementation of the Tentatively Selected Plan (i.e., the 100-yr frequency system). If you have any questions regarding the above information, please contact Mr. Ronny Paille of this office (337-291-3117).

Sincerely,



Jeffrey D. Weller  
Supervisor  
Louisiana Ecological Services Office

cc: SE Refuges, Bayou LaCombe, LA  
EPA, Dallas, TX  
NMFS, Baton Rouge, LA  
NRCS, Alexandria, LA  
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA  
LA Dept. of Natural Resources (CMD), Baton Rouge, LA  
LA OCPR, Baton Rouge, LA

APPENDIX A

Agency Comments letters on the May 2012 and December 2012 draft Fish and Wildlife  
Coordination Act Reports



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office  
263 13th Avenue, South  
St. Petersburg, Florida 33701

June 8, 2012

F/SER46/PW:jk  
225/389-0508

Mr. Jeffrey D. Weller, Supervisor  
Louisiana Field Office  
U.S. Fish and Wildlife Service  
646 Cajundome Blvd., Suite 400  
Lafayette, Louisiana 70506

Dear Mr. Weller:

NOAA's National Marine Fisheries Service (NMFS) has received the draft Fish and Wildlife Coordination Act Report (Report) on the Corps of Engineers' (USACE) "Mississippi River and Tributaries – Morganza to the Gulf, Louisiana, Post-Authorization Change (PAC) Report." The project's primary objective is to provide hurricane flood protection up to a 100-year recurrent frequency storm event. Only levee reaches F1, F2, G1, the Houma Navigation Canal (HNC) Lock and Bayou Grand Caillou floodgate and associated mitigation are proposed for construction authorization because detailed engineering and design is not presently available for the remainder of features. The majority of the project features are evaluated at an updated, but programmatic level.

As described in the Report, the Tentatively Selected Plan is the 100-year protection alternative. The constructible features alone under that plan would result in 39 and 351 acres of intermediate and brackish marsh impacts, respectively. Total direct impacts to emergent non-fresh tidally influenced marsh for the entire 100-year alternative is estimated to be 2,105 acres. Total direct impacts to tidal open water would be 3,150 acres from dredging or filling. All marsh and tidal water impacts have been designated as essential fish habitat. Impacts to forested wetlands also would occur. Engineering and design details are unavailable to completely assess direct, indirect, and cumulative impacts for all reaches and structures.

NMFS has reviewed and concurs with the majority of descriptions, positions, and recommendations in the Report. However, NMFS is concerned primarily with two issues: 1) adequacy of mitigation; and, 2) uncertainties of the impacts (direct, indirect, and cumulative) to habitat and fisheries. NMFS requests the expansion of description and recommendations in the Report pertaining to these items.

#### GENERAL COMMENTS

##### Mitigation

Development of mitigation overall and for the near term constructible features is incomplete and therefore inadequate thus far. The Final Report should be revised to clarify that mitigation planning for the constructible features is incomplete until detailed specifics on all 12 requirements in the USACE and Environmental Protection Agency's (EPA) 2008 final mitigation rule are developed through coordination with the natural resources agencies. This development should occur to allow inclusion of these details in the draft and final revised Programmatic Environmental Impact



Statement (PEIS) and the Record of Decision. Of the 12 items, we request the Report recommend a site protection instrument, performance standards, monitoring requirements, long-term management plan, adaptive management plan, and financial assurances be developed and committed to by the USACE for all mitigation. We recommend the mitigation performance standards and monitoring developed for the Hurricane Surge Damage Risk Reduction (HSDRRS), Lake Pontchartrain and Vicinity be used which are available in your office or upon request from NMFS and the USACE staff working on HSDRRS.

Possible marsh creation sites have been assessed to compensate for the constructible features. One of the sites consists of marsh creation in open water south of Falgout Canal located in subunit B13. NMFS supports consideration of mitigation in that location. However, it is reasonably foreseeable that mitigation for multiple local levees pending authorization by the Regulatory Branch may be sited within this open water area. Depending on the number of permits and the type of mitigation (i.e., terracing or marsh creation), space and layout may become a limiting factor precluding mitigation opportunities for either levee construction program. NMFS recommends the Report encourage coordination amongst the USACE and natural resource agencies regarding both Regulatory and civil works needs to develop acceptable mitigation. There is likely room to accommodate mitigation needs for both programs if developed synergistically rather than separately.

Timely implementation of mitigation is concerning because potential delays from the time levee impacts occur until functional mitigation is attained can cause substantial temporal loss of wetlands and associated functions. The draft Report recommends "concurrent" mitigation; however, the definition of concurrent in application is unclear and has become problematic. Ideally, it is preferable to have mitigation constructed literally at the same time as impacts occur. Conversely, some applications have allowed "concurrent" to be defined as the construction completion of all levee reaches. NMFS recommends the Report stipulate mitigation for each reach should be completed no later than 18 months from the initiation of levee construction for that reach. This avoids unfilled mitigation obligations if a date to begin mitigation is required and there is a change in project schedule. It also considers the construction duration with an ample contingency for marsh creation using dedicated dredging as the type of mitigation. This is consistent with recent provisions being required by the Regulatory Branch for interim levees along the Morganza alignment, as well as being requested of the Plaquemines Federal Assumption of Non-Federal Levees and the New Orleans to Venice Levees. NMFS supports EPA's stipulation in their April 17, 2012, letter on the Plaquemines projects that "completed" means mitigation has either been addressed through purchase of credits at an appropriate mitigation banks, sufficient contributions to an approved in-lieu fee program, or initial fill elevations have been achieved for a USACE's performed marsh creation project. We further recommend the Report stipulate that additional mitigation should be assessed if there is a delay in implementing mitigation or in development of projected wetland functions.

No progress has been made by the USACE since the 2002 PEIS in coordinating with the natural resource agencies pertaining to updating and improving mitigation planning for those levee reaches not identified as "constructible". The draft Report quantifies the significant amount of wetland loss by subunit in the project area and the landscape implications and importance due to that loss projected in the future. NMFS continues to be very supportive of creating marsh for mitigation using dedicated dredging. We request the Report be revised to request initiation of mitigation planning, and to the maximum extent practicable, to stress that marsh mitigation be sited on the flood side of the levee system as the preferred method and location of mitigation. Locating the mitigation on the flood side of the levees may afford some protection for the levee while maximizing wetland functions.

## Uncertainties of Impacts to Fisheries and Wetlands

By USACE's admission, the water control structure closure trigger elevation may need to be increased to account for relative sea level rise. As described in the Report, the closure criteria proposed by USACE is +3.5 ft NAVD88. In the future as sea level rises and enclosed elevations subside, the local sponsor may desire more frequent closure of structures to reduce damages from higher stages unrelated to storm events. Such operations are not covered by the PEIS for the current PAC report. Because of reasonably foreseeable desires to operate structures, NMFS believes the USACE should quantify the frequency and duration of all structure closures in the future with sea level rise (SLR) at the +2.5 ft NAVD 88 elevation generally desired by the local sponsor during periods there is not a named storm in the Gulf of Mexico. NMFS requests the Report be revised to both identify the need to assess future closure frequency and duration and request quantification by the USACE of potential associated impacts to wetlands and fisheries under these closure and SLR scenarios.

Various sections of the Report identify uncertainties associated with the project. We recommend the Report be revised to have a sub-section that consolidates a discussion and lists uncertainties with the evaluation to-date, including data, assessment methods, project schedule, etc. This would allow for better context of individual and compounding uncertainties, their relative magnitude, and would further emphasize the programmatic nature of the assessments.

Although the interagency Habitat Evaluation Team agreed to not assess impacts to fisheries using the Wetland Value Assessment (WVA) methodology, NMFS did not conclude the project would have minimal impacts to fisheries. A decision to not assess potential impacts to fisheries with the WVA was based upon: 1) the individual and compounding uncertainties of data limitations and project schedule; and, 2) concession at this programmatic level that a determination of net overall impacts to both wetlands and fisheries may not be possible at this time. NMFS recommends the Report be revised to clarify the determination of impacts to fisheries, its limitation, and the need to reassess impacts to fisheries during the preliminary engineering and design phase prior to supplemental environmental clearance.

### SPECIFIC COMMENTS

Page i. For emphasis, insert "including mitigation" after "project features" in the first sentence of the last paragraph.

Page 8, Evaluation Methodology. The following are items to incorporate into a listing of uncertainties under this section or by reference to an appendix to the Report.

- When adjusting wetland loss rates increases, perhaps adjustments should consider coastwide marsh of like marsh type rather than all non-fresh marshes.
- USACE stipulated project schedule limitations prevented obtaining site specific data to conduct WVAs in most instances. Notable examples are the absence (in total or since the revised PEIS) of field verified percent cover of submerged aquatic vegetation and water depths.
- Due to the study schedule, predicted salinities were not available under future with SLR conditions.

Page 12, WVA Methodology. NMFS appreciates the efforts, leadership, and interagency coordination by your staff to conduct the WVA of project impacts. NMFS neither concurs nor disagrees with the WVA results at this time pending a verification of methods and results during our review of the revised PEIS. The acreage derived mitigation ratio for marsh (i.e., 1.36:1 for total impacts) is unexpected when using the WVA.

Page 14. NMFS does not concur with paragraph 4 regarding potential project impacts to fisheries. The frequency and duration of water control structure closures should be consistent with the project authority and operation plan which is storm related flood protection and closure in exceedence of +3.5 ft NAVD 88. An average closure of 1 or 2 days per year should be verified and substantiated based upon storm frequency and the time necessary in advance of and following storms to close and open the structures once water levels are less than +3.5 ft NAVD 88. Further, the Report should identify and discuss as a reasonably foreseeable risk that the frequency and duration of structure closures may increase in the future with SLR. The Report should revise this paragraph as well as under the Evaluation of Alternative Plans section to discuss that potential in response to two scenarios: 1) SLR; and, 2) potential adjustments in project authority and therefore closure elevation. Although potential impacts associated with the limits of the project authority are considered, it is important to note in the Report that interim levee measures being permitted by USACE Regulatory Division allow structures to be closed when water levels at the gates approach +2.5 ft NAVD 88. If a "named" storm is in the Gulf of Mexico and a sudden rise in water level due to storm surge is expected, the gates may be closed at +2.0 ft NAVD 88. Therefore, despite the limitations of the present USACE's interpretation of the project's authority, it is reasonably foreseeable that both tidal and storm flood protection provided by interim levees would be desired of the civil works project. Likely substantial adverse impacts to fisheries for that potential scenario should be mentioned in the Report.

Page 15. The first paragraph references mitigation south of Falgout Canal and in Felix Lake as being located in subunits identified as B13 and B15, respectively. Figure 6 on Page 8 has the subunits labeled differently. However, NMFS concurs that B13 and B15 correspond with the described locations based on a different map provided during the planning process. It is suggested either Figure 8 be replaced with the alternative map or a second map be appended to the report to provide clarification.

Page 21. Due to storm surge magnification, the independent utility of the Morganza project may be in jeopardy without adding or elevating levee reaches in the vicinity east of Larose. If features of any type are added, the Evaluation of Alternative Plans section of the Report should be revised to discuss additional impacts to fish and wildlife habitat.

The Evaluation of Alternative Plans section of the Report should be revised to discuss potential temporary impacts to fisheries associated with coffer dam closures, if used, to construct floodgates and environmental water control structures.

Page 26. NMFS believes the project may result in an unquantified amount of impacts to fisheries. The vicinity of Bayou Plat (reach G1) and north of levee reaches G2 and G3 are example areas. Assessments were made by NMFS of the changes in hydrologic connection and associated fish access related to interim non-civil works measures in these areas. Change in cross sectional area providing sheet flow and tidal exchange was estimated for Reaches G2 and G3. For both of these reaches, approximately 14% and 10% for reaches G2 and G3, respectively of the future without cross-sectional area available for fishery movement would remain when the structures are open.

These reductions would hinder fish access to habitat on the north side of the levee. The Report should be revised to identify the potential impacts to fisheries accessing marshes that would be north of Reach G1, G2 and G3. However, the minimum amount of openings necessary to avoid impacts to fisheries (by species and life stage) is not known. The Report should be revised to include and discuss the above as an indication of potential implications of the Morganza features to fisheries. The Report also should indicate the need during preliminary engineering and design to further assess potential impacts to fisheries and develop means to avoid, minimize, and mitigate those impacts yet to be identified.

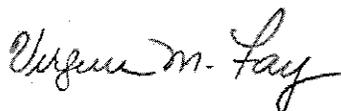
Page 30. Coordination by the USACE on developing mitigation for the constructible features has been inadequate. We recommend this section of the Report identify the mitigation shortcomings raised above.

Page 33. The last sentence of the first paragraph should be revised to include "and reassess need to compensate for indirect impacts to wetlands and fisheries."

Page 35. NMFS requests Service Recommendation 10 pertaining to mitigation be expanded. Specifically, the need to rectify shortcomings identified above, as well as to include the 12 items required by mitigation regulations, should be discussed. Mitigation shortcomings that should be discussed include, the need for a site protection instrument, performance standards, monitoring requirements, long-term management plan, adaptive management plan, and financial assurances for each mitigation site. Other requests to expand recommendations are identified above under the General Comments.

We appreciate the coordination during the impact assessment and for the opportunity to review and comment on the Report. Continued coordination with NMFS under the Fish and Wildlife Coordination Act will be necessary as this project progresses.

Sincerely,



Virginia M. Fay  
Assistant Regional Administrator  
Habitat Conservation Division

c:  
F/SER46, Swafford  
USACE, Dayan  
LDWF, Balkum, R. Bourgeois  
EPA, Ettinger  
Files



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

Southeast Regional Office  
263 13th Avenue, South  
St. Petersburg, Florida 33701

January 8, 2013

F/SER46/PW:jk  
225/389-0508

Mr. Jeffrey D. Weller, Supervisor  
Louisiana Field Office  
U.S. Fish and Wildlife Service  
646 Cajundome Blvd, Suite 400  
Lafayette, Louisiana 70506

Dear Mr. Weller:

NOAA's National Marine Fisheries Service (NMFS) has received the draft Supplemental Fish and Wildlife Coordination Act Report (Report) for the Morganza, Louisiana, to the Gulf of Mexico Hurricane Protection Project. The Report updates the May 2012 draft Report. The U.S. Army Corps of Engineers (USACE) is preparing a Post-Authorization-Change Report (PAC) and draft revised programmatic Environmental Impact Statement (RPEIS) for the project. The PAC alternatives consist of levees to protect from storms with 100-year and 35-year return frequencies. Features in the PAC are evaluated at a programmatic level except "constructable" features comprised of levee reaches F1, F2, and G1; the Houma Navigation Canal (HNC) Lock Complex; and the Bayou Grand Caillou (BGC) Floodgate.

NMFS has reviewed the supplemental Report and submits the following General and Specific comments and recommendations to be addressed in the final Report prior to its incorporation into a Final Environmental Impact Statement.

### **General Comments**

During early 2012, Project Delivery Team (PDT) meetings for this project were suspended. Further, there were infrequent opportunities for the interagency Habitat Evaluation Team to discuss matters with equal information or coordination which had been provided by the USACE to the U.S. Fish and Wildlife Service (FWS). Pursuant to the Fish and Wildlife Coordination Act (FWCA), the USACE's must provide NMFS adequate opportunity to assess impacts. In the future, more frequent and routine coordination should be re-established with natural resource agencies on this project to resolve matters on data needs, impact assessments, and adequate mitigation plan development.

Important issues remain unresolved for the project which are the responsibility of the USACE. The frequency and duration of closures for all structures over the project life under each of the three sea level rise scenarios must be determined and considered when assessing indirect impacts. Preliminary determination on closures by the FWS remains under debate and unconcluded. Mitigation planning (site selection, design, and a complete plan) is largely incomplete at this time for both programmatic and near term constructable features.



Determination of indirect impacts is incomplete due to lack of necessary data needed from the USACE as well as resolution of impact assessment methods (e.g., fisheries). Last, acceptable mitigation must be developed prior to final clearance of the project. Mitigation planning needs much attention by the USACE. No consolidated description or complete draft mitigation plan has been provided by the USACE to the natural resource agencies. For example, figures depicting conceptual layout of mitigation sites and corresponding borrow have not been developed by the USACE and provided for review by natural resource agencies. If the draft RPEIS contains such details, it would be the first opportunity for natural resource agency review.

NMFS finds that time and data made available to date by the USACE, as the Federal action agency, is limiting and insufficient to complete assessment of all impacts to fisheries and determine recommendations. Many details remain unspecified or are being provided in a piecemeal incomplete fashion.

NMFS concurs that direct impacts in the supplement supersede those in the May 2012 draft Report and the assessment of indirect impacts now must be revised and incorporated based on changes to the operation plans. The Report should indicate all necessary data to assess indirect impacts should be provided by the USACE, the assessment be conducted, and findings be included in the Final Report prior to its incorporation into the Final RPEIS.

The Report indicates the FWS does not consider periodic closures of the HNC Lock Complex as causing impacts to fisheries access because water exchange is provided elsewhere by the BGC floodgate and other channels. At this time, NMFS finds insufficient information has been provided to support such a conclusion and does not concur with the methods applied by FWS to assess impacts north of the HNC Lock Complex and BGC floodgate. It is noted that time provided by the USACE limited the opportunity for coordination and resolution on this and related matters. In the future, we request the USACE allow adequate time for such matters to be resolved within technical proceedings such as working meetings, conference calls, or webinars.

Overall, it is important to consider different analytical options which bracket the range of potential environmental outcomes, especially in light of uncertainties in available data and analytical methods. Consistent with the both the FWCA and the intent in the National Environmental Policy Act, all agencies should identify and develop methods and procedures to assess impacts to the environment such that means to prevent or mitigate those impacts are considered. To that end, NMFS continues to advise the FWS that there is no single or best method to assess potential impacts to fisheries for this project. To the contrary, multiple methods should be considered. The Report should be revised to further identify methods and acknowledge their limitations to assess impacts to fisheries by themselves and in combination with data or tools used to inform them.

On a broad scale, fisheries impact assessment methods range from rudimentary analyses such as the Wetland Value Assessment (WVA) Methodology to more sophisticated analyses such as numeric fish passage and production modeling, all of which have shortcomings. To explain, three present methods exist when determining values to enter for Variable 6, fish access, under the WVA. These methods include: 1) Traditional Method; 2) Percent Open Channel (POC)

Method; and, 3) Average or Tidal Flux Method. However, none of these methods, or the WVA marsh models themselves, have been proven by validation. Further, the minimum amount of opening necessary to maintain “optimal” fisheries functions for enclosed wetlands is not known. Care must be taken when applying these methods individually or in combination within the WVA to remain consistent with the assumptions which are the basis for each method and the rating values for various water control structures. Proposed methods for the Falgout Canal Wetlands area propose adjusting a structure rating which was developed with consideration of variable configurations with the percent time the structure may be open. The structure ratings for actively operated water control structures already include variability in structure configurations. Therefore, no adjustment should be made when calculating the V6 value based on range of potential structure configurations because of a redundant or “double counting” effect.

The Report suggests consideration of the tidal flux method to resolve matters to assess impacts to fisheries. Although this method may be accepted as practicable once necessary data are provided by the USACE, the Report should be revised to reiterate passage of all species and life stages does not occur passively with tides. Any use of the tidal flux method must be qualified with the uncertainty of not representing passage by some juveniles and adults nor would it consider behavior strategies by any life stage which could affect passage.

The Eulerian Lagrangian-Agent Method (ELAM) and Particle Transport Model (PTM) are examples of numeric modeling used to assess fish passage. ELAM is suited for assessing passage of juvenile and adult fish, whereas PTM is suited for crustaceans and larval fish. Each of these models are directly informed by hydraulic and hydrology (H&H) modeling. Therefore, similar to WVAs, passage modeling has its own uncertainties which are compounded by imprecision associated with H&H modeling. Such uncertainties diminish potential accuracy of projected outcomes. NMFS has suggested passage modeling during previous PDT meetings and the USACE agreed to consider them further, if deemed necessary, during the Preliminary Engineering and Design (PED) phase. Despite the increased rigor provided by numeric passage modeling, such models provide information on passage alone and do not directly translate into quantifiable impacts to fisheries production. NMFS is unaware of numeric fisheries production models that presently have the capability to incorporate passage effects. The Report should be revised to reiterate passage modeling is a means to quantify potential impacts, if determined necessary during PED.

The Report provides the construction acreage and Average Annual Habitat Unit impacts for the Tentatively Selected Plan to marsh. The Report should be revised to provide a breakdown of impacts by each marsh type.

### **Specific Comments**

Page 4, paragraphs two. The Report should be revised to indicate coordination between the USACE, NMFS and other natural resource agencies is necessary throughout post-authorization and PED to update and finalize impacts and develop an adequate mitigation plan.

Page 5, Item 6. The Report should be revised to clarify this item includes refinement of indirect impacts to fisheries based on any changes to features and additional fisheries impact analyses. Such analyses could include numeric fisheries modeling accomplished during PED.

Page 5, Item 8. This item or item 12, j (page 7) is recommended to be amended with the following preliminary guidelines developed from the Greater New Orleans Hurricane Surge Damage Risk Reduction System (HSDRRS): 1) avoid inducing wave refraction/diffraction erosion of existing shorelines; 2) avoid inducing slope failure of existing shorelines; 3) avoid submerged aquatic vegetation; and, 4) avoid inducing hypoxia.

Depending on potential borrow locations, monitoring of dissolved oxygen may be determined to be prudent. If so, it is suggested a monitoring plan be developed and included as recommendations to assess if hypoxia occurs in borrow pits excavated within the estuary (outside navigation channels) as fill to construct marsh mitigation. As listed below, the same monitoring methods are recommended as proposed and conducted by the U.S. Geological Survey for the Mississippi River-Gulf Outlet Ecosystem Restoration Study and Individual Environmental Report 11. Monitoring to determine if hypoxia is a problem may provide information for adaptive management revisions for future planning of borrow pits.

Measure specific conductance, temperature, dissolved oxygen, and pH in at least one location in the dredge/borrow pit. A calibrated multiparameter probe should be used. The site(s) should be profiled at 5 to 10-ft intervals, depending on depth and conditions, from the lake bottom to the water surface. Samples should be collected one time during each of the months of April, September, and October and twice, about 2 weeks apart, during May, June, July, and August. Sampling frequency should be increased to twice monthly during September and October as necessary.

Page 6, Item 12. A sub item should be added requesting coordination by the USACE with the natural resource agencies to plan, select, site, and design acceptable mitigation. Final scaling of mitigation must occur after determining all direct and indirect impacts to wetlands and other categories of EFH, and revised WVAs are conducted for the mitigation projects based on their final design.

Page 6, Item 12. A sub item should be added indicating if mitigation is not implemented in a concurrent and timely manner, the amount of mitigation necessary should be reassessed and adjusted to offset temporal losses of wetland and EFH functions.

Page 6, Item 12, d. This item recommends assessing mitigation performance using the draft performance criteria used by the USACE and natural resource agencies for HSDRRS. Be advised those criteria are draft and refinement is likely. This item should be revised to indicate final criteria, once developed by the USACE and natural resource agencies, should be used for this project.

Page 6, Item 12, g. Consistent with pending natural resource agency coordination with the USACE, it is recommended this item be amended to clarify the USACE should remain responsible for marsh mitigation until the mitigation is demonstrated to be fully compliant with success and performance criteria. At a minimum, this should include compliance with the requisite vegetation, elevation, acreage, and gapping criteria.

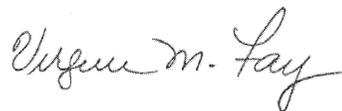
Page 8. The list of items requested in the Report to conduct full assessment of indirect project impacts should be supplemented. Presently there is lack of clarity on how often or how long floodgates and environmental water control structures would be closed over the project life under the three sea level rise scenarios. Questions remain unresolved regarding the amount of time preliminarily determined by the FWS, based in part from information provided by the USACE. The Report should be revised to request the USACE provide data and their final determination of the frequency and duration of structure closures throughout the project life for each of the three sea level rise scenarios. The Report should specify that information should be provided to the natural resource agencies at the same time as the Service for review.

An item should be added in the Report requesting fish passage modeling be conducted during PED if determined necessary through continuing coordination with NMFS and the other natural resource agencies. At a minimum this should consist of the PTM. A determination of necessity of passage modeling would consider the usefulness of the H&H model-generated tidal flux data as a surrogate for a more robust analysis.

Other than discussed above, NMFS fully supports the Service positions and recommendations included in the Report. Please continue to coordinate with Patrick Williams of my staff regarding this project.

We appreciate the opportunity to review and comment on this Report.

Sincerely,



Virginia M. Fay  
Assistant Regional Administrator  
Habitat Conservation Division

c:  
EPA, Ettinger  
NOD, Behrens, Wilkinson  
LA DWF, Bourgeois  
F/SER46, Swafford  
Files



BOBBY JINDAL  
GOVERNOR

## State of Louisiana

ROBERT J. BARHAM  
SECRETARY

DEPARTMENT OF WILDLIFE AND FISHERIES  
OFFICE OF WILDLIFE

JIMMY L. ANTHONY  
ASSISTANT SECRETARY

June 8, 2012

Mr. Jeffrey D. Weller, Supervisor  
U.S. Fish and Wildlife Service  
646 Cajundome Blvd.  
Suite 400  
Lafayette, LA 70506

RE: Mississippi River and Tributaries – Morganza to the Gulf of Mexico Louisiana,  
Post-Authorization Change Report (DRAFT)

Dear Mr. Weller:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced draft Fish and Wildlife Coordination Act Report. Based upon this review, the following has been determined:

LDWF agrees with the majority of USFWS comments and concerns. We are concerned that the proposed levee system will drastically reduce the ability of estuarine species to enter and exit critical nursery areas. The current draft suggests that these impacts will likely be minimal (pages 26-27); however this is entirely dependent on the types and number of water control structures incorporated into the project design. While it does not appear that the water control structures plans have been finalized, it is our recommendation that a special effort be made to design these structures as large and numerous as possible, with an operational plan that keeps these structures open unless emergency conditions exist (i.e. hurricane). This is essential in order to maintain existing fisheries and estuarine functions. With roads currently serving as a barrier to nursery access in many areas, this project may provide an opportunity to improve/restore hydrologic connectivity to these areas by improving water control structures under roads and could be considered for mitigation credit.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Steve Beck at 225-765-2956 should you need further assistance.

Sincerely,

Kyle F. Balkum  
Biologist Program Manager

sb

APPENDIX B

DIRECT CONSTRUCTION IMPACTS BY LEVEE REACH AND HABITAT TYPE

Table A-1. Construction impacts of the 100-year alternative under the low SLR scenario.

100-Yr Levee Reach	Fresh Tidal Habitats				INT Tidal Habitats		BR Tidal Habitats		SAL Tidal Habitats		Force Drained (non-tidal)		Total Tidal Water*	Total Tidal Marsh
	Hwds (acres)	Swamp (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water (acres)	acres	acres
Barrier	202	547	209	48	0	0	0	0	0	0	0	0	48	209
A	81	13	362	43	0	0	0	0	0	0	0	0	43	362
B	0	0	144	19	39	151	0	0	0	0	0	39	170	182
E-1	0	0	0	0	94	191	0	0	0	0	0	0	191	94
E-2	0	0	0	0	39	216	0	0	0	0	0	4	216	39
F-1	0	0	0	0	84	16	276	78	0	0	0	0	94	359
F-2	0	0	0	0	147	42	0	0	0	0	0	0	42	147
G-1	0	0	0	0	0	0	139	41	0	0	26	0	41	139
G-2	0	0	0	0	0	0	0	0	53	96	0	0	96	53
G-3	0	0	0	0	0	0	0	0	43	29	0	0	29	43
H-1	0	0	0	0	0	0	0	0	112	79	0	0	79	112
H-2	0	0	0	0	0	0	0	0	187	106	0	0	106	187
H-3	0	0	0	0	0	0	0	0	103	119	0	0	119	103
I-1	0	0	0	0	0	0	83	101	0	0	0	0	101	83
I-2	0	0	0	0	0	0	0	0	86	139	0	1	139	86
I-3	0	0	0	0	0	0	0	0	91	144	0	0	144	91
J-1	0	0	0	0	79	216	0	0	2	13	2	1	229	81
J-2	0	0	0	0	0	0	40	300	35	200	28	2	500	75
J-3	0	0	0	0	0	0	0	0	26	123	0	4	123	26
K	0	0	0	0	0	0	139	552	0	0	0	0	552	139
L	0	0	0	0	105	70	107	128	0	0	0	7	197	212
LG	51	0	0	0	30	1	0	0	0	0	0	18	1	30
LL	187	39	89	0	0	0	0	0	0	0	0	3	0	89
TOTAL	520	599	803	110	616	902	783	1,199	736	1,048	57	80	3,260	2,939

Table A-2. Construction impacts of the 100-year alternative under the medium SLR scenario.

100-Yr Levee Reach	Fresh Tidal Habitats				INT Tidal Habitats		BR Tidal Habitats		SAL Tidal Habitats		Force Drained (non-tidal)		Total Tidal Water*	Total Tidal Marsh
	Hwds (acres)	Swamp (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water (acres)	acres	acres
Barrier	202	547	209	48	0	0	0	0	0	0	0	0	48	209
A	81	13	361	43	0	0	0	0	0	0	0	0	43	361
B	0	0	144	20	39	151	0	0	0	0	0	39	170	182
E-1	0	0	0	0	94	191	0	0	0	0	0	0	191	94
E-2	0	0	0	0	39	216	0	0	0	0	0	4	216	39
F-1	0	0	0	0	84	16	276	78	0	0	0	0	95	359
F-2	0	0	0	0	147	42	0	0	0	0	0	0	42	147
G-1	0	0	0	0	0	0	139	41	0	0	26	0	41	139
G-2	0	0	0	0	0	0	0	0	53	96	0	0	96	53
G-3	0	0	0	0	0	0	0	0	43	29	0	0	29	43
H-1	0	0	0	0	0	0	0	0	112	79	0	0	79	112
H-2	0	0	0	0	0	0	0	0	186	107	0	0	107	186
H-3	0	0	0	0	0	0	0	0	102	119	0	0	119	102
I-1	0	0	0	0	0	0	83	101	0	0	0	0	101	83
I-2	0	0	0	0	0	0	0	0	86	139	0	1	139	86
I-3	0	0	0	0	0	0	0	0	90	144	0	0	144	90
J-1	0	0	0	0	79	217	0	0	2	13	2	1	229	81
J-2	0	0	0	0	0	0	40	300	34	200	28	2	500	75
J-3	0	0	0	0	0	0	0	0	26	123	0	4	123	26
K	0	0	0	0	0	0	139	552	0	0	0	0	552	139
L	0	0	0	0	105	70	107	128	0	0	0	7	197	212
LG	51	0	0	0	30	1	0	0	0	0	0	18	1	30
LL	187	39	89	0	0	0	0	0	0	0	0	3	0	89
TOTAL	520	599	802	111	616	903	783	1,199	735	1,049	57	80	3,262	2,936

Table A-3. Construction impacts of the 100-year alternative under the high SLR scenario.

100-Yr Levee Reach	Fresh Tidal Habitats				INT Tidal Habitats		BR Tidal Habitats		SAL Tidal Habitats		Force Drained (non-tidal)		Total Tidal Water*	Total Tidal Marsh
	Hwds (acres)	Swamp (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water* (acres)	Marsh (acres)	Water (acres)	acres	acres
Barrier	202	547	208	48	0	0	0	0	0	0	0	0	48	208
A	81	13	361	44	0	0	0	0	0	0	0	0	44	361
B	0	0	143	20	39	151	0	0	0	0	0	39	171	182
E-1	0	0	0	0	94	191	0	0	0	0	0	0	191	94
E-2	0	0	0	0	39	216	0	0	0	0	0	4	216	39
F-1	0	0	0	0	83	17	275	79	0	0	0	0	95	358
F-2	0	0	0	0	146	42	0	0	0	0	0	0	42	146
G-1	0	0	0	0	0	0	138	41	0	0	26	0	41	138
G-2	0	0	0	0	0	0	0	0	52	96	0	0	96	52
G-3	0	0	0	0	0	0	0	0	43	29	0	0	29	43
H-1	0	0	0	0	0	0	0	0	112	79	0	0	79	112
H-2	0	0	0	0	0	0	0	0	186	107	0	0	107	186
H-3	0	0	0	0	0	0	0	0	102	120	0	0	120	102
I-1	0	0	0	0	0	0	82	101	0	0	0	0	101	83
I-2	0	0	0	0	0	0	0	0	86	140	0	1	140	86
I-3	0	0	0	0	0	0	0	0	90	144	0	0	144	90
J-1	0	0	0	0	79	217	0	0	2	13	2	1	230	81
J-2	0	0	0	0	0	0	40	300	34	200	28	2	500	75
J-3	0	0	0	0	0	0	0	0	25	123	0	4	123	25
K	0	0	0	0	0	0	138	553	0	0	0	0	553	138
L	0	0	0	0	105	70	106	128	0	0	0	7	198	212
LG	51	0	0	0	30	1	0	0	0	0	0	18	1	30
LL	187	39	89	0	0	0	0	0	0	0	0	3	0	89
TOTAL	520	599	801	112	614	905	781	1,201	733	1,052	57	80	3,270	2,928

APPENDIX C

**Structure Operation Plan**

**March 6, 2013**

## Morganza to the Gulf of Mexico, Louisiana Water Control Structure Operations Plan

Note: The following operation plans are preliminary for the purpose of assessing potential adverse indirect impacts of the proposed Federal project. Operation plans will be further refined during Preconstruction Engineering and Design and in future NEPA documents.

Group 1 contains the constructible features; all other groups contain programmatic features. The HNC lock/floodgate complex also has a salinity trigger which is described below the table.

No structure can be closed or re-opened when the pressure head differential exceeds the structure design capability. No structure can be re-opened until storm force winds have dropped to a level safe for personnel to access the area and operate the machinery.

### Flood Closure Criteria

The following group of structures...	...cannot be closed until the following conditions are met:	...and can only be re-opened if the following conditions are met:
<p><b>Group 1:</b> Bayou Grand Caillou HNC lock and floodgate</p>	<p>1. A NHC watch is issued for the area, <u>AND</u> 2. The stage measured at the gate location reaches +2.5 ft NAVD88.</p>	<p>1. The NHC watch has been discontinued for the area, <u>AND</u> 2. Stages on the outside of the structures drop below +2.5 ft NAVD88, <u>AND</u> The NHC small craft advisory no longer applies to the area and the channel has been cleared of obstructions so that navigation can safely resume.</p>
<p><b>Group 2:</b> ECS in Reaches G and H Bayou Four Points ECS #3 (new) in Reach J All ECS and navigable gates in Barrier Reach GIWW West of Houma Minors Canal Bayou Lafourche GIWW East at Bayou Lafourche ECS in Larose to Lockport</p>	<p>1. A named storm is in the Gulf and threatening the Louisiana coast, <u>OR</u> 2. The stage measured at the gate location reaches +3.0 ft NAVD88.</p>	<p>1. Stages on the outside of the structures drop below +3.0 ft NAVD88, <u>AND</u> 2. The NHC small craft advisory no longer applies to the area and the channel has been cleared of obstructions so that navigation can safely resume.</p>

The following group of structures...	...cannot be closed until the following conditions are met:	...and can only be re-opened if the following conditions are met:
<p>Reach</p> <p><b>Group 3:</b>  Marmande Canal  Bayou Dularge  Falgout Canal  Bayou Petite Caillou  Bayou Terrebonne  Humble Canal  Grand Bayou  Bayou Pointe Aux Chenes  Placid Canal  Bush Canal</p>	<p>1. A named storm is in the Gulf and threatening the Louisiana coast,  <u>OR</u>  2. The stage measured at the gate location reaches +2.5 ft NAVD88.</p>	<p>1. Stages on the outside of the structures drop below +2.5 ft NAVD88,  <u>AND</u>  2. The NHC small craft advisory no longer applies to the area and the channel has been cleared of obstructions so that navigation can safely resume.</p>
<p><b>Group 4:</b>  ECS in Reaches E, K, &amp; L</p>	<p>These structures are flap gates that allow for continuous one way flow/drainage.</p>	
<p><b>Group 5:</b>  ECS #1 (existing) and #2 (existing) in Reach J</p>	<p>These structures will be managed according to current LA Wildlife and Fisheries Permit.</p>	<p>According to current LA Wildlife and Fisheries Permit.</p>

<sup>1</sup> An announcement that tropical-storm conditions are possible within the specified area (includes tropical depressions). Because outside preparedness activities become difficult once winds reach tropical storm force, watches are issued 48 hours in advance of the anticipated onset of tropical-storm-force winds.

NHC = National Hurricane Center. ECS = Environmental Control Structures

**Salinity Trigger for the HNC lock and floodgate:**

**The HNC lock and floodgate will be closed for salinity control only if:**

1. Flows in the Atchafalaya River flows are below 100,000 cfs as measured on the Simmesport gage (USGS 07381490 Atchafalaya River at Simmesport, LA) or
2. If a gage on the outside of the HNC Lock complex exceeds a salinity value that has been correlated with preventing exceedance of the maximum allowable chloride level of 250 ppm as defined in EPA's secondary drinking water standard at the Houma Treatment Plant. The structure should be closed for at least 12 hrs and fluctuations in chloride levels should be monitored and recorded hourly. This to be determined salinity value at the new gage should correlate with the value of 7.5 ppt measured at the HNC at Dulac monitoring station. The 7.5 ppt trigger will be used to perform the indirect impact analysis in this document. Once the new trigger is established the impact analysis will be redone to verify the assumptions made.

**The HNC lock complex may be opened when all of the following additional criteria have been met** (The lock may be used for navigation, as soon as the hurricane and small craft warning no longer apply to the project area, and the channel has been cleared of obstructions. This may occur before the next two criteria are met):

1. The differential between the interior water level and exterior water level is equal to or less than the +1.0 feet as measured on the upstream and downstream staff gage respectively.
2. After monitoring chloride levels over the 12 hour period at the new gage on the outside of the HNC Lock complex drops below the salinity closure trigger described above. For the analysis of indirect impacts a salinity level of 13 ppt as measured near Cocodrie (LUMCON Station) will be used. The LUMCON station replaces the Bayou Grand Caillou USACE 76305 from the 2002 feasibility report because it has a more robust dataset. If the USACE re-evaluates the salinity trigger at the LUMCON station and comes up with a trigger different than 13ppt, this trigger may change. Once the new trigger is established the impact analysis will be redone to verify the assumptions made.

APPENDIX D

TWELVE REQUIRMENTS FOR MITIGATION PLANNING  
(from the U.S. Army Corps of Engineers & EPA 2008 Final Mitigation Rule in the  
FEDERAL REGISTER Vol. 73, No. 70, April 10, 2008)

## **Twelve Requirements for a Compensatory Mitigation Plan**

1. **Objectives.** A description of the resource type(s) and amount(s) that will be provided, the method of compensation (restoration, establishment, preservation etc.), and how the anticipated functions of the mitigation project will address watershed needs.
2. **Site selection.** A description of the factors considered during the site selection process. This should include consideration of watershed needs, onsite alternatives where applicable, and practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the mitigation project site.
3. **Site protection instrument.** A description of the legal arrangements and instrument including site ownership, that will be used to ensure the long-term protection of the mitigation project site.
4. **Baseline information.** A description of the ecological characteristics of the proposed mitigation project site, in the case of an application for a DA permit, the impact site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s), and other characteristics appropriate to the type of resource proposed as compensation. The baseline information should include a delineation of waters of the United States on the proposed mitigation project site. A prospective permittee planning to secure credits from an approved mitigation bank or in-lieu fee program only needs to provide baseline information about the impact site.
5. **Determination of credits.** A description of the number of credits to be provided including a brief explanation of the rationale for this determination.
  - **For permittee-responsible mitigation,** this should include an explanation of how the mitigation project will provide the required compensation for unavoidable impacts to aquatic resources resulting from the permitted activity.
  - **For permittees intending to secure credits from an approved mitigation bank or in-lieu fee program,** it should include the number and resource type of credits to be secured and how these were determined.
6. **Mitigation work plan.** Detailed written specifications and work descriptions for the mitigation project, including: the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water; methods for establishing the desired plant community; plans to control invasive plant species; proposed grading plan; soil management; and erosion control measures. For stream mitigation projects, the mitigation work plan may also include other relevant information, such as planform geometry, channel form (e.g., typical

channel cross-sections), watershed size, design discharge, and riparian area plantings.

7. Maintenance plan. A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.
8. Performance standards. Ecologically-based standards that will be used to determine whether the mitigation project is achieving its objectives.
9. Monitoring requirements. A description of parameters monitored to determine whether the mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting monitoring results to the DE must be included.
10. Long-term management plan. A description of how the mitigation project will be managed after performance standards have been achieved to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.
11. Adaptive management plan. A management strategy to address unforeseen changes in site conditions or other components of the mitigation project, including the party or parties responsible for implementing adaptive management measures.
12. Financial assurances. The DE may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the mitigation project.

Other information. The DE may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the mitigation project.

# **Appendix C**

## **CLEAN WATER ACT SECTION 404(b)(1) ASSESSMENT**

## SECTION 404(b)(1) EVALUATION

### Mississippi River and Tributaries Morganza to the Gulf of Mexico, Louisiana Project

#### Terrebonne Parish, Louisiana

#### Revised Programmatic Environmental Impact Statement

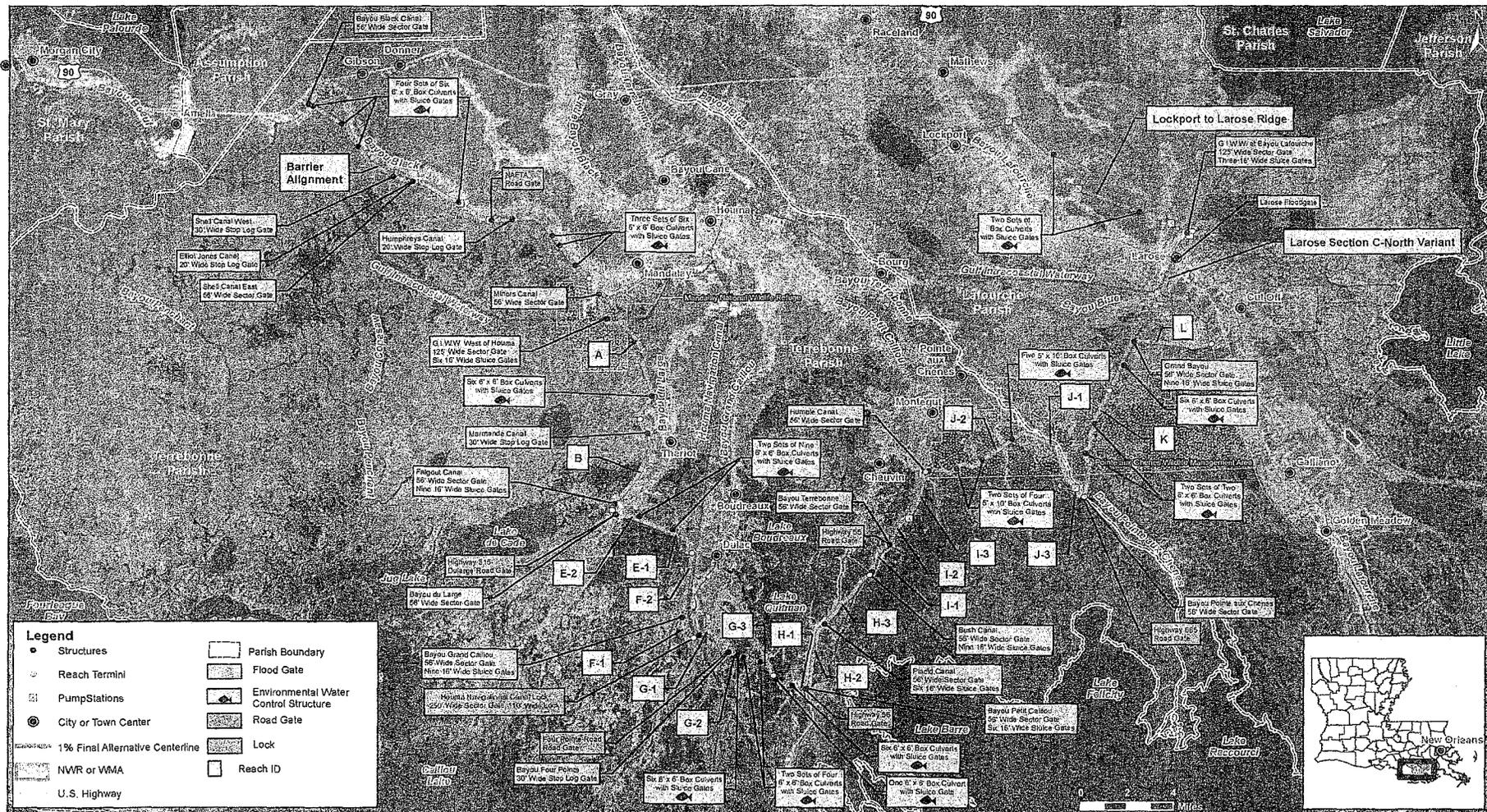
##### I. Project Description

a. Location. The project is located approximately 60 miles southwest of New Orleans, Louisiana, and includes most of Terrebonne Parish, excluding the barrier islands, and the portion of Lafourche Parish between the Terrebonne Parish eastern boundary and Bayou Lafourche (**Figure 1**). The study area extends south to the saline marshes bordering the Gulf of Mexico and encompasses approximately 1,900 square miles. The 404(b)(1) short form prepared for the previously constructed first lift of J1 and the Revised Draft Programmatic Environmental Impact Statement prepared for this project are here in incorporated by reference.

b. General Description. 1% Annual Exceedance Probability Storm Surge Risk Reduction System (1% AEP Alternative) provides risk reduction for water levels that have a 1% chance of occurring each year (see figure). This alternative includes programmatic elements that would be further investigated in the future and constructible elements for which this consistency determination would serve as the required documentation for the Coastal Zone Management Act. The features that have been to be identified as constructible include, the first lift of Levee Reach F1 and F2, Levee Reach G1, Houma Navigation Canal Lock Complex (HNC Lock), and Bayou Grand Caillou Floodgate (BGC floodgate).

The 98-mile levee system would extend from high ground along US 90 near the town of Gibson and tie into Hwy 1 near Lockport, LA in Lafourche Parish. Planned levee elevations range from 15.0 to 26.5 feet NAVD88. Toe-to-toe levee widths range from 282 feet to 725 feet. It will take several levee lifts to reach these dimensions. Twenty-two navigable floodgate structures, ranging in elevation from 17.0 to 33 feet (NAVD88), would be located on waterways throughout the levee system, including a lock complex on the HNC. Additionally, environmental water control structures would allow tidal exchange at 23 locations through the levee through sluice gates and box culverts. Approximately 84 miles of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers.

Nine road gates would be located at the following levee/road crossings: NAFTA, Four Pointe Road, Highway 315 (DuLarge), Highway 55, Highway 56, Highway 24, Highway 3235, Union Pacific RR, and Highway 665. Fronting protection would be provided for four pumping stations, including the Madison, Pointe aux Chenes, Elliot Jones (Bayou Black), and Hanson Canal pump stations.



**Figure 1. ALIGNMENT AND STRUCTURES OF THE  
1% ANNUAL EXCEEDANCE PROBABILITY STORM SURGE RISK REDUCTION SYSTEM ALTERNATIVE**  
Morganza to the Gulf of Mexico, Louisiana  
Revised Programmatic Environmental Impact Statement

<b>USACE</b> Gulf Region/MS, CA, and LA	
Figure 1	
Date: June 2012	
Scale: 1:250,000	
Source: USACE/GEC	
Map ID: 273160010-2811	

Levees would be constructed using a combination of side-cast and hauled-in borrow materials. Adjacent sidecast was planned for the pre-load section only. Borrow pits are oversized to offset the potential for encountering organics, expected losses, etc. Structures on Federally maintained navigation channels include the Houma Navigation Canal Lock Complex (and 250-ft sector gate) and two 125-ft sector gates on the GIWW east and west of Houma. In addition, thirteen 56-ft sector gates and five 20- to 30-ft stop log gates are located on various waterways that cross the levee system.

The constructible features would directly impact intermediate and brackish marsh, while the programmatic features have the potential to directly impact bottomland hardwoods, swamp, fresh, intermediate, brackish, and saline marsh. Approximately 126 million cubic yards of earthen material (quality based Hurricane Storm Damage Risk Reduction System (HSDRRS) Guidelines) would be used to build the complete levee alignment to its full height.

Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh and open water are within the indirect impacts area for the constructible features (**Figure 2**).

To mitigate for the indirect impacts approximately 1,765 acres of marsh will be created from dredged material. Most of this material will come from the construction of the lock complex and the by-pass channel. A total of approximately 2,690 acres of wetland will be created for both the direct and indirect impacts. Most of this material will come from the organic overburden in the adjacent borrow pits to the levee reaches and from the area of the construction of the lock complex and the by-pass channel.

The proposed action itself consists of measures to minimize the adverse effects of storm water erosion and thus requires no separate measures or controls for compliance with Clean Water Act Section 402(p) and LAC 33:IX.2341.B.14.j.

c. Authority and Purpose. The study is authorized by: House Resolution, Docket 2376, April 30, 1992; and WRDA 96 (PL 104-303, Sec 425) the Energy and Water Development Appropriation Act of 1995 (PL 103-316), Section 425 of WRDA 96 (PL 104-303), Section 158 of the Energy and Water Development Appropriations Act, 2004 (PL 108-137), and Section 1001 of WRDA 2007 (Public Law 110-114) authorized construction for the project for:

*hurricane and storm damage reduction, Morganza to the Gulf of Mexico, Louisiana: Reports of the Chief of Engineers dated August 23, 2002, and July 22, 2003, at a total cost of \$886,700,000, with an estimated Federal cost of \$576,355,000 and an estimated non-Federal cost of \$310,345,000. The operation, maintenance, repair, rehabilitation, and replacement of the Houma Navigation Canal lock complex and the Gulf Intracoastal Waterway floodgate features of the project described in subparagraph (A) that provide for inland waterway transportation shall be a Federal responsibility in accordance with section 102 of the Water Resources Development Act of 1986 (33 U.S.C. 2212).*



**Figure 2. Indirect impacts area for constructible project features.**

project footprint to either upland terrain or wetland habitat (with the exception of areas where habitat type will not change). In total, the project would directly impact 3,286 acres of open water habitat, 4,364 acres of wetland habitat, and 6,336 acres of upland habitat.

Reach	Reach Length (Miles)	Crown Elevation (ft. NAVD88)	Base Elevation (ft. NAVD88)	Crown Width (ft)	Levee Width (Not Including Berm) (ft)	Total Levee Width (ft)	Levee Side Slope (Protected Side)	Levee Side Slope (Flood Side)	Berm Side Slopes (Protected Side)	Berm Side Slopes (Flood Side)
A/Barrier Alignment	15.7/8.18	22	-1	10	82	329	1V:4H	1V:4H	1V:10H; 1V:3H at Toe	1V:15H; 1V:6H at Toe
B	5.07	20.5	-2	10	64	520	1V:4H	1V:4H	1V:26H; 1V:4H at Toe	1V:15H; 1V:30H; 1V:5H at Toe
E	4.66	25	-1	10	88	725	1V:4H	1V:4H	1V:29H; 1V:3H at Toe	1V:15H; 1V:25H; 1V:5H at Toe
F	4.04	25	0.5	10	89	480	1V:4H	1V:4H	1V:20H; 1V:4H at Toe	1V:13H; 1V:6H at Toe
G	5.72	26	-1	10	95	550	1V:4H	1V:4H	1V:19H; 1V:6H at Toe	1V:19H; 1V:6H at Toe
H1	1.95	25.5	-1	10	96	435	1V:4H	1V:4H	1V:17.5H; 1V:6H at Toe	1V:15H; 1V:6H at Toe
H2/H3	2.58/3.43	28	-2	10	104	500	1V:4H	1V:4H	1V:23H; 1V:6H at Toe	1V:15H; 1V:6H at Toe
I	5.70	28	-1	10	110	425	1V:4H	1V:4H	1V:24H; 1V:4H at Toe	1V:15H; 1V:4H at Toe
J1/J2	3.14/4.89	28	-1	10	101	654	1V:4H	1V:4H	1V:21H; 1V:4H at Toe	1V:15H; 1V:6H at Toe
J3	1.31	28	-1	10	90	740	1V:4H	1V:6H	1V:20H; 1V:5H at Toe	1V:20H; 1V:4H at Toe
K/L	5.04/5.90	26	0	10	94	644	1V:4H	1V:4H	1V:21H; 1V:11H at Toe	1V:25H; 1V:10H at Toe

*Levee Reaches:* As several thousand acres within the footprint of the proposed levee alignment consist of open water or wetland habitat, placement of dredged or fill material for levee construction would convert these areas to upland habitat. **Table 1** depicts final pre-settlement levee dimensions for the proposed project. Levees would be constructed in a total of four lifts for all reaches except for reach G, which will be constructed in three lifts. Variable and sometimes large time intervals (4-35 years) would separate lift cycles. Further levee lift schedule information is available in the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix*.

**Table 1 – Proposed pre-settlement levee dimensions by reach\***

\* Dimensions of the Larose to Lockport Ridge and Larose Section C-North Variant levees will be determined in later phases of the project and included in a separate 404(b)(1) assessment.

*Mitigation Sites:* Approximately 4,364 acres of wetlands, including marsh, swamp, and bottomland hardwood habitats, are to be constructed for mitigation associated with direct loss of wetland habitat from levee construction. A portion of this mitigation would consist of construction of 1,175 acres of marsh habitat using the top 5 ft of borrow material from adjacent borrow areas associated with initial levee lifts.

To mitigate for the indirect impacts approximately 1,765 acres of marsh will be created from dredged material. Most of this material will come from the construction of the lock complex and the by-pass channel. A total of approximately 2,690 acres of wetland will be created for both the direct and indirect impacts. Most of this material will come from the organic overburden in the adjacent borrow pits to the levee reaches and from the area of the construction of the lock complex and the by-pass channel.

In accordance with CWPPRA program marsh creation assumptions, dredged material would be mechanically placed in confined marsh creation sites to an

initial construction elevation of +2.5 ft NAVD88, and would be expected to settle to elevations ranging between the initial construction elevation and +1.37 ft NAVD88 after initial placement. Confinement dikes would be constructed to +3.0 ft NAVD88. Typical side slopes for confinement dikes used for marsh creation are 1V:3H. In general, mitigation sites associated with adjacent levee borrow areas would be constructed on the flood side of the proposed alignment; while a majority of these sites appear to be predominantly sites where historical marsh loss has occurred, some sites include existing marsh as well as natural bayous. In many cases, mitigation sites associated with adjacent levee borrow areas are situated directly adjacent to these borrow areas. Details regarding mitigation site locations and footprints are available in the *Morganza to the Gulf of Mexico, Louisiana Revised Programmatic Environmental Impact Statement*.

*Structures:* The proposed project includes a navigation lock, twenty two (22) navigable floodgates, twenty three (23) environmental control structures, nine (9) road gates, and fronting protection for four (4) existing pump stations. **Table 2** identifies the various floodgates included in the proposed project. Cofferdams would be utilized to construct floodgates in the dry; conceptual cofferdam dimension have been established for most floodgates included in the proposed project (**Figure 3**). More information concerning floodgates and floodgate construction can be found in the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix*.

**Table 2 – Navigable floodgates included in the proposed project\***

Reach	Waterway	Structure Design Size/Type	Design Elevation (ft NAVD88)
Barrier	Bayou Black	56-ft sector gate	22
	Shell Canal West	30-ft stop log gate	23.5
	Shell Canal East	56-ft sector gate	23.5
	Elliot Jones Canal	20-ft stop-log gate	23.5
	Humphreys Canal	20-ft stop-log gate	23.5
A (north of GIWW)	Minor's Canal	56-ft sector gate	23
A	GIWW West (at Houma)	125-ft sector gate	23
B	Marmande Canal	30-ft stop-log gate	23
	Falgout Canal	56-ft sector gate	23
E-2	Bayou Du Large	56-ft sector gate	25.5
F-1	Bayou Grand Caillou	56-ft sector gate	25.5
G-1	HNC	250-ft sector gate and lock	30.5
G-2	Four Point Bayou	30-ft stop-log gate	30
H-1	Bayou Petit Caillou	56-ft sector gate	30.5
H-2	Placid Canal	56-ft sector gate	31.5
H-3	Bush Canal	56-ft sector gate	33
I-1	Bayou Terrebonne	56-ft sector gate	33
I-3	Humble Canal	56-ft sector gate	33
J-3	Bayou Pointe aux Chenes	56-ft sector gate	33
L	Grand Bayou	56-ft sector gate	29.5
L*	GIWW East (at Larose)	125-ft sector gate	21.5

\* Dimensions of the Larose to Lockport Ridge and Larose Section C-North Variant structures will be determined in later phases of the project and included in a separate 404(b)(1) assessment.



pump stations. Features associated with the construction of fronting protection include T-walls and butterfly gate valves as shown in figure 5-4. All fronting protections would be constructed on the flood side of the existing protection. Based on site visits, the discharge pipes extend far enough that additional pipes are not needed. Butterfly valves would be opened to allow pumping discharge for interior drainage or closed to prevent backflow during storm conditions. Construction of fronting protection will also include excavation of material for structural purposes. Up to 21,000 cubic yards of material will be excavated for fronting protection associated with each pump station. At this time, disposal of this material has not been resolved.

### **Constructible Features**

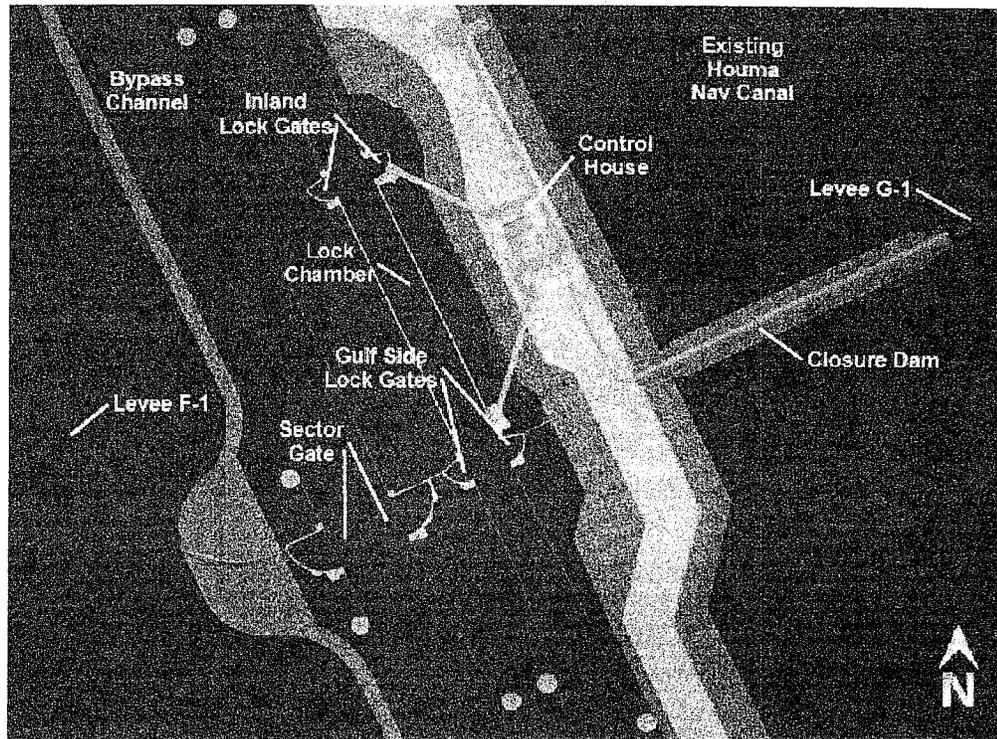
*Levee Reaches (F and G-1):* See discussion of programmatic features for levee dimensions for reaches F and G-1. For these reaches, conventional, land-based construction would be utilized. Therefore, there will be no placement of dredged or fill material within surface waters for construction of these levee reaches apart from actual levee construction.

*Houma Lock Complex:* The largest structure in the Morganza to the Gulf project is the HNC lock complex, which consists of a 110-ft wide by 800-ft long lock with an adjacent 250-ft wide floodgate. The lock complex has a +30.5 ft NAVD88 top elevation and a -18.0 ft NAVD88 sill elevation.

**Figure 2** is a conceptual drawing of the HNC lock complex. Features shown in the figure appear in bold in the following text:

- The HNC lock complex is generally oriented in a north-south direction approximately 3,000 ft south of the intersection of the HNC with Bayou Grand Caillou and is located in a bypass channel adjacent to the HNC on its west side.
- The lock structure consists of two lock gate monoliths (gulf side lock gates and inland lock gates), which house two sets of sector gates, and five U-frame lock chamber monoliths. A floodgate monolith adjoins the gulf side lock gate monolith and houses a sector gate, which is separated from the gulf side lock gates to the west by 59 ft. The five lock monoliths and the floodgate monolith are made of cast-in-place, reinforced concrete, and are pile supported.
- T-walls extend from both sides of the lock and floodgate to tie into the proposed Morganza to the Gulf hurricane system at levee reach F-1 to the west and levee reach G-1 to the east, transitioning to levee elevations +23.5 and +24 ft NAVD88 (in year 2085), respectively. Within the T-walls, there are a total of ten 5-ft wide by 10-ft high sluice gates—four between the floodgate and Levee Reach F-1, two between the lock and floodgate, and four between the lock chamber and closure dam.
- A closure dam closes the existing HNC channel near the confluence of Bayou Platte and the HNC. The dam is underlain by a grid of soil-cement columns installed with the dry method of deep-soil mixing. The closure dam is a rock dam constructed to elevation +8.0 ft NAVD88 with a T-wall on top that provides

protection to elevation +30.5 ft NAVD88.



**Figure 2 -Conceptual Drawing of the HNC Lock Complex**

As with other navigable floodgate structures included in the project, a cofferdam would be constructed to allow for lock construction in the dry.

*Bayou Grand Calliou Floodgate:* The Bayou Grand Calliou Floodgate is a 56-ft sector gate. This sector gate would be constructed to elevation +25.5 ft NAVD88. As mentioned in discussion of programmatic features, a cofferdam would be constructed for this feature to allow for construction in the dry (Figure 1).

Construction of the Bayou Grand Calliou will also include excavation of material for structural excavation and bypass channel construction. Approximately 35,000 cubic yards of material will be excavated for the floodgate. At this time, disposal of this material has not been resolved.

## (2) Sediment Type

### Programmatic Features

The surface and shallow subsurface of the project area is generally comprised of natural levee, swamp, and marsh deposits. Natural levee deposits are at the surface and underlie marsh and swamp deposits and occur adjacent to abandoned courses and distributaries. Natural levee deposits generally consist of soft to stiff clays interbedded with layers and lenses of silt and silty sand. Natural levee

deposits vary in thickness but generally range from 5 to 20 feet. Swamp and marsh deposits are located adjacent to natural levee deposits and comprise most of the land area in the project area. They consist mainly of very soft to medium, organic clays, with lenses of soft to medium lean clay, peat, silt, and silty sand. Swamp deposits contain wood. These deposits generally range from 5 to 20 feet thick. Interdistributary deposits underlie marsh, swamp, and natural levee deposits and consist of soft to medium clay interbedded with layers and lenses of very soft to medium lean clay, silt, and silty sand and occasional lenses of shell. Interdistributary deposits generally range from 80 to 120 feet thick. Swamp deposits are also frequently interbedded with interdistributary deposits. Intradelata deposits underlie marsh, swamp, and natural levee deposits and are interbedded with interdistributary deposits. Intradelata deposits are associated with delta progradation and are found adjacent to abandoned courses and major distributaries. Intradelata deposits consist of silt, silty sand and sand with occasional layers and lenses of soft to medium, fat and lean clays. Intradelata deposits vary in thickness but average 10 feet thick.

*Levee Reaches:* Borrow material for the first lift will be obtained from adjacent borrow areas for all levee reaches except **Reach A**. For all other lifts, borrow material will be obtained from approved offsite borrow sources.

Material used for levee construction will be levee grade material meeting HSDRRS Guidelines. Levee grade material is currently defined and specified as follows: Earth materials naturally occurring or Contractor blended materials that are classified in accordance with ASTM D2487 as clay (CL) or high plasticity, fat clay (CH) with less than 35% sand content are suitable for use as embankment fill (Materials classified as silt [ML] are suitable if blended to produce a material that classifies as CH or CL according to ASTM D 2487). Materials shall be free from masses of organic matter, sticks, branches, roots, and other debris including hazardous and regulated solid wastes. Isolated pieces of wood will not be considered objectionable in the embankment provided their length does not exceed 1 foot, their cross-sectional area is less than 4 square inches, and they are distributed throughout the fill. Not more than 1 percent (by volume) of objectionable material shall be contained in the earthen material placed in each cubic yard of the levee section. Pockets and/or zones of wood shall not be placed in the embankment. Materials placed in the section must be at or above the Plasticity Index of 10. Materials placed in the section must be at or below organic content of 9 percent by weight, as determined by ASTM D 2974, Method C.

Soil and geologic profiles conducted along the proposed levee alignment indicate a majority of soils consist of CH and CL, with interspersed lenses of silt and sand. A majority of adjacent borrow material is therefore anticipated to meet HSDRRS guidelines for levee grade material.

*Mitigation Sites:* The topmost 5 feet of material from borrow areas adjacent to the proposed levee alignment would be used for creation of 1,175 acres of marsh. As

material is highly organic, placement of material will result in a layer of highly organic sediments of varying thickness underlain primarily by swamp and marsh deposits consisting of CH and CL.

*Structures:* Material used in construction of structures would either consist of backfill from adjacent areas or offsite borrow. Adjacent backfill characteristics would be dependent on location and depth; however, as stated earlier, a majority of soils in the project area can be classified as either CH or CL. Offsite borrow material would be required to meet HSDRRS guidelines for levee grade material.

#### **Constructible Features**

*Levee Reaches (F and G-1):* Borrow material for these levee reaches would be derived from HNC lock and bypass channel excavation. The soil and geologic profile conducted nearest to the bypass channel (Reach G-1) indicates a majority of soils within 20 feet of the surface consist of CH and CL, with interspersed lenses of silt and sand. A majority of borrow material associated with HNC lock and bypass channel excavation is therefore expected to meet HSDRRS guidelines for levee grade material.

*Houma Lock Complex:* Material used in lock construction would either consist of backfill from adjacent areas or offsite borrow. Adjacent backfill characteristics would be dependent on location and depth; however,, a majority of soils in the vicinity of the lock complex can be classified as either CH or CL. Offsite borrow material would be required to meet HSDRRS guidelines for levee grade material.

*Bayou Grand Caillou Floodgate:* Material used in construction of the Bayou Grand Caillou Floodgate would either consist of backfill from adjacent areas or offsite borrow. Adjacent backfill characteristics would be dependent on location and depth; however,, a majority of soils in the vicinity of the lock complex can be classified as either CH or CL. Offsite borrow material would be required to meet HSDRRS guidelines for levee grade material.

### (3) Dredged/Fill Material Movement

#### **(All Features)**

*Levee Reaches:* Material placed for levee construction would be contained within the levee right of way with berms or small dikes. Movement of material beyond the levee right of way is not anticipated.

*Mitigation Sites:* Because mitigation sites would include confinement dikes, no lateral movement of dredged material is anticipated.

*Structures:* Structure materials and any associated cofferdams would not be expected to move or shift after final placement.

### (4) Physical Effects on Benthos (burial, changes in sediment types, etc)

**(All Features)**

Sessile aquatic organisms within the footprint of project features would be smothered by dredged and fill materials. For structures and levees, because these sites will be converted to terrestrial habitat, these organisms would not reestablish. For mitigation areas, organisms adapted to survival in marsh vegetation would establish. Following cofferdam removal, aquatic organisms formerly present within the footprint of cofferdams would reestablish in areas within the footprint which still consist of aquatic habitat.

(5) Other Effects

(6) Actions Taken to Minimize Impacts:

**(All Features)**

Confinement dikes and berms would be used to prevent lateral movement of dredged or fill material during construction activities.

b. Water Circulation, Fluctuation, and Salinity Determinations

(1) Water

(a) Salinity

**(All Features)**

Prediction of impacts to salinities within the Terrebonne estuary was performed using a TABS-MDS model simulating with- and without-project salinities, water levels, and water velocities; a summary of model results is available in the modeling report *Comparison of Plan Alternatives for the Morganza to the Gulf of Mexico Levee System*. Globally in the project area, salinity changes are expected to be less than 1 part per thousand (ppt) with the largest changes occurring in the areas to the north and south of the HNC Lock when complex when it is closed (Plan 3 in the model report), and south of the Falgout Canal and north of Point Aux Chene when environmental structures are in the open position (Plans 1 and 3 in the model report). The addition of environmental water control structures along Falgout Canal allow new freshwater inflow to the area south of the canal, which in turn reduces the salinity (about 3 ppt on average), with the largest reduction occurring during the winter months and minimal reduction occurring during the summer months. The Falgout Canal and Lake Boudreaux areas would be freshened as the closed HNC structure forces the freshwater flow to divert along other avenues, thereby freshening the surrounding areas. Addition of environmental water control structures near Point aux Chenes appears to introduce higher salinity waters to the area north of the proposed levee alignment irrespective of seasonality. During closure of the HNC Complex, salinity

will increase in the area to the south of the Complex, while salinity intrusion to inland areas via the HNC would be reduced.

With the increase in sea-level rise, it is anticipated that the local sponsor may desire more frequent closure of environmental control structures to reduce damages from higher stages unrelated to storm events. If this change in operation were authorized, changes to salinity in the Terrebonne estuary resulting from the project may be more significant than those predicted through modeling.

Because bypass channels would be constructed prior to construction of cofferdams for navigable floodgates, and therefore impacts to water circulation for adjacent waters during construction would be minimized, no significant impacts to salinity are anticipated as a result of cofferdams.

(b) Water Chemistry (pH, etc.)

#### **Programmatic Features**

Dredging and placement may result in short term effects on pH. Factors typically associated with dredging activities may cause pH in receiving area waters to shift toward more acidic conditions. These factors include increased turbidity, organic enrichment, chemical leaching, reduced dissolved oxygen, and elevated carbon dioxide levels, among others.

Ambient pH values in the project area range between 6.27 and 8.7, with an average of 7.6

The proposed project primarily traverses existing hydraulic barriers within the Terrebonne estuary and includes a myriad of water control structures, minimizing impacts to water circulation as practicably as possible while still providing hurricane protection. However, localized changes in water circulation may occur within the project area. These localized changes in water circulation may induce localized changes in pH within the study area.

With the increase in sea-level rise, it is anticipated that the local sponsor may desire more frequent closure of environmental control structures to reduce damages from higher stages unrelated to storm events. If this change in operation were authorized, changes in pH levels within the study area may become significant. For example, more frequent closure of structures could lead to a greater level of influence of Atchafalaya River water north of the proposed levee alignment. Because the river water contains high alkalinity and elevated nutrient levels, pH levels in this area may increase directly or through eutrophication.

*Levee Reaches:* Material proposed as levee fill would be confined by

berms. Therefore, only minimal amounts of fill material (primarily material associated with berm construction) would directly impact adjacent water bodies. Associated impacts to the water column from placement of levee fill material would therefore be localized and temporary.

*Mitigation Sites:* Effluent discharges from mitigation sites would result in a temporary reduction in pH for adjacent waters. The tidal action in the vicinity of mitigation sites would help to reduce pH effects by dispersing and diluting mitigation site effluent waters. As emergent wetland vegetation establishes at sites, pH levels would return to normal.

*Structures:* Minor and localized impacts to pH levels in adjacent waters may occur during placement of cofferdam, construction, and backfill materials. These impacts would be expected to last the duration of construction activities.

(c) Clarity

**(All Features)**

Placement of dredged or and fill material is expected to result in localized turbidity plumes, which would affect water clarity. Following completion of construction activities, the occurrence of these turbidity plumes would no longer occur.

(d) Color

**(All Features)**

Placement of dredged or and fill material is expected to result in localized turbidity plumes, which would affect water color. Following completion of construction activities, the occurrence of these turbidity plumes would no longer occur.

(e) Odor

**(All Features)**

Placement of adjacent borrow area sediments will result in the exposure of previously undisturbed, organic and reduced sediments, which is expected to result in an odor which would persist until material is dewatered for levee construction or until emergent wetland vegetation establishes at mitigation sites. No significant odors are anticipated to be associated with offsite borrow material or any other construction materials.

(f) Taste

**(All Features)**

The nearest potable water intake (via surface water route) to any feature along the proposed levee alignment is approximately 6 miles. Any possible effects of construction activities for project features would be expected to diminish long before reaching the closest municipal water intake.

(g) Dissolved Gas Levels

**(All Features)**

Short-term decreases in dissolved oxygen could occur due to introduction of organics from the sediment into the water column, as well as the release of nutrients. Turbidity affects water quality in several ways, one which may markedly affect dissolved oxygen levels. The introduction of nutrients and organic material to the water column as a result of the discharge can lead to a high biochemical oxygen demand (BOD), which in turn can lead to reduced dissolved oxygen, thereby potentially affecting the survival of aquatic organisms. Adjacent borrow area sediment is highly organic, and therefore there is potential for temporarily lowering dissolved oxygen levels at mitigation sites.

Ambient dissolved oxygen values in the project area range between 0.2 and 12.5 mg/L, with an average of 6 mg/L. As discussed in the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix*, low dissolved oxygen level is the most commonly cited suspected cause of impairment for study area waterbodies. Citation of dissolved oxygen as a suspected cause of impairment occurred disproportionately on the protected side of the proposed levee alignment. The proposed project primarily traverses existing hydraulic barriers within the Terrebonne estuary and includes a myriad of water control structures, minimizing impacts to water circulation as practicably as possible while still providing hurricane protection. However, localized changes in water circulation may occur within the project area. These localized changes in water circulation may induce localized changes in dissolved oxygen levels within the study area.

In addition, with the increase in sea-level rise, it is anticipated that the local sponsor may desire more frequent closure of environmental control structures to reduce damages from higher stages unrelated to storm events. If this change in operation were authorized, changes to dissolved oxygen levels within the study area may be more significant. For example, more frequent closure of structures could lead to the stagnation of low dissolved oxygen waters present to the north of the proposed alignment.

*Levee Reaches:* Material proposed as levee fill would be confined by berms. Therefore, only minimal amounts of fill material (primarily material associated with berm construction) would directly impact

adjacent waterbodies. Associated impacts to the water column from placement of levee fill material would therefore be localized and temporary.

*Mitigation Sites:* Because of the high organic carbon content of sediment from the borrow areas, the discharge of dredged material for marsh creation at mitigation sites may have a short-term impact on dissolved oxygen levels for effluent waters discharging from the confines of sites. In addition, there is a possibility that dissolved oxygen effects related to the release of ammonia from borrow area sediment pore water could occur. Because mitigation sites are highly tidally influenced, it is anticipated that effluent waters would be quickly dispersed and diluted.

*Structures:* Minor, localized impacts to dissolved oxygen levels in adjacent waters may occur during placement of cofferdam, construction, and backfill materials. These impacts would be expected to last the duration of construction activities.

#### (h) Nutrients

##### **(All Features)**

As discussed in the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix*, elevated nutrients are a commonly cited suspected cause of impairment for study area waterbodies. Citation of nutrients, total phosphorus, and nitrate/nitrite as a suspected cause of impairment occurred disproportionately on the protected side of the proposed levee alignment. The proposed project primarily traverses existing hydraulic barriers within the Terrebonne estuary and includes a myriad of water control structures, minimizing impacts to water circulation as practicably as possible while still providing hurricane protection. However, localized changes in water circulation may occur within the project area. These localized changes in water circulation may induce localized changes in the distribution of nutrients within the study area.

With the increase in sea-level rise, it is anticipated that the local sponsor may desire more frequent closure of environmental control structures to reduce damages from higher stages unrelated to storm events. If this change in operation were authorized, changes to nutrient levels within the study area may be more significant. For example, more frequent closure of structures could lead to a greater level of influence of Atchafalaya River water north of the proposed levee alignment while preventing flushing of this same area with estuarine waters. Because the river water contains elevated nutrient (particularly nitrate) levels, nutrient concentrations in this area may increase directly.

*Levee Reaches:* Material proposed as levee fill would be confined by berms. Therefore, only minimal amounts of fill material (primarily material associated with berm construction) would directly impact adjacent waterbodies. Associated impacts to the water column from placement of levee fill material would therefore be localized and temporary.

In addition, because fill material associated with levee construction is anticipated to be dewatered prior to placement, it would be relatively free of ammonia commonly associated with sediment pore water. Therefore, placement of fill material during structure construction is not anticipated to significantly impact nutrient levels in adjacent waters.

*Mitigation Sites:* Sediments proposed as borrow material for mitigation sites are expected to contain variable levels of organic material, which may release elevated concentrations of ammonia during construction activities related to marsh restoration and nourishment. Because all mitigation sites are in areas heavily influenced by Gulf of Mexico tides, it is anticipated that nutrient releases occurring during construction would be quickly dispersed and diluted.

*Structures:* Because fill material associated with construction of structures is anticipated to be dewatered prior to placement, it would therefore be relatively free of ammonia commonly associated with sediment pore water. Therefore, placement of fill material during structure construction is not anticipated to significantly impact nutrient levels in adjacent waters.

(i) Eutrophication

**(All Features)**

As discussed in the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix*, elevated nutrients and abundance of non-native aquatic plants (both indicators of potential eutrophication) are a commonly cited suspected cause of impairment for study area waterbodies. Citation of nutrients, total phosphorus, nitrate/nitrite, and non-native aquatic plants as a suspected cause of impairment occurred disproportionately on the protected side of the proposed levee alignment. The proposed project primarily traverses existing hydraulic barriers within the Terrebonne estuary and includes a myriad of water control structures, minimizing impacts to water circulation as practicably as possible while still providing hurricane protection. However, localized changes in water circulation may occur within the project area. These localized changes in water circulation may induce localized changes in the distribution of eutrophic conditions within the study area.

With the increase in sea-level rise, it is anticipated that the local sponsor

may desire more frequent closure of environmental control structures to reduce damages from higher stages unrelated to storm events. If this change in operation were authorized, changes to levels of eutrophication within the study area may be more significant. For example, more frequent closure of structures could lead to a greater level of influence of Atchafalaya River water north of the proposed levee alignment while preventing flushing of this same area with estuarine waters. Because the river water contains elevated nutrient (particularly nitrate) levels, nutrient concentrations in this area may increase directly, leading to an increase in the frequency and distribution of eutrophic conditions.

*Levee Reaches:* Material proposed as levee fill would be confined by berms. Therefore, only minimal amounts of fill material (primarily material associated with berm construction) would directly impact adjacent water bodies. Associated impacts to the water column from placement of levee fill material would therefore be localized and temporary.

*Mitigation Sites:* Sediments proposed as borrow material for mitigation sites are expected to contain variable levels of organic material, which may release elevated concentrations of ammonia during construction activities related to marsh restoration and nourishment. Because all mitigation sites are in areas heavily influenced by Gulf of Mexico tides, it is anticipated that nutrient releases occurring during construction would be quickly dispersed and diluted, thereby preventing localized algal blooms.

*Structures:* Because fill material associated with construction of structures is anticipated to be dewatered prior to placement, it would therefore be relatively free of ammonia commonly associated with sediment pore water. Therefore, placement of fill material during structure construction is not anticipated to significantly impact nutrient levels or potential for algal blooms in adjacent waters.

(j) Others as Appropriate

## (2) Current Patterns and Circulation

(a) Current Patterns and Flow

### **(All Features)**

Predicted project impacts of the project on flows within the Terrebonne estuary are available in the report the modeling report *Comparison of Plan Alternatives for the Morganza to the Gulf of Mexico Levee System*. Model results generally indicate very little change in water levels in the study area and discharge rates through transects along the proposed levee alignment under any of the structure operational plans modeled, indicating

the project would not induce significant changes on hydrology of the estuary under historical sea level rates.

The authorized alignment builds on existing hydrologic barriers, such as natural ridges, roadbeds, or existing levees that have been built for other purposes such as forced drainage or marsh management. Of the estimated 77 miles of levee originally proposed in the authorized alignment, approximately 16 miles would cross part of the estuaries that are currently open to estuarine exchange. The proposed project includes numerous environmental water control structures to allow hydrologic exchange through the levees. In addition, with the exception of the HNC Lock Complex, the navigation structures are planned to closely maintain the present hydrologic exchange characteristics of the waterways, except during tropical storm closure events. At times, the HNC Lock Complex will be operated to reduce salinity in the HNC. This operation would lower the present hydrologic exchange rate along the HNC.

Although it is anticipated that the proposed project will minimize impacts to water circulation, localized changes in water circulation may occur within the project area as a result of the addition of significant basin hydraulic features. In addition, with the increase in sea-level rise, it is anticipated that the local sponsor may desire more frequent closure of environmental control structures to reduce damages from higher stages unrelated to storm events. If this change in operation were authorized, significant changes in water circulation and hydrology within the study area could occur.

(b) Velocity

**(All Features)**

See II.b.2(a) (Current Patterns and Flow)

(c) Stratification.

**(All Features)**

The project is generally not expected to contribute to stratification in the water column. During extended durations of closure of the HNC Lock Complex for salinity control, salinity stratification in the HNC inland of the Lock Complex will be reduced due to the restriction of higher salinity water, which can contribute to stratification, from entering the HNC inland of the Lock Complex. However, since salinity will increase in the area south of the Complex during these times, the potential for salinity stratification in the HNC south of the Lock Complex will increase due to higher salinity and reduced circulation.

Extended durations of closure of the HNC Lock complex may also

contribute to temperature and dissolved oxygen stratification, both upstream and downstream of the complex. This phenomena has been observed in the Mississippi River Gulf Outlet (MRGO) channel (a similar long and straight navigation channel connecting the Gulf of Mexico with inland areas) following the construction of the MRGO rock barrier.

Because bypass channels would be constructed prior to construction of cofferdams for navigable floodgates, and therefore impacts to water circulation for adjacent waters during construction would be minimized, no significant stratification is anticipated as a result of the implementation of cofferdams.

(d) Hydrologic Regime.

**(All Features)**

See II.b.2(a) (Current Patterns and Flow )

(3) Normal Water Level Fluctuations/Hydroperiod.

**(All Features)**

See II.b.2(a) Current Patterns and Flow

(4) Salinity Gradients.

**(All Features)**

See II.b.1.(a) (Salinity)

(5) Actions That Would Be Taken to Minimize Impacts.

**(All Features)**

A major component of the proposed project includes the construction of 21 environmental control structures along the proposed levee alignment. The purpose of the environmental control structures is to provide flood control during storm conditions and to match existing drainage patterns during non-storm conditions. Environmental control structures consist of box culverts and sluice gates allowing tidal exchange. The number of 6-ft by 6-ft or 5-ft by 10-ft culverts at each location varies from one to nine.

*Levees:* Material obtained from adjacent borrow areas for initial levee lifts would be dewatered prior to placement, and material will be placed between levee berms, minimizing water column impacts associated with levee construction.

*Mitigation Sites:* Use of confinement dikes would allow for clarification of effluent waters prior to discharge into receiving waterbodies, thereby reducing water column impacts associated with elevated turbidity levels such as low dissolved oxygen levels.

*Structures:* Construction of structures (i.e., floodgates, tidal exchange structures, and the locks) would result in localized increases in turbidity associated with runoff of construction materials. To minimize construction-related impacts, it is anticipated that a Stormwater Pollution Prevention Plan (SWPPP) shall be implemented for construction activities. SWPPPs shall be prepared in accordance with good engineering practices emphasizing storm water Best Management Practices and complying with Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology. The SWPPP shall identify potential sources of pollution, which may reasonably be expected to affect storm water discharges associated with the construction activity. In addition, the SWPPP shall describe and ensure the implementation of practices which are to be used to reduce pollutants in storm water discharges associated with the construction activity and to assure compliance with the terms and conditions of this permit.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site

**(All Features)**

*Levee Reaches:* Material proposed as levee fill would be confined by berms. Therefore, only minimal amounts of fill material (primarily material associated with berm construction) would directly impact adjacent waterbodies. Associated impacts to the water column from placement of levee fill material would therefore be localized and temporary.

*Mitigation Sites:* Use of confinement dikes would allow for clarification of effluent waters prior to discharge into receiving waterbodies, and would minimize any suspended particulates and turbidity associated with effluent discharge.

*Structures:* Minor, localized impacts to turbidity levels and water clarity in adjacent waters may occur during placement of cofferdam, construction, and backfill materials. These impacts would be expected to last the duration of construction activities.

(2) Effects on Chemical and Physical Properties of the Water Column.

(a) Light penetration

**(All Features)**

See II.c.1 Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site.

(b) Dissolved oxygen

**(All Features)**

See section II.b.1(g) (Dissolved Gas Levels)

(c) Toxic metals and organics

See section II.d (Contaminant Determinations)

(d) Pathogens

**(All Features)**

The proposed project primarily traverses existing hydraulic barriers within the Terrebonne estuary and includes a myriad of water control structures, minimizing impacts to water circulation as practicably as possible while still providing hurricane protection. However, localized changes in water circulation may occur within the project area. These localized changes in water circulation may induce localized changes in the distribution of waterborne pathogens within the study area.

As discussed in the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix*, elevated fecal coliform densities is the second most commonly cited suspected cause of impairment for study area waterbodies. Citation of elevated fecal coliform densities as a suspected cause of impairment occurred disproportionately on the protected side of the proposed levee alignment. The proposed project primarily traverses existing hydraulic barriers within the Terrebonne estuary and includes a myriad of water control structures, minimizing impacts to water circulation as practicably as possible while still providing hurricane protection. However, localized changes in water circulation may occur within the project area. These localized changes in water circulation may induce localized changes in fecal coliform densities within the study area.

In addition, with the increase in sea-level rise, it is anticipated that the local sponsor may desire more frequent closure of environmental control structures to reduce damages from higher stages unrelated to storm events. If this change in operation were authorized, changes to pathogen concentrations within the study area may be more significant. For example, more frequent closure of structures could prevent flushing of waters containing pathogens with relatively clean Gulf of Mexico waters, resulting in stagnation of waters with elevated pathogen concentrations.

(3) Effects on Biota.

(a) Primary production, photosynthesis. Primary production in the project area is subject to normally turbid conditions due to the high-suspended

sediment loads within the water column. During actual construction activities of project features there would be short-term direct impacts to phytoplankton populations due to increases in turbidity, low dissolved oxygen (DO), and introduction of dredged sediments into shallow open water areas. Submerged aquatic vegetation (SAV) would be buried at both the marsh creation sites and the levee sites. Photosynthesis rates in the area would drop due to the turbidity and the burial. Phytoplankton populations should return after construction. Photosynthesis rates would return once the turbidity clears and the newly created marsh will replace the loss due to the burial of the SAV.

(b) Suspension/filter feeders. Direct impact will be experienced by filter feeders at the dredging operation and at the disposal sites. Filter feeders will be removed from the dredging locations during dredging operations. Existing filter feeders will be buried at the disposal sites where wetlands and levees are to be created. With favorable conditions, filter feeders will quickly reestablish in the new environments. Filter feeders adjacent to the dredging and placement areas will be indirectly impacted by the increased turbidity. Filter feeders gills can be clogged and prevent feeding. In response the organism will stop feeding and as long as the event is short lived a high mortality rate is not expected.

(c) Sight feeders. Sight feeders in the project area include freshwater and saltwater fish species. Slight visibility decreases will be experienced in the immediate vicinity of the dredging operations. Conditions will return to pre-project levels upon completion of operations. Disposal sites will have material placement to create wetlands eliminating site feeding opportunities but increasing nursery grounds for such species. Levee sites will be removed completely from the use of the fish. A temporary avoidance of the work area will occur.

(4) Actions Taken To Minimize Impacts. Construction operations are expected to temporarily increase the concentration of suspended particulates. Particulates suspended during project construction would dissipate after construction activities are complete. Temporary increases in suspended particulates will be minimized as much as possible through best management practices such as creating containment berms, use of silt fencing, silt curtains, and seeding, to prevent the unnecessary transport of sediments within the construction and placement areas.

#### d. Contaminant Determinations.

##### **(All Features)**

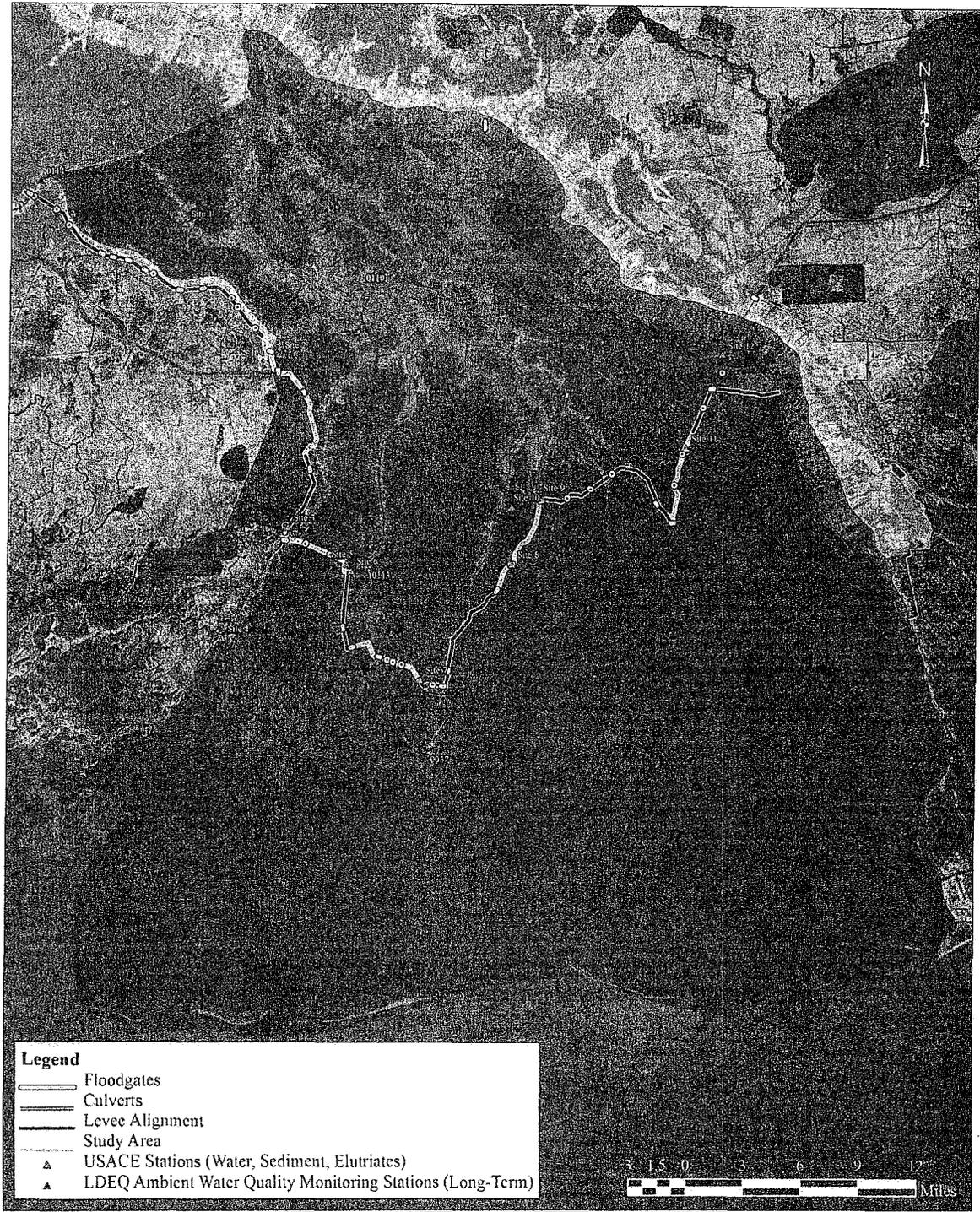
Project-specific sediment, water, and elutriate chemistry data was collected. Water and sediment samples were collected from a total of twelve (12) sites between January 31<sup>st</sup> and February 2<sup>nd</sup>, 2011 (see **Table 3 and Figure 3**).

**Table 3 – Project-specific water and sediment sampling sites**

Station ID	Latitude	Longitude	Station Description	Sampling Date
Site 1	29.650000	-90.872500	Munson's World Famous Swamp Tours, north of Barrier Alignment	1/31/2011
Site 2	29.548056	-90.791111	Near canal with bridge crossing, 1/2 miles east of Minors Canal	1/31/2011
Site 3	29.417500	-90.784722	Canal by upper Bayou du Large pump station	1/31/2011
Site 4	29.335556	-90.843333	Floodgate near end of Bayou Dularge Road	2/1/2011
Site 5	29.389739	-90.733056	South of east end of Falgout Canal	2/1/2011
Site 6	29.384444	-90.729167	Houma Navigation Canal and Falgout Road	2/1/2011
Site 7	29.302222	-90.670000	Highway 57 northwest of Rabbit Bayou – location of proposed culvert with sluice gates	2/1/2011
Site 8	29.387500	-90.587778	Flood side of Mason Canal Road at proposed Bayou Terrebonne floodgate	2/1/2011
Site 9	29.437836	-90.565075	Near dock at Humble Canal, west of Humble Canal floodgate	2/1/2011
Site 10	29.430833	-90.587778	Pump station, Oak Point Road off of Highway 65	2/2/2011
Site 11	29.474122	-90.435028	Shoreline of Grand Bayou Canal at proposed Grand Bayou floodgate	2/2/2011
Site 12	29.543889	-90.402778	Off Highway 24 across from shipyard in GIWW, at proposed Grand Bayou floodgate	2/2/2011

The purpose of data collection was to ensure proposed dredged material disposal activities associated with adjacent borrow areas do not have adverse environmental effects on the receiving aquatic environment. Disposal of dredged material should not exceed State or Federal water quality criteria outside of the established mixing zone in order to comply with the section 404(b)(1) guidelines and in order to ensure 401 water quality certification. Evaluation of sediment chemistry was performed to determine whether sediment has the potential to result in mortality of mobile benthic organisms. Evaluation of water and elutriate chemistry is typically performed to determine whether the proposed discharge of dredged material effluent exceeds State and/or Federal water quality criteria outside of the State-enforced mixing zone, and therefore may result in toxicity to water column organisms. Sample preparation and testing is performed in accordance with the *Inland Testing Manual* and/or *Upland Testing Manual*, depending on the proposed dredged material disposal method.

**Table 4** displays the chemical classes included in the analysis of sediment, water, and elutriates, the latter of which is a mixture of dredging site water and sediment at proportions intended to replicate those of hydraulic dredging. Up to five (5) herbicides, Fourteen (14) inorganic/general chemistry parameters, twenty one (21) metals, twenty four (24) pesticides, seven (7) PCB congeners, nine (9) PAHs, fifty eight (58) semi-volatile organic compounds, fifty four (54) volatile organic compounds, and total petroleum hydrocarbons were included in the analyses. As a disclaimer, analysis of elutriates for project-specific sampling and analysis does not suggest adjacent borrow would be hydraulically placed for levee construction; in contrast, material would be mechanically excavated and dewatered prior to placement. Therefore, elutriate test results have little bearing on predicted water column impacts during placement of adjacent borrow for levee fill. In addition, the type of elutriate test conducted (modified elutriate or standard elutriate) was not specified in the laboratory report. In summary, the purpose and type of elutriate testing conducted for this project was not specified, however results of testing is being provided herein.



**Figure 3 – Project-specific water and sediment sampling sites and LDEQ long-term monitoring stations**

**Table 4 – Chemical classes included in sediment, water, and elutriate analysis**

Chemical Class	Sediment	Water	Elutriate
Herbicides	X	X	X
Inorganic/General Chemistry	X	X	X
Metals	X	X	X
Pesticides	X	X	X
Polychlorinated Biphenyls	X	X	X
Polycyclic Aromatic Hydrocarbons	X	X	X
Semi-Volatile Organic Compounds	X	X	X
Total Petroleum Hydrocarbons	X	X	X
Volatile Organic Compounds	X	X	

*Water and Elutriate Quality*

Water and elutriate chemistry data was compared with applicable State and Federal water quality criteria to determine whether results exceeded these criteria. Salinity data from LDEQ water quality monitoring stations in proximity to project-specific sampling sites was used to estimate the salinity regime of these sites, in order to determine applicable water quality criteria (LDEQ water quality criteria exists for freshwater, brackish, and marine waters, while EPA water quality criteria exists for freshwater and marine waters).

**Tables 5 and 6** below display exceedances of water quality criteria for water and elutriates. In most cases, values exceeding criteria are not measured values, but are instead estimates, as results were below the laboratory reporting limit (in other words, the concentration was below that which the laboratory could quantify with confidence).

For freshwater sites (**Tables 5 and 6**), the only exceedances for measured values are for copper (Site 1 elutriate), iron (Site 1 elutriate, Site 2 water, Site 12 elutriate and water), lead (Site 1 elutriate, site 12 elutriate), and mercury (site 1 elutriate). These measured elutriate concentrations, which are for exceedances of chronic water quality criteria, are within one order of magnitude of criteria.

Results below the laboratory reporting limit, when estimated as one-half of the laboratory reporting limit, exceeded acute criteria for cadmium, p,p'-DDD, and toxaphene, for all freshwater sites and both analytical media (water and elutriates), and chronic criteria for cadmium, mercury, p,p'-DDD, p,p'-DDT, endrin, heptachlor, heptachlor epoxide, methoxychlor, toxaphene, and hexachlorobutadiene for all freshwater sites and both analytical media.

**Table 5 – Exceedances of water quality criteria for freshwater sites (excludes State hardness-dependent metals criteria)**

Chemical Class	Parameter	Units	Freshwater								Water Quality Criteria				
			Site 1		Site 2		Site 12		Freshwater		Freshwater				
			Elutriate	Water	Elutriate	Water	Elutriate	Water	Acute	Chronic	Acute	Chronic			
Metals	Cadmium	µg/L	2.50	2.50	2.50	2.50	2.50	2.50					2	0.25	
	Copper	µg/L	17.0	5.00	5.00	5.00	5.00	5.00						9	
	Iron	µg/L	1,700	930	220	1,100	4,000	2,800							1,000
	Lead	µg/L	14.0	1.50	1.50	1.50	4.80	1.50						65	2.5
	Mercury	µg/L	0.220	0.100	0.100	0.100	0.100	0.100	2.04	0.012			1.4	0.77	
Pesticides	DDD, p,p'	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.03	0.006					
	DDT, p,p'	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	1.1	0.001	1.1	0.001			
	Endrin	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.086	0.0375	0.086	0.036			
	Heptachlor	µg/L	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.52	0.0038	0.52	0.0038			
	Heptachlor Epoxide	µg/L	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250			0.52	0.0038			
	Methoxychlor	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500						0.03	
	Toxaphene	µg/L	0.850	0.850	0.850	0.850	0.850	0.850	0.73	0.0002	0.73	0.0002			
Semi-Volatile Organic Compounds	Hexachlorobutadiene	µg/L	5.00	3.75	5.00	3.75	5.00	3.75	5.1	1.02					

**Table 6 – Exceedances of State hardness-dependent metals criteria**

Salinity Regime	Station ID	LDEQ Water Quality Criteria for Metals (Hardness-Dependent for Freshwater/Brackish Criteria)																			
		Cadmium		Copper		Lead		Nickel		Zinc		Cadmium		Copper		Lead		Nickel		Zinc	
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Freshwater	Site 1	2.5	5	1.5	16	7.5	35	6	22.1	0.944	14.7	10.0	29.5	2.02	1.155	128	93.4	85.3			

For brackish sites (Table 7 and 8), the only measured concentration exceeding criteria was for ammonia (Site 5, elutriate).

Results below the laboratory reporting limit, when estimated as one-half of the laboratory reporting limit, exceeded acute criteria for copper, silver, p,p'-DDD, beta-endosulfan, endrin, toxaphene, and hexachlorobutadiene for all brackish sites and both analytical media, and chronic criteria for copper, mercury, silver, p,p'-DDD, p,p'-DDT, dieldrin, alpha-endosulfan, beta-endosulfan, endrin, heptachlor, heptachlor epoxide, methoxychlor, toxaphene, and hexachlorobutadiene for all brackish sites and both analytical media.

**Table 7 – Exceedances of water quality criteria for brackish sites**

Chemical Class	Parameter	Units	Brackish																Water Quality Criteria			
			Site 3		Site 4		Site 5		Site 6		Site 8		Site 9		Site 10		Brackish		EPA			
			Elutriate	Water	Acute	Chronic	Acute	Chronic														
Metals	Copper	µg/L	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.00	0.012	4.8	3.1		
	Mercury	µg/L	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	2.00	0.012	1.8	0.94		
	Silver	µg/L	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50			1.9			
Pesticides	DDD, p,p'	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.03	0.006				
	DDT, p,p'	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	1.1	0.001	1.1	0.001		
	Dieldrin	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.237	0.0019	0.71	0.019		
	Endosulfan, alpha	µg/L	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.034	0.0087	0.34	0.0887		
	Endosulfan, beta	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500			0.34	0.0887		
	Endrin	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.037	0.0023	0.37	0.023		
	Heptachlor	µg/L	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.053	0.0036	0.53	0.036		
	Heptachlor Epoxide	µg/L	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250			0.53	0.036		
	Methoxychlor	µg/L	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500					0.03	
	Toxaphene	µg/L	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.850	0.21	0.0002	0.21	0.0002		
	Semi-Volatile Organic Compounds	Hexachlorobutadiene	µg/L	5.00	3.75	5.00	3.75	5.00	3.75	5.00	3.75	5.00	3.75	5.00	3.75	5.00	3.75	1.6	0.32			

**Table 8 – Exceedances of Federal criteria for ammonia**

Salinity Regime	Station ID	Nitrogen, Ammonia		Marine	
		mg/L		Acute	Chronic
		Elutriate	Water		
Brackish	Site 5	3.90	0.066	25	3.7

For marine sites (**Table 9**), no exceedances of measured values were reported.

Results below the laboratory reporting limit, when estimated as one-half of the laboratory reporting limit, exceeded acute criteria for silver, beta-endosulfan, endrin, toxaphene, and hexachlorobutadiene for all marine sites and both media, and chronic criteria for mercury, silver, p,p'-DDT, dieldrin, alpha-endosulfan, beta-endosulfan, endrin, heptachlor, heptachlor epoxide, methoxychlor, toxaphene, and hexachlorobutadiene for all marine sites and both media.

### 9 – Exceedances of water quality criteria for marine sites

Chemical Class	Parameter	Units	Marine				Water Quality Criteria			
			Site 7		Site 11		LDEQ		EPA	
			Elutriate	Water	Elutriate	Water	Marine	Marine	Acute	Chronic
Metals	Mercury	µg/L	0.400	0.400	0.160	0.160	2	0.025	1.8	0.94
	Silver	µg/L	2.50	2.50	2.50	2.50			1.9	
Pesticides	DDT, p,p'-	µg/L	0.0500	0.0500	0.0500	0.0500	0.13	0.001	0.13	0.001
	Dieldrin	µg/L	0.0500	0.0500	0.0500	0.0500	0.71	0.0019	0.71	0.0019
	Endosulfan, alpha-	µg/L	0.0250	0.0250	0.0250	0.0250	0.034	0.0087	0.034	0.0087
	Endosulfan, beta-	µg/L	0.0500	0.0500	0.0500	0.0500			0.034	0.0087
	Endrin	µg/L	0.0500	0.0500	0.0500	0.0500	0.037	0.0023	0.037	0.0023
	Heptachlor	µg/L	0.0250	0.0250	0.0250	0.0250	0.053	0.0036	0.053	0.0036
	Heptachlor Epoxide	µg/L	0.0250	0.0250	0.0250	0.0250			0.053	0.0036
	Methoxychlor	µg/L	0.0500	0.0500	0.0500	0.0500				0.03
	Toxaphene	µg/L	0.850	0.850	0.850	0.850	0.21	0.0002	0.21	0.0002
Semi-Volatile Organic Compounds	Hexachlorobutadiene	µg/L	5.00	3.75	5.00	3.75	1.6	0.32		

### Sediment Quality

**Tables 10 - 11** below display exceedances of NOAA sediment screening values. In most cases, values exceeding screening values are not measured values, but are instead estimates, as results were below the laboratory reporting limit.

For freshwater sites (**Table 10**), the measured concentrations for arsenic, copper, nickel, and zinc exceeded freshwater Lowest Effect Level (LEL) screening values at all freshwater sites, while the measured value for mercury at Site 12 exceeded the freshwater LEL screening value.

Results below the laboratory reporting limit, when estimated as one-half of the laboratory reporting limit, exceeded sediment screening values at all freshwater sites for the following parameters: antimony, mercury, silver, aldrin, gamma-BHC, p,p'-DDD, p,p'-DDE, p,p'-DDT, dieldrin, endrin, heptachlor epoxide, toxaphene acenaphthene, acenaphthalene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, phenanthrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, and naphthalene.





**Table 12 – Exceedances of sediment screening values for marine sites**

Chemical Class	Parameter	Units	NOAA Sediment Screening Values for Marine Sediment										
			Marine		Predicted Toxicity Gradient						Increasing		
			Site 7	Site 11	PEL	PEL	ERL	T50	PEL	ERM	AET	Esc Tox. ERL	
Metals	Aluminum	µg/kg	8,970,000	34,100,000								0,0180 N	
	Antimony	µg/kg	4,100	16,200	630			2,400				9,300 E	
	Arsenic	µg/kg	4,500	10,300	7,400	7,240	8,200	20,000	41,600	70,000		35,000 B	
	Barium	µg/kg	95,500	291,000		130,100 #							
	Cobalt	µg/kg	7,200	16,500								10,000 N	
	Copper	µg/kg	20,600	22,000	32,000	18,700	34,000	94,000	108,000	270,000		390,000 MO	
	Manganese	µg/kg	307,000	630,000								260,000 N	
	Nickel	µg/kg	35,200	26,400	15,000	15,900	20,900	47,000	42,800	51,600		110,000 EL	
	Silver	µg/kg	700	1,000	230	730	1,000	1,100	1,770	3,700		3,100 B	
Pesticides	BHC, gamma-	µg/kg	2.30	1.25		0.320			0.990		4.80 N	3.70	
	DDD, p,p'-	µg/kg	4.50	2.40		1.22	2.00		7.81	20.0	16.0 I		
	DDE, p,p'-	µg/kg	4.50	2.40		2.07	2.20		374	27.0	9.00 I		
	DDT, p,p'-	µg/kg	4.50	2.40		1.19	1.00		4.77	7.00	12.0 E		
	Disdrin	µg/kg	4.50	2.40	0.830	0.720	0.0200	2.90	4.30	8.00	1.90 E		
	Heptachlor	µg/kg	2.50	1.05							0.300 B		
	Heptachlor Epoxide	µg/kg	2.50	1.05	0.600 c				2.74 c				
	Toxaphene	µg/kg	451	241		0.100 c						28.0	
	Polycyclic Aromatic Hydrocarbons	Acenaphthene	µg/kg	451	241	19.0	6.71	16.0	116	88.9	500	130 E	
Acenaphthylene		µg/kg	451	241	14.0	5.87	44.0	140	128	640	71.0 E		
Anthracene		µg/kg	451	241	34.0	46.9	85.3	290	245	1,100	280 E		
Benzo(a)anthracene		µg/kg	451	241	61.0	74.8	261	466	693	1,600	960 E		
Benzo(a)pyrene		µg/kg	451	241	69.0	88.8	430	520	763	1,600	1,100 E		
Benzo(b)fluoranthene		µg/kg	451	241	130			1,107			1,800 EI		
Benzo(k)fluoranthene		µg/kg	451	241	67.0			497			670 M		
Benzo(k)perylene		µg/kg	451	241	70.0			537			1,800 EI		
Phenanthrene		µg/kg	451	241	68.0	86.7	240	455	544	1,500	660 E		
Semi-Volatile Organic Compounds		Benzoic Acid	µg/kg	451	241							65.0 O	
		Benzyl Alcohol	µg/kg	451	241							52.0 B	
	Bis(2-Ethylhexyl) Phthalate	µg/kg	583	144		182			2,647		1,300 I		
	Butyl Benzyl Phthalate	µg/kg	551	241							63.0 M	1,100	
	Chrysene	µg/kg	451	241	82.0	108	384	650	846	2,800	950 E		
	Cresol, o-	µg/kg	451	241							8.00 B		
	Cresol, p-	µg/kg	451	241							100 B		
	Dibenzo(a,h)anthracene	µg/kg	451	241	19.0	6.22	63.4	113	135	260	230 OM		
	Dibenzofuran	µg/kg	451	241							110 E	2,000	
	Dimethylphenol, 2,4-	µg/kg	451	241							18.0 N		
	Fluoranthene	µg/kg	451	241	119	113	600	1,034	1,494	5,100	1,300 E		
	Fluorene	µg/kg	451	241	19.0	21.2	19.0	114	144	540	120 E	540	
	Hexachlorobenzene	µg/kg	451	241							6.00 B		
	Methylnaphthalene, 2-	µg/kg	451	241	21.0	20.2	70.0	128	201	670	64.0 E		
	Naphthalene	µg/kg	228	172	30.0	34.6	160	217	391	2,100	230 E	480	
	Nitrobenzene	µg/kg	451	241							21.0 N		
	N-Nitrosodiphenylamine	µg/kg	451	241							28.0 I		
Pyrene	µg/kg	451	241	125	153	665	932	1,398	2,600	2,400 E			
Pyrene, Indeno (1,2,3-cd)	µg/kg	451	241	68.0				488		600 M			

With the exception of sediment phenanthrene measurements at Site 5, all other measured concentrations exceeding sediment screening values for those indicative of low-level contamination. In addition, adjacent borrow material is expected to have characteristics similar to sediments present at the proposed placement sites. Therefore, no significant changes in sediment quality at the placement sites are anticipated.

The proposed hurricane protection project could have significant indirect impacts on contaminant levels in the study area, the extent to which is largely unknown. Based on historical water quality information for the study area, it is clear that a majority of the water quality problems within the study area occur on the protected side of the proposed levee alignment (see the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix* for details). Although the modeling report *Comparison of Plan Alternatives for the Morganza to the Gulf of Mexico Levee System* suggests that proper management of gates and tidal exchange structures can minimize changes in flow and water level between the flood and protected side of the proposed levee alignment, it is a legitimate concern that the proposed alignment will cause significant alteration of hydrology and hydraulics in the study area, such that water exchange between the

protected and flood sides of the proposed levee alignment is significantly inhibited, and that localized areas of stagnation behind the levee alignment may occur. If these conditions present themselves, the levee alignment would serve as a barrier between relatively free of contamination Gulf of Mexico waters and impaired waters, further exacerbating water quality conditions on the protected side of the alignment while maintaining or improving the health of waters on the flood side. Moreover, the potential expansion of developed areas as a result of the project could lead to additional point and nonpoint discharges within the hurricane protection system, which would further degrade water quality on the protected side of the proposed alignment. Also, as sea-level rise increases water levels in the study area, the frequency with which environmental water control structures are closed could increase provided it is authorized, causing further stagnation for waters on the protected side of the proposed levee alignment.

Hydrology plays a major role in biogeochemical cycling in wetlands (Mitsch and Gosselink 2000); therefore, operation of these structures is expected to have a significant impact on biogeochemical cycling for wetlands in the study area, particularly on the protected side of the proposed levee alignment. This could be beneficial or detrimental, depending on the operation of gates and tidal exchange structures and impediment of flow caused by the proposed hurricane protection system.

A major potential benefit of the project is that it would provide for the protection of marshes on the flood side of the proposed levee alignment, potentially extending the lifespan of these marshes. However, the marshes just outside of the hurricane protection system are expected to be subjected to an increase in wave energy as a result of the proposed project, which could lead to the accelerated loss of unprotected marsh vegetation. This detracts from rationale for utilizing the topmost organic sediment layer of adjacent levee borrow areas for marsh construction on the flood side of the proposed levee alignment. Similar to on the protected side of the proposed levee alignment, wetland loss on the flood side could negatively affect water quality via the decrease in area of wetlands vegetation capable of filtering pollutants and nutrients, increases in suspended solids and turbidity, and releases of constituents stored by deteriorating wetlands vegetation.

#### e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton. Section 6.4.2 of the RPDEIS goes into details on the impacts to this resource. During actual construction activities of project features there would only be short-term minor adverse impacts to plankton populations due to increases in turbidity, low DO, and introduction of dredged sediments into shallow open water areas. There would be long-term loss of shallow water habitats due to dredge disposal activities. However, there is an abundance of shallow open water habitat available for use by plankton.

(2) Effects on Benthos. Section 6.4.1 of the RPDEIS goes into details on the impacts to benthic resources. Direct effects on benthic habitat include covering and smothering of benthic organisms in association with levee construction and similar activities in wetlands and aquatic habitats. Borrow material removed from

aquatic and wetland habitats would result in a temporary loss of the benthic organisms followed by re-colonization from adjacent areas, however, because of a change in depth and other habitat characteristics, the structure of the benthic community may be altered.

(3) Effects on Nekton. Nekton are largely comprised of animals from three clades; vertebrates, mollusks, and crustaceans. Direct impacts to nekton from implementation of the proposed action would result from construction of project features. Impacts from construction of water control structures may include direct mortality due to burial or sudden salinity changes; injury or mortality due to increased turbidity (e.g. gill abrasion, clogging of feeding apparatus); modified behavior, and short-term displacement. Dredging and placement of borrow material associated with dredge features, levee construction, and marsh creation would negatively impact benthic organisms and benthic feeders in dredge channels and disposal areas. Sessile and slow-moving aquatic invertebrates would be disturbed by the dredge or excavation activity or buried by the placed material. Construction activities would temporarily increase turbidity, temperatures, and biological oxygen demand (BOD), and decrease dissolved oxygen. These temporary conditions would likely displace more mobile nekton from the construction area. Following construction, displaced nekton would likely return to the project area.

(4) Effects on the Aquatic Food Web. *Mitigation Sites:* The aquatic food web at the mitigation sites are expected to be affected for a period of a few months after the deposition of dredged material. Populations of organisms at all levels of the food web would be decreased or eliminated in the vicinity of the disposal site from a combination of effects including turbidity, decreased DO, physical burying and displacement. The decrease in light penetration from increased turbidity would cause a decline of phytoplankton populations. This decline in primary productivity would also reduce zooplankton populations and populations of filter feeders and other high order predators. A viable food web is expected to reestablish after the completion of disposal activities and consolidation of sediments.

(5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges. Coordination has occurred and would continue with US Fish and Wildlife Service and Louisiana Department of Fish and Wildlife concerning construction in the Mandalay National Wildlife Refuge and Pointe Aux Chenes Wildlife Management Area.

(b) Wetlands. Section 6.2.2 of the RPDEIS goes into details on the impacts to wetlands. The constructible components of the 1% AEP Alternative would result in the filling of wetlands and their conversion to uplands and open water. The table below summaries the acres affected by the projects'

constructible features. These impacts will be mitigated for as part of the proposed action.

Features	Acres of Wetlands Directly Effected		Total wetlands
	Tidal Wetlands	Force Drained Wetlands	
Constructible Features	644.35	25.98	670.33
Programmatic Features	4,047	57	4,104

Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh and open water are within the indirect impacts area for the constructible features (Figure 2). Approximately 84 miles of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers.

To mitigate for the indirect impacts approximately 1,765 acres of marsh will be created from dredged material. Most of this material will come from the construction of the lock complex and the by-pass channel. A total of approximately 2,690 acres of wetland will be created for both the direct and indirect impacts. Most of this material will come from the organic overburden in the adjacent borrow pits to the levee reaches and from the area of the construction of the lock complex and the by-pass channel.

(c) Mud Flats. Section 6.6.2 of the RPDEIS goes into details on the impacts to Essential Fish Habitat (EFH). Mud Flats are one the EFH in the project area.

(d) Vegetated Shallows. Section 6.6.2 of the RPDEIS goes into details on the impacts to EFH. Vegetated shallows are one the EFH in the project area. Construction activities using earthen materials to create wetland mitigation areas along the proposed right of way could bury EFH substrates or temporarily change environmental conditions, including turbidity and salinity, in the water column. These impacts would be minimized, as much as practicable, through implementation of appropriate Best Management Practices. The project would increase SAV and adjacent intertidal marsh vegetation (marsh creation areas) in some areas and decrease vegetation in other areas (levee construction areas).

(e) Coral Reefs. Not Applicable

(f) Riffle and Pool Complexes. Not Applicable

(6) Threatened and Endangered Species. Section 6.8.2 of the RPDEIS goes into details on the impacts to this resource. No direct impacts on threatened or endangered species would result from implementation of the 1% AEP Alternative.

(7) Other Wildlife. Section 6.7.2 of the RPDEIS goes into details on the impacts to this resource. Wildlife species using the marsh and open water habitat in the proposed right of way could easily avoid disturbances associated with construction activities. Birds would have ample alternative locations available for use. Mammals or reptiles that may inhabit the proposed construction areas would likely react to disturbances by relocating to adjacent marsh or open water habitats. Once the levee is constructed, it would provide additional upland habitat that may be valuable to some terrestrial wildlife species, such as snakes, lizards, terrapins, and rodents.

(8) Actions to Minimize Impacts. Formulation of project plans and designs, evaluation of alternative plans, and development of operational scenarios for the preferred alternative, have all been conducted with the objective of minimizing potential negative impacts to the aquatic ecosystem.

- Follow the National Bald Eagle Management Guidelines.
- During investigations for programmatic features look for ways to reduce levee foot print.
- Use best management practices to reduce runoff and turbidity during construction.

#### f. Proposed Disposal Site Determinations

##### (1) Mixing Zone Determination.

###### **(All Features)**

Because of the nature of sediment excavation and placement (dredged material will be excavated with a bucket dredge, allowed to dewater, and then placed for levee construction), very little dredged material effluent will be generated. In addition, elutriate tests conducted (which would be extremely conservative estimates of dissolved contaminant concentrations present in effluent generated during mechanical disposal or dewatered sediments) do not indicate the proposed disposal activity will have significant water column impacts (the highest exceedance observed is within one order of magnitude of chronic water quality criteria, while the only observed exceedance of acute criteria, for copper in the Site 1 elutriate sample, would be readily diluted by site water, having a dilution factor of -0.767). Therefore, there does not appear to be a reason to believe that disposal of mechanically dredged, dewatered dredged material will exceed water quality criteria outside of the proposed mixing zone.

##### (2) Determination of Compliance with Applicable Water Quality Standards.

###### **(All Features)**

There does not appear to be a reason to believe that disposal of mechanically

dredged, dewatered dredged material will exceed water quality criteria outside of the proposed mixing zone; therefore, based on best available information, direct impacts from construction of the proposed project are expected to be in compliance with applicable water quality standards. As discussed in earlier sections (in particular, subparts II.b.1(g) and II.b.1(h)) and in the *Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix*, there is a long-term potential for indirectly affecting subsegment support, especially for subsegments on the protected side of the proposed levee alignment.

### (3) Potential Effects on Human Use Characteristics.

#### (a) Municipal and private water supply.

##### **(All Features)**

The project would have a beneficial effect on water supplies. The multipurpose HNC Lock Complex would be constructed and operated as part of the Project to control storm surge and saltwater intrusion. The HNC Lock Complex would be operated to reduce salinity intrusion in the Houma Navigation Canal, thus reducing the raw source water salinity for the Houma Water Treatment Plant.

(b) Recreational and commercial fisheries. Recreational and commercial activities in the project area are based on vessel activity. There would be a minimum impact by the dredging and disposal activities. U.S. Coast Guard regulations, such as marine safety zones would be strictly adhered to for assurance of safe vessel passage. The area would return to pre-project conditions upon construction completion. Disposal areas would become a new feature of the landscape.

(c) Water-related recreation. Water related recreation would experience a minimum inconvenience at the time of dredging and disposal operations, but would return to pre-project conditions after project completion.

(d) Aesthetics. The aesthetics of the project area at the time of construction would be characterized by the presence of the dredge and other project associated equipment and exposed mud at the disposal sites. This is considered temporary and local natural vegetation would quickly take root improving the aesthetics within the first and second growing seasons.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar preserves. The study area includes Mandalay National Wildlife Refuge and Pointe Aux Chenes Wildlife Management Area. Direct impacts to wetlands in these areas will be mitigated for as part of the project.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. Cumulative effects on the coastal ecosystem would primarily be related to the incremental impact of all past, present, and future actions affecting water quality within the Basin such as: increase in fresh water areas; stabilization or decrease in salinities; increase in sediment introduction to the coastal zone, with accompanying minor increases in trace metals associated with bed sediments; increased total suspended sediments; increased turbidity; increased organic/nutrient enrichment of the water column; disturbance and release of possible contaminants; decrease in water temperatures along with fewer water temperature fluctuations; and increased dissolved oxygen levels. Temporary turbidity impacts may occur on- and off-site during construction of project features, but would be short-term in duration. Negative impacts due to loss of wetlands from creating the levee would be mitigated for. No long-term, negative cumulative impacts are anticipated.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Indirect impacts to oyster leases could include increased rate of mortality and decrease in productivity in oyster leases located closest to the construction sites.

### III. Findings of Compliance or Non-compliance with the Restrictions on Discharge

- a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation were not significant.
- b. No practicable alternatives to the proposed discharges could be identified that would have less adverse impacts on the aquatic ecosystem.
- c. Compliance with Applicable State Water Quality Standards was met.
- d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 of the Clean Water Act was met
- e. The proposed action is compliant with the Endangered Species Act of 1973, as amended. The proposed action would not adversely affect endangered or threatened species or their critical habitats.
- f. The proposed action is compliant with specified protection measures for marine sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972. All disposal sites and effects are inland waters. No effects would occur in ocean waters beyond the shoreline of the Gulf of Mexico.

#### g. Evaluation of Extent of Degradation of the Waters of the United States

##### (1) Significant Adverse Effects on Human Health and Welfare

- (a) Municipal and Private Water Supplies. There would be short-term direct impacts to municipal or private water supplies.

(b) Recreational and Commercial Fisheries. There would be short-term direct impacts to recreational and commercial fishing due to increases in turbidity, low DO, and introduction of dredged sediments into shallow open water areas. The immediate area would be unavailable for fishing during construction.

(c) Plankton. There would be short-term direct impacts to plankton populations due to increases in turbidity, low DO, and introduction of dredged sediments into shallow open water areas. There would be long-term loss of shallow water habitats in some areas due to dredge disposal activities. However, overall, there is an abundance of shallow open water habitat in the project area available for use by plankton.

(d) Fish. Temporary conditions would likely displace more mobile fisheries species from the construction area. Following construction, displaced fish would likely return to the project area.

(e) Shellfish. No measurable direct impacts to oysters are anticipated to result from placement of dredged material.

(f) Wildlife. Temporary low DO and turbidity caused by placement of dredged material is unlikely to affect wildlife.

(g) Special Aquatic Sites. The study area includes Mandalay National Wildlife Refuge and Pointe Aux Chenes Wildlife Management Area. There will be direct impacts to the refuge and management area anticipated from implementation of the proposed action. Wetlands are the major special aquatic sites in the project area. There would be loss of wetlands with the placement of material to create the levees. This loss of functions and values are being mitigated for by the creation of marsh.

(2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems. Impacts to early life stages may occur during placement of dredged material, but they are expected to diminish after project completion. The mitigated marsh would provide a nursery area for early life stages of many fish and shellfish.

(3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity, and Stability. Ecosystem diversity and productivity would be expected to remain the same with the mitigation of wetland loss from building the levees.

(4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Resources. Disposal of dredged material would have very little impact on recreational, aesthetic, and economic resources.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem. The formulation of project plans and designs, evaluation of alternative plans, and development of operational scenarios for the tentatively selected plan, have all been conducted with the objective of minimizing potential negative impacts to the aquatic ecosystem. Placement of material excavated for construction of project features was designed in the context best management practices to reduce impacts also mitigation for any loss of functions and values of wetlands are part of the plans.

i. On the Basis of the Guidelines, the Proposed Disposal Sites for the Discharge of Dredged Material are (select one)

- X (1) Specified as complying with the requirements of these guidelines; or,
- (2) Specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem; or,
- (3) Specified as failing to comply with the requirements of these guidelines.

#### IV. Evaluation Responsibility

- a. Water Quality Input Prepared by: Rodney Mach and Eric Glisch
- b. Project Description and Biological Input Prepared by: Coastal Environmental Planning section - Nathan Dayan

#### Review Responsibility

- a. Water Quality Input reviewed by: Knoll Body
- b. Project Description and Biological Input reviewed by: Sandra Stile

Mach 24, 2013  
Date

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



## **Appendix D**

# **COASTAL ZONE MANAGEMENT PROGRAM CONSISTENCY**



## **CONSISTENCY DETERMINATION**

### **Louisiana Coastal Use Guidelines**

### **Mississippi River and Tributaries Morganza to the Gulf of Mexico, Louisiana Project**

### **Terrebonne Parish, Louisiana**

### **Revised Programmatic Environmental Impact Statement**

## **INTRODUCTION**

Section 307 of the Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et. seq. requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination has been prepared for the proposed 1% Annual Exceedance Probability Storm Surge Risk Reduction System. Coastal Use Guidelines were written in order to implement the policies and goals of the Louisiana Coastal Resources Program, and serve as a set of performance standards for evaluating projects. Compliance with the Louisiana Coastal Resources Program, and therefore, Section 307, requires compliance with applicable Coastal Use Guidelines.

## **PURPOSE AND NEED FOR THE PROPOSED ACTION**

The purpose of this project is to provide flood risk reduction for the communities located within the levee system. The goal is to maximize the number of residential and commercial structures protected from damage caused by hurricane storm surges. The project is needed because of the increasing susceptibility of coastal communities to storm surge due to wetland loss, sea level rise, and subsidence. Hurricanes and tropical storm tidal surges have caused immense property damage, human suffering, destruction of natural habitat, and loss of human life in the two-parish study area. While the TLCD is currently maintaining a system of forced drainage levees, pump stations, and flood control structures for Terrebonne Parish, adequate hurricane and storm risk reduction is not currently available for the entire area. This project represents an opportunity to reduce the risk of catastrophic hurricane and tropical storm damages by implementing an effective, comprehensive system for hurricane and flood risk reduction.

## **DESCRIPTION OF THE PROPOSED ACTION**

1% Annual Exceedance Probability Storm Surge Risk Reduction System (1% AEP Alternative) provides risk reduction for water levels that have a 1% chance of occurring each year (see figure). This alternative includes programmatic elements that would be further investigated in the future and constructible elements for which this consistency determination would serve as the required documentation for the Coastal Zone Management Act. The features that have been identified as constructible include, Levee Reach F1 and F2, Levee Reach G1, HNC Lock Complex (HNC Lock), and Bayou Grand Caillou Floodgate (BGC floodgate).



The 98-mile levee system would extend from high ground along US 90 near the town of Gibson and tie into Highway 1 near Lockport, LA in Lafourche Parish. Planned levee elevations range from 15.0 to 26.5 feet NAVD88. Toe-to-toe levee widths range from 282 feet to 725 feet. Twenty-two navigable floodgate structures, ranging in elevation from 17.0 to 33 feet (NAVD88), would be located on waterways throughout the levee system, including a lock complex on the HNC. Additionally, environmental water control structures would allow tidal exchange at 23 locations through the levee through sluice gates and box culverts.

Nine road gates would be located at the following levee/road crossings: NAFTA, Four Pointe Road, Highway 315 (DuLarge), Highway 55, Highway 56, Hwy 24, Hwy 3235, Union Pacific RR, and Highway 665. Fronting protection would be provided for four pumping stations, including the Madison, Pointe aux Chenes, Elliot Jones (Bayou Black), and Hanson Canal pump stations.

Levees would be constructed using a combination of sidecast and hauled-in borrow materials. Adjacent side cast was planned for the pre-load section only. Borrow pits are oversized to offset the potential for encountering organics, expected losses, etc. The project would involve constructing 22 navigable floodgates, 23 environmental water control structures, nine road gates, and fronting protection for four existing pumping stations. Structures on Federally maintained navigation channels include the Houma Navigation Canal Lock Complex (and 250-ft sector gate) and two 125-ft sector gates on the GIWW east and west of Houma. In addition, thirteen 56-ft sector gates and five 20- to 30-ft stop log gates are located on various waterways that cross the levee system.

<b>Implementation Schedule</b>	
<b>Activities</b>	<b>Years for 1% AEP</b>
Real Estate Acquisition, Utility Relocations, and Mitigation	2014 to 2025
Construction of Structures	2015 to 2024
Construction of Levee Lifts to Achieve Base Year Elevations	2015 to 2035
Construction of Levee Lifts to Achieve Future Year Elevations	2035 to 2071

<b>Acres of Wetlands Directly Effected</b>			
<b>Features</b>	<b>Tidal Wetlands</b>	<b>Force Drained Wetlands</b>	<b>Total wetlands</b>
Constructible Features	644.35	25.98	670.33
Programmatic Features*	3,017	31	3,048
<b>Total Impact</b>	<b>3,661</b>	<b>57</b>	<b>3,718</b>

The constructible features would impact intermediate and brackish marsh, while the programmatic features has the potential to impact bottomland hardwoods, swamp, fresh, intermediate, brackish and saline marsh. Approximate 109 million cubic yards of earthen material (quality based on post-Katrina standards) would be used to build the complete levee alignment to its full height.

## GUIDELINES APPLICABLE TO ALL USES

**Response to Guidelines 1.1 - 1.6.** The guidelines have been read in their entirety and all applicable guidelines would be addressed through the preparation of responses to the guidelines contained within the specific use categories. The proposed action would be in conformance with all applicable state water and air quality laws, regulations, and standards. Therefore, the proposed action is consistent with these guidelines.

**Response to Guideline 1.7.** This guideline has been read in its entirety and all applicable guidelines would be addressed through the preparation of responses to the guidelines contained within the specific use categories. The constructible features of the proposed action would directly impact approximately 670 acres of wetlands while the programmatic feature could potentially impact approximately 3,520 additional acres. During further studies for the programmatic features there is the potential to reduce the number of acres. There are no adverse effects to guidelines 1.7 a-d, g-k, m-q, and s-u. The impacts to guideline 1.7 e have been avoided to the maximum extent practicable and mitigation for wetland impacts are part of the plan. The impacts to guideline 1.7 f have been avoided to the maximum extent practicable but there is potential for induced damages outside the levee system. In order to prevent increased risk to people and structures, which are already located in high risk areas, a preliminary nonstructural compensation plan has been developed. The impacts to guideline 1.7 l, and r have been avoided to the maximum extent practicable the levee system has been designed with 21 environmental water control structures and 21 navigable structures so that reduction or blockage of water flow is not detrimental to the wetland habitat and species that use that habitat. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 1.8 – 1.10.** The guidelines have been read in their entirety and all applicable guidelines would be addressed through the preparation of responses to the guidelines contained within the specific use categories. The proposed action would be in conformance with all applicable state water and air quality laws, regulations, and standards. Therefore, the proposed action is consistent with these guidelines.

## GUIDELINES FOR LEVEES

**Responses to Guideline 2.1 and 2.2.** The guidelines have been read in their entirety. The impacts to biologically productive wetlands in guideline 2.1 have been avoided to the maximum extent practicable the alignment of the levee system was situated on or next to existing hydraulic barriers (roads, levees, natural ridges, canals) where ever practicable. Additionally the levee system has been designed with 23 environmental water control structures and 22 navigable structures so that reduction or blockage of water flow would be avoid or minimize segmentation of wetland areas. Parts of constructible features, HNC lock, and levee reach G1run across biologically productive wetlands, but have been designed to limit impacts to the maximum extent practicable. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 2.3.** This guideline has been read in their entirety. The levee construction would not change the use of a wetland area. No additional areas would be put under pump with this proposed action and Jurisdictional standing of the wetlands would not change. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 2.4.** This guideline has been read in its entirety. Part of the Hurricane and flood protection levee is being built on an existing levee and/or is located at the non-wetland/wetland interface or landward to the maximum extent practicable. Parts of constructible features, HNC lock, and levee reach G1run across biologically productive wetlands, but have been designed to limit impacts to the maximum extent practicable. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 2.5.** This guideline has been read in its entirety. There are no impoundment levees as part of the proposed action. Therefore, this guideline is not applicable to the project.

**Responses to Guideline 2.6.** This guideline has been read in its entirety. The levee system has been designed with 21 environmental water control structures and 21 navigable structures so that reduction or blockage of water flow is limited. These designs used hydraulic models to analyse the potential impacts. Parts of constructible features, HNC lock, BGC floodgate, and levee reach G1run across biologically productive wetlands, but have been designed to limit impacts to the maximum extent practicable. The levee system would also be built and thereafter operated and maintained utilizing best practical techniques to minimize the impacts to the existing hydrologic patterns, and the interchange of water, beneficial nutrients and aquatic organisms between enclosed wetlands and those outside the levee system. Therefore, the proposed action is consistent with this guideline.

## **GUIDELINES FOR LINEAR FACILITIES**

**Responses to Guideline 3.1.** The guideline has been read in its entirety. The proposed levee system, floodgate structures, water control structures, sluice gates and box culverts, road gates, pumping stations, the HNC lock complex, parallel borrow pits and other project features would avoid, to the maximum extent practicable, areas of high biological productivity, such as important estuarine habitats, and irreplaceable resource areas. In addition, project-induced impacts would be appropriately mitigated consistent with all applicable laws, regulations and policy. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 3.2.** The guideline has been read in its entirety. The proposed levee system has been planned to avoid and minimize potential wetland and estuarine areas, to the maximum extent practicable. The alignment builds on existing hydrologic barriers, such as natural ridges, roadbeds, or existing levees that have been built for other purposes such as forced drainage or marsh management. Of the estimated 72 miles of levee originally proposed in the authorized alignment, approximately 15 miles would cross part of the estuaries that are currently open to estuarine exchange. Of the estimated 98 miles of levee in the PAC alternatives, approximately 14 miles would cross open estuaries. The levee reaches that are part of the constructible features are approximately 6% of the total 98 miles. The proposed project alternatives include numerous environmental water control structures to allow hydrologic exchange through the levees. Borrow is generally adjacent to the proposed levee alignment or hauled in from offsite. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 3.3.** The guideline has been read in its entirety. The new channel that is part of the HNC Lock Complex would be planned, designed, located and built using the best practical techniques to minimize disruption of natural hydrologic and sediment transport

patterns, sheet flow, and water quality, and to minimize adverse impacts on wetlands, to prevent bank slumping and erosion, saltwater intrusion, and to minimize the potential for inland movement of storm generated surges. The HNC Lock and Flood gate would be built in the new channel and would be used as part of this project to reduce saltwater intrusion. Adjacent borrow pits have been planned for the pre-load section only of some reaches. The top 5 ft of borrow material from adjacent borrow pits is not suitable for levee building because of its organic makeup. Approximately 12,305,000 cubic yards of this organic material would be available for beneficial use to create marsh for the required compensable mitigation. The remaining dredge material from the adjacent pits would be used beneficially to create the levees. No new disposal areas are required. For the constructible features dredged material (spoil) would come from the bypass channel and HNC lock area and adjacent borrow pits flood side levee reaches F1 and F2 and the protected side of levee reach G1. These sites have been designed to the minimum practical size and length. Therefore, the proposed action is consistent with this guideline. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 3.4.** This guideline has been read in its entirety. This proposed action would not directly include the construction pipelines. There would be requirement for the relocation of some linear facilities (pipelines, power lines, etc.), these actions would be covered under either an existing coastal use permit or a modification of this determination depending on if the linear facilities are found to be Federally compensable or not. Therefore, this guideline is not applicable to the project at this time.

**Responses to Guideline 3.5.** The guideline has been read in its entirety. The proposed levee system has been planned to avoid and minimize potential wetland and estuarine areas, to the maximum extent practicable. The alignment builds on existing hydrologic barriers, such as natural ridges, roadbeds, or existing levees that have been built for other purposes such as forced drainage or marsh management. Of the estimated 72 miles of levee originally proposed in the authorized alignment, approximately 15 miles would cross part of the estuaries that are currently open to estuarine exchange. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 3.6.** The guideline has been read in its entirety. Linear facilities and alignments shall be, to the maximum extent practicable, designed and constructed to permit multiple uses consistent with the nature of the facility. The proposed levee system has, to the maximum extent practicable, been designed and will be constructed to permit multiple uses consistent with the features. For example, several reaches of the levee system are planned through existing pasture lands and once construction is complete would be have an easement which allows multiple uses, compatible with the facility, by the private landowner. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 3.7.** The guideline has been read in its entirety. The proposed action involving dredging would not traverse or adversely affect any barrier island. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 3.8.** The guideline have been read in its entirety. The proposed action involving dredging would not traverse or adversely affect any beaches, tidal passes, protective reefs or other natural gulf shoreline. Therefore, these guidelines are not applicable to the project and the proposed action is consistent with these guidelines.

**Responses to Guideline 3.9.** The guideline have been read in its entirety. The proposed project features have been be planned, designed, located and will be constructed using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow, and water quality, and to minimize adverse impacts on wetlands. The new

channel that is part of the HNC Lock Complex would be planned, designed, located and built using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow, and water quality, and to minimize adverse impacts on wetlands, to prevent bank slumping and erosion, saltwater intrusion, and to minimize the potential for inland movement of storm-generated surges. The HNC Lock and Flood gate would be built in the new channel and would be used as part of this project to reduce saltwater intrusion. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 3.10.** The guideline have been read in its entirety. Proposed project features have been planned, designed, and will be constructed using the best practical techniques to prevent bank slumping and erosion, saltwater intrusion, and to minimize the potential for inland movement of storm-generated surges. The new channel that is part of the HNC Lock Complex would be planned, designed, located and built using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow, and water quality, and to minimize adverse impacts on wetlands, to prevent bank slumping and erosion, saltwater intrusion, and to minimize the potential for inland movement of storm-generated surges. The HNC Lock and Flood gate would be built in the new channel and would be used as part of this project to reduce saltwater intrusion. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 3.11.** This guideline has been read in its entirety. There are no non-navigation canals, channels, and ditches which connect more saline areas with fresher areas that are part of the proposed alternatives. Therefore, this guideline is not applicable to the project and the proposed action is consistent with these guidelines.

**Responses to Guideline 3.12.** This guideline has been read in its entirety. The multiple use of existing canals, directional drilling and other practical techniques would be utilized to the maximum extent practicable to minimize the number and size of access canals, to minimize changes of natural systems and to minimize adverse impacts on natural areas and wildlife and fisheries habitat. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 3.13.** This guideline has been read in its entirety. This proposed action would not directly include the construction pipelines. There would be requirement for the relocation of some pipelines, power lines, etc., these actions would be constructed in accordance with parts 191, 192, and 195 of Title 49 of the Code of Federal Regulations, as amended, and in conformance with the Commissioner of Conservation's Pipeline Safety Rules and Regulations and those safety requirements established by La. R. S. 45:408, whichever would require higher standards. Therefore, this guideline is not applicable to the project at this time.

**Responses to Guideline 3.14 to 3.16.** The guidelines have been read in their entirety. Areas dredged for linear facilities would be backfilled or otherwise restored to the pre-existing conditions upon cessation of use for navigation purposes to the maximum extent practicable, the best practical techniques for site restoration and re-vegetation would be utilized for all linear facilities, confined and dead end canals would be avoided to the maximum extent practicable. Approved canals would be designed and constructed using the best practical techniques to avoid water stagnation and eutrophication. Therefore, the proposed action is consistent with these guidelines.

## **GUIDELINES FOR DREDGED MATERIAL DEPOSITION**

**Responses to Guideline 4.1.** This guideline has been read in its entirety. Adjacent borrow pits have been planned for the pre-load section only of some reaches. For the constructible features dredged material (spoil) would come from the bypass channel and HNC lock area and adjacent borrow pits flood side levee reaches F1 and F2 and the protected side of levee reach G1.

Dredged material would be deposited utilizing the best practical techniques to avoid disruption of water movement, flow, circulation, and quality in the creation of the levee system and marsh mitigation areas. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 4.2.** This guideline has been read in its entirety. The top 5 ft of borrow material from adjacent borrow pits is not suitable for levee building because of its organic makeup. Approximately 12,305,000 cubic yards of this organic material would be available for beneficial use to create marsh for the required compensable mitigation. The remaining dredge material from the adjacent pits would be used beneficially to create the levees. No new disposal areas are required. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 4.3.** This guideline has been read in its entirety. The levee construction would not be disposed of in a manner which could result in the impounding or draining of wetlands or the creation of development sites. No additional areas would be put under pump with this proposed action and Jurisdictional standing of the wetlands would not change. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 4.4.** This guideline has been read in its entirety. The levee alignment and width has been designed to reduce the deposition of dredge material on marsh and submersed vegetation to the maximum extent practicable. There are no direct depositions on known oyster or clam reefs. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 4.5 to 4.7.** The guidelines have been read in their entirety. No dredged material would be disposed of in such a manner as to create a hindrance to navigation or fishing, or hinder timber growth, disposal areas would be designed and constructed and maintained using the best practical techniques to retain the material at the site, reduce turbidity, and reduce shoreline erosion when appropriate, and no state-owned property would be alienated due to dredge material deposition activities without the consent of the Department of Natural Resources. Therefore, the proposed action is consistent with these guidelines.

## **GUIDELINES FOR SHORELINE MODIFICATION**

**Responses to Guideline 5.5 and 5.6.** The guidelines have been read in their entirety. Under the constructible features there would be shoreline modification as part of the HNC Lock complex. Non-structural methods of shoreline protection would be utilized to the maximum extent practicable, shoreline modification structures would be designed and built using best practical techniques to minimize adverse environmental impacts, would be lighted or marked in accordance with U.S. Coast Guard regulations, not interfere with navigation, and should foster fishing, other recreational opportunities, and public access, and would be built using best practical materials and techniques to avoid the introduction of pollutants and toxic substances into coastal waters. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 5.5 and 5.6.** The guidelines have been read in their entirety. There are no piers and docks and other harbor structures or Marinas being built as part of the proposed action. Therefore, these guidelines are not applicable to the project.

**Responses to Guideline 5.7.** This guideline has been read in its entirety. Neglected or abandoned shoreline modification structures, piers, docks, mooring and other harbor structures would be removed at the owner's expense, when appropriate. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 5.8.** This guideline has been read in its entirety. Shoreline stabilization structures are being built for the purpose of creating fill areas as part of the HNC

Lock complex a public works project covered under Guideline 6.2 of the Guideline for Surface Alterations below. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 5.9.** This guideline has been read in its entirety. There are no jetties, groins, breakwaters, and similar structures being built as part of the proposed action. Therefore, this guideline is not applicable to the project.

## **GUIDELINES FOR SURFACE ALTERATIONS**

**Responses to Guideline 6.1.** This guideline has been read in its entirety. The proposed action would not add any new industrial, commercial, urban, residential, and recreational uses. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 6.2.** This guideline has been read in its entirety. The proposed levee systems protects areas suitable for development pursuant to Guideline 6.1, are consistent with the other guideline and are consistent with all relevant adopted state, local and regional plans.

**Responses to Guideline 6.3.** BLANK (Deleted)

**Responses to Guideline 6.4.** This guideline has been read in its entirety. The levee alignment and width has been designed to reduce the deposition of dredge material in wetlands. Dredged material would be deposited utilizing the best practical techniques to minimize present and future property damage and adverse environmental impacts. Compensatory mitigation for the value of the wetlands is part of the proposed action. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 6.5.** This guideline has been read in its entirety. This proposed action would not include Coastal water dependent uses. Therefore, this guideline is not applicable to the project.

**Responses to Guideline 6.6 and 6.7.** The guidelines have been read in its entirety. Areas modified by surface alteration activities (temporary access roads, staging area, etc.) would to the maximum extent practicable, be re-vegetated, refilled, cleaned, and restored to their predevelopment condition upon termination of the use as part of the proposed action. Site clearing would to the maximum extent practicable be limited to those areas immediately required for physical development as part of the proposed action. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 6.8.** This guideline has been read in its entirety. Surface alterations would, to the maximum extent practicable, be located away from critical wildlife areas and vegetation areas. Coordination has occurred and would continue with US Fish and Wildlife service and Louisiana Department of Fish and Wildlife concerning construction in the Mandalay National Wildlife Refuge and Pointe Aux Chenes Wildlife Management Area. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 6.9.** This guideline has been read in its entirety. There are no planned surface alterations which have high adverse impacts on natural functions on barrier islands and beaches, isolated cheniers, isolated natural ridges or levees, or in wildlife and aquatic species breeding or spawning areas, or in important migratory routes. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 6.10.** This guideline has been read in its entirety. The proposed action does not create low dissolved oxygen conditions in the water or traps for heavy metals. Therefore, this guideline is not applicable to the project.

**Responses to Guideline 6.11** This guideline has been read in its entirety. The surface mining that is part of the proposed action would be carried out utilizing the best practical techniques to minimize adverse environmental impacts. Offsite borrow locations would be located in not wetland areas and would be covered in future modification request for the programmatic features. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 6.12.** This guideline has been read in its entirety. The proposed action would not create underwater obstructions. Therefore, this guideline is not applicable to the project.

**Responses to Guideline 6.12.** This guideline has been read in its entirety. Surface alteration sites that are part of the proposed action would be designed, constructed, and operated using the best practical techniques to prevent the release of pollutants or toxic substances into the environment and minimize other adverse impacts. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 6.12.** This guideline has been read in its entirety. The proposed action would use material that is free of contaminants and compatible with the environmental setting as fill. Therefore, the proposed action is consistent with this guideline.

#### **GUIDELINES FOR HYDROLOGIC AND SEDIMENT TRANSPORT MODIFICATIONS**

**Responses to Guideline 7.1 to 7.4.** The guidelines have been read in its entirety. There are no planned controlled diversion of sediment-laden waters, sediment deposition system, siphons, and controlled conduits in the proposed alternative. Therefore, these guidelines are not applicable to the project.

**Responses to Guideline 7.5 to 7.7.** The guidelines have been read in their entirety. The levee system has been designed with 21 environmental water control structures and 21 navigable structures so that reduction or blockage of water flow would be avoid. The constructible features (HNC Lock and Floodgate and BGC Floodgate) and the associated water management plans would result in an overall benefit to the productivity of the area due to the use of the lock to limit saltwater intrusion based on system wide and structure specific hydraulics models. All of the water control structures were modeled as part of the system wide model. As the programmatic features are designed future assessments of their merits would be done. Weirs and similar water control structures would be designed and built using the best practical techniques to prevent "cut arounds," permit tidal exchange in tidal areas, and minimize obstruction of the migration of aquatic organisms. Therefore, the proposed action is consistent with these guidelines.

**Responses to Guideline 7.8.** This guideline has been read in its entirety. The levee system has been designed with 21 environmental water control structures and 21 navigable structures to limit impoundments which prevent normal tidal exchange and/or the migration of aquatic organisms would not be constructed in brackish and saline areas to the maximum extent practicable. Therefore, the proposed action is consistent with this guideline.

**Responses to Guideline 7.8.** This guideline has been read in its entirety. There is no withdrawal of surface and ground water as part of the proposed alternative. Therefore, this guideline is not applicable to the project.

### **GUIDELINES FOR DISPOSAL OF WASTES**

**Responses to Guideline 8.1 to 8.9.** The guidelines have been read in their entirety. The proposed action would not involve the disposal of wastes and, therefore, these guidelines are not applicable.

### **GUIDELINES FOR USES THAT RESULT IN THE ALTERATION OF WATERS DRAINING INTO COASTAL WATERS**

**Responses to Guideline 9.1 to 9.3.** The guidelines have been read in their entirety. The proposed action would not involve the alteration of waters draining into coastal waters and, therefore, these guidelines are not applicable.

### **GUIDELINES FOR OIL, GAS, AND OTHER MINERAL ACTIVITIES**

**Responses to Guideline 10.1 to 10.19** The guidelines have been read in their entirety. The proposed action would not involve oil, gas, and other mineral activities and, therefore, these guidelines are not applicable.

### **OTHER STATE POLICIES INCORPORATED INTO THE PROGRAM**

Section 213.8A of Act 361 directs the Secretary of DOTD, in developing the LCRP, to include all applicable legal and management provisions that affect the coastal zone or are necessary to achieve the purposes of Act 361 or to implement the guidelines effectively. It states:

The Secretary shall develop the overall state coastal management program consisting of all applicable constitutional provisions, laws and regulations of this state which affect the coastal zone in accordance with the provisions of this Part and shall include within the program such other applicable constitutional or statutory provisions, or other regulatory or management programs or activities as may be necessary to achieve the purposes of this Part or necessary to implement the guidelines hereinafter set forth.

The constitutional provisions and other statutory provisions, regulations, and management and regulatory programs incorporated into the LCRP are identified and described in Appendix 1. A description of how these other authorities are integrated into the LCRP and coordinated during program implementation is presented in Chapter IV. Since all of these policies are incorporated into the LCRP, federal agencies must ensure that their proposed actions are consistent with these policies as well as the coastal use guidelines. (CZMA, Section 307)

### **CONSISTENCY DETERMINATION**

The proposed action is consistent with the guidelines for all uses, levees, linear facilities, dredged material deposition, shoreline modification, surface alterations, and hydrologic and sediment transport. Based on this evaluation, the U. S. Army Corps of Engineers, New Orleans District, has determined that the proposed is consistent, to the maximum extent practicable, with the State of Louisiana's Coastal Resources Program.

**From:** [Brian Marcks](#)  
**To:** [Dayan, Nathan S MVN](#)  
**Cc:** [Jeff Harris](#)  
**Subject:** C20130001 Mitigation for Morganza to Gulf RPEIS  
**Date:** Friday, January 18, 2013 2:20:20 PM

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Nathan,

I have some comments on mitigation from OCM staff that need to be addressed with this project. They have indicated to me that OCM will expect mitigation for project in accordance with the Louisiana Coastal Resources Program, which may be different than the requirements of NEPA, WRDA and other statutes. We recommend that your mitigation staff get in touch with Kelley Templet, our Mitigation Program Manager at 225-342-3124 or email her at [Kelley.Templet@LA.GOV](mailto:Kelley.Templet@LA.GOV). at the earliest practical time in order to avoid the need for last-minute changes.

One of the requirements for mitigation will be that compensatory mitigation be carried out concurrently with project construction impacts. We would also like to see an estimated time schedule of mitigation planning and construction for the project. Also, please provide a justification for the use of WVA's for habitat analysis, rather than the use of the Modified Charleston Method that the Regulatory Branch of the Corps currently uses.

Finally, I will have some other comments/questions later on the Guideline responses that I hope to get to you early next week.

Brian Marcks

Consistency Analyst

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**From:** [Brian Marcks](#)  
**To:** [Dayan, Nathan S MVN](#)  
**Cc:** [Jeff Harris](#)  
**Subject:** C20130001 RPEIS Morganza to the Gulf  
**Date:** Thursday, January 24, 2013 8:39:58 AM

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Nathan,

Below are some problems we have with the Corps responses to some of our Coastal Use Guidelines in the RPEIS:

Guideline 2.6. In the third sentence the word designed should probably be designs. Also note two periods at the end of that sentence. In the fifth sentence there seems to be a couple of words missing after the word minimize. Perhaps the missing words should be impacts to.

Guidelines for linear facilities

Guideline 3.1 to 3.16. The second sentence is not how we interpret construction of linear facilities. We consider the entire levee, floodgates, parallel borrow pits, etc., to be a linear facility and all of the Guidelines under this section from 3.1 to 3.16 must be treated and evaluated as a linear facility that will have certain hydrological or boundary effects on the ecosystem or land uses.

Please let us know if you have any problems with these comments and/or make changes as necessary. We will likely have addition comments for you as we get responses back from the various commenting agencies.

Brian Marcks

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## Dayan, Nathan S MVN

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**From:** Brian Marcks [Brian.Marcks@LA.GOV]  
**Sent:** Tuesday, February 19, 2013 11:05 AM  
**To:** Dayan, Nathan S MVN  
**Cc:** Jeff Harris  
**Subject:** FW: Emailing: C20130001  
**Attachments:** C20130001.pdf; C20130001.doc

Nathan,

Attached are the LDWF comments on the RPEIS for the Morganza to the Gulf project that will need to be resolved before we can issue a Consistency decision and concurrence letter on the project. Since our 60 day review period for this project ends March 1, I anticipate we will shortly send you a 15-day time extension letter to March 15, which we are allowed to do by law. If there are issues that cannot be resolved within that period, we will need to mutually agree to say a further 30 time extension or whatever, to finish the resolution of environmental issues in order for us to render a consistency decision. If that is not possible, you may have to withdraw the project and resubmit it at a later time when these issues are resolved. Thanks for your consideration in this matter.

Brian Marcks

-----Original Message-----

**From:** Butler, Dave [<mailto:dbutler@wlf.la.gov>]  
**Sent:** Tuesday, February 19, 2013 10:37 AM  
**To:** Brian Marcks  
**Cc:** [gutierrez.raul@epa.gov](mailto:gutierrez.raul@epa.gov); 'patrick.williams@noaa.gov'; 'Patti Holland'  
**Subject:** Emailing: C20130001

Brian,

Here are LDWF comments regarding C20130001.

Thanks,

Dave Butler  
Permits Coordinator  
Louisiana Department of Wildlife and Fisheries P.O. Box 98000 Baton Rouge, LA 70898-9000  
Office: 225-763-3595  
Fax: 225-765-2625

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BOBBY JINDAL  
GOVERNOR

State of Louisiana  
DEPARTMENT OF WILDLIFE & FISHERIES

ROBERT J. BARHAM  
SECRETARY

February 15, 2013

Keith Lovell, Administrator  
Louisiana Department of Natural Resources  
Office of Coastal Management  
P.O. Box 44487  
Baton Rouge, LA 70804-4487

RE: *Application Number: C20130001 (RPEIS Mississippi River and Tributaries–Morganza to the Gulf of Mexico)*  
*Applicant: U.S. Army Corps of Engineers-New Orleans District*  
*Notice Date: January 4, 2013*

Dear Mr. Lovell:

We have reviewed the Revised Programmatic Environmental Impact Statement (RPEIS) for the U.S. Army Corps of Engineers (USACE) and the Terrebonne Levee District (TLD) Morganza to the Gulf Levee Project. The Department of Wildlife and Fisheries (LDWF), as a member of the Habitat Evaluation Team (HET), has worked closely with other regulatory and resource agencies to provide comments and recommendations throughout the process. We fully understand the need for hurricane protection measures to provide protection to coastal communities. The livelihoods of many Louisiana residents depend on productive estuaries, and our main concern is that while these resident's homes and infrastructure may be protected, their livelihoods may suffer if the proposed levee negatively impacts fisheries and wetland habitat.

Our concerns with the RPEIS fall into 3 categories: 1) Design and Operation Issues, 2) Inadequate Fisheries Impact Analysis, and 3) Inadequate Mitigation and Cumulative Impacts Analysis. In general, given the scale of this project and the changes in hydrology that would result, LDWF feels that the RPEIS does not adequately address potentially substantial long-term, indirect impacts to fisheries and wetland habitat.

1) Design and Operation Issues:

Recently, information being presented to the HET has been both insufficient and inconsistent, particularly flood gate and environmental structure design and operation plans. Information has been provided to the HET in a confusing piecemeal fashion with unrealistic review and comment deadlines. The cumulative impacts of structural protection to the productivity and sustainability of Louisiana's estuarine areas are difficult to determine. Exacerbating this difficulty is the fact that predictive modeling efforts have been hindered by changing structure design and uncertain operation criteria. Of particular concern is the high probability that flood gates and environmental structures will be closed more frequently and for longer periods in the future for salinity control purposes, which strongly suggests increasing fisheries and wetland impacts with time. We suggest that these important design and operation uncertainties be resolved immediately so that reliable predictions of impacts can be determined.

## 2) Inadequate Fisheries Impact Analysis:

We feel that potential impacts to fisheries production are not adequately quantified using Wetland Value Assessment (WVA) methodology given the size of the project area. Any attempt to assess potential impacts to fisheries production needs to incorporate the types and number of flood gates and environmental control structures that will be present IN the levee design, how these structures will be operated, how these structures could affect fish access to and from critical habitats at all life stages, and how these structures could affect the recruitment of commercially and recreationally important aquatic species. While several environmental control structures have been implemented into the project to improve hydrologic and fisheries connectivity, it is unclear how aquatic organisms respond to/use these structures or if natural organism movement through these structures occurs. It should not be assumed that the mere presence of these structures is comparable to natural conditions and removes the possibility of negative impacts to fisheries.

Structure operation fisheries effects should include structure closure effects (timing and duration of closure and how this could change with time), open structure effects (changes in flow, concentrating/limiting migration corridors, and reduction in access), and how this could alter local population dynamics of aquatic species at all life stages. Species of concern include white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), blue crab (*Callinectes sapidus*), eastern oyster (*Crassostrea virginica*), gulf menhaden (*Brevoortia patronus*), redfish (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), black drum (*Pogonias chromis*), striped mullet (*Mugil cephalus*), bay anchovy (*Anchoa mitchilli*), and Atlantic croaker (*Micropogonias undulatus*). The RPEIS needs to address if and how these species will be affected, if possible using other substantial levee projects as examples (i.e. eastern Calcasieu Lake).

The RPEIS should also include a long-term fisheries monitoring plan to determine if substantial fisheries impacts are occurring from levee construction and once completed, floodgate and environmental structure operation.

## 3) Inadequate Mitigation and Cumulative Impacts Analysis:

A detailed wetland and fisheries mitigation plan outlying specific projects should be included in the document. In order to be considered adequate, this plan must consider short and long-term direct and indirect impacts to wetland and fisheries production, which at this time is not present in the RPEIS. Any mitigation plan should include long-term monitoring and be adaptive in nature to account for unforeseen future impacts.

Throughout the document, it is suggested that other local, state, and federal wetland restoration projects in the area will mitigate the impacts of levee construction and operation, and that the levee itself is a form of wetland and fisheries restoration. It would be more appropriate to discuss potential restoration projects, their interaction with the levee, and ecosystem response in a separate section; and to clarify that these projects are not part of the levee mitigation plan. We feel that the environmental benefits of levee construction are exaggerated throughout the document. The only clear benefit that a levee would have on wetland habitat would be preventing wetland loss through erosion and scour during storm surge events. However, these sporadic storm event benefits might be contradicted by long-term wetland degradation resulting from levee hydrologic interference. Similarly, the sporadic protection of fish habitats could be outweighed by long-term alteration and degradation of fish habitat and access to and from critical habitats. Additional fisheries production impact analysis (with and without separate restoration projects) for each species of concern listed above should also be conducted. Provided that restoration projects include freshwater introductions, how these projects would influence structure operation (closure time and during) should be considered along with the predicted impacts on the species listed above.

Given that other state/federal coastal restoration projects are suggested as mitigation for levee construction in the RPEIS, we believe these restoration projects deserve more discussion in the "No Action Alternative" scenarios. These separate local, state, and federal restoration projects are better suited to address the described coastal land loss issues than levee construction, where the primary goal is infrastructure protection. It should also be discussed in the 1% and 3% AEP Alternative sections if and how the presence of a levy could negatively impact the effectiveness of other restoration projects inside and outside of the levee (un-natural hydrologic/marsh flooding regimes, formation of stagnant/low circulation areas, high flow areas around structures increasing erosion rates, etc).

Finally, cumulative impact benefits resulting from levee construction need supporting evidence, especially when most benefit appears to be provided by other restoration programs and negative impacts from the presence of a levee are more likely. It is stated in the RPEIS that hydrologic/fisheries impacts will be minimal because salinity modeling shows little change. Salinity models do not take into account major hydrologic and ecological characteristics such as marsh flooding frequency, increasing flow velocities, and aquatic organism access reductions that can have substantial impacts on wetland and fisheries productivity and would differ inside and outside of the proposed levee. We find it very troubling that cumulative impact sections in the main RPEIS document list only benefits and minimal impacts, where in Appendix C it is indicated that more frequent and longer duration structure closures in the future would lead to more substantial impacts.

Comments on specific portions of the RPEIS are as follows:

**Fisheries Habitat:**

*Section 6.5.2*

This part of the document needs clarification on reductions in salinities and it's affects on both inside and outside the system. One might expect accelerated salinities in some oyster areas and outside the system and/or depending on operations of structures and environmental conditions.

This section discusses inclusion of environmental structures, it should be mentioned that the structures provide hydrological benefits; however, there is a lack of research on fish passage through various structures. Furthermore, increased feeding opportunities at structures on bait fish could augment the natural process.

There are no detailed descriptions of closure impacts due to timing and duration especially with regards to increased sea level rise.

It is difficult to link the statement "improvement in marsh habitats and increased SAV would benefit fisheries resources", when access may be reduced.

*Section 6.14.5*

Discussion, in this section or another, may be warranted regarding non-structural alternatives, including but not limited, elevating structures and roads.

*Section 6.16.2*

There are concerns that the boating access issue is not adequately addressed with respect to frequency of closures. Also, the document did not seem to address recreational and commercial boats being trapped outside the system during storm events, subsequent closures and associated economic impacts.

**Louisiana Natural Heritage Program:**

Our Natural Heritage Program (LNHP) records indicate that the proposed project may potentially impact a Bald Eagle (*Haliaeetus leucocephalus*) nesting site. This species is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (16 U.S.C. 703-712) and is protected by the state of Louisiana. This proposed project is less than 1,000 ft. away from the bald eagle nest of concern. All bald eagle nests (active, inactive or seemingly abandoned) should be protected, and no large trees should be removed. Please refer to the Bald Eagle Management Guidelines for more information on avoiding impacts to bald eagles: <http://www.fws.gov/southeast/es/baldeagle/>. If additional information is needed contact the LNHP zoologist at 337-491-2576 Ext 3019.

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

Nesting colonies can move from year to year and no current information is available on the status of these colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

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

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

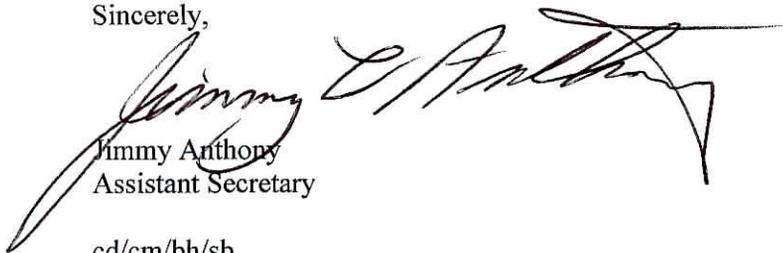
To minimize disturbance to colonial nesting birds, the following restrictions on activity should be observed:

- For colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, roseate spoonbills, anhingas, and/or cormorants), all project activity occurring within 300 meters of an active nesting colony should be restricted to the non-nesting period (i.e., September 1 through February 15).
- For colonies containing nesting gulls, terns, and/or black skimmers, all project activity occurring within 400 meters (700 meters for brown pelicans) of an active nesting colony should be restricted to the non-nesting period (i.e., September 16 through April 1).

February 15, 2013

The Louisiana Department of Wildlife and Fisheries submits these recommendations to the U.S. Army Corps of Engineers in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 or Barry Hebert at 225-765-0233 should you need further assistance.

Sincerely,



Jimmy Anthony  
Assistant Secretary

cd/cm/bh/sb

c: EPA Marine & Wetlands Section  
USFWS Ecological Services  
Patrick Williams, NOAA-NMFS

**BOBBY JINDAL**  
GOVERNOR



**STEPHEN CHUSTZ**  
INTERIM SECRETARY

**State of Louisiana**  
**DEPARTMENT OF NATURAL RESOURCES**  
**OFFICE OF COASTAL MANAGEMENT**

March 28, 2013

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

RE: **C20130001**, Coastal Zone Consistency  
**New Orleans District, Corps of Engineers**  
Direct Federal Action  
Draft Revised Programmatic Environmental Impact Statement (RPEIS) for the  
Mississippi River & Tributaries-Morganza to the Gulf, **Terrebonne and Lafourche**  
**Parishes, Louisiana**

Dear Ms. Exnicios:

The above referenced project has been reviewed for consistency with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in this application, is consistent with the LCRP.

If you have any questions concerning this determination please contact Brian Marcks of the Consistency Section at (225) 342-7939 or 1-800-267-4019.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Lovell".

Keith Lovell  
Acting Administrator  
Interagency Affairs/Field Services Division

KOL/JDH/bgm

cc: Nathan Dayan, COE-NOD  
James McMenis, CPRA  
David Butler, LDWF  
Ronny Paille, USFWS  
Patrick Williams, NMFS  
Jon Ettinger, USEPA  
Reggie Dupre, TLCD  
Kirk Kilgen, OCM FC  
Rod Pierce, OCM FC  
Archie Chaisson, Lafourche Parish  
James Miller, Terrebonne Parish

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487  
617 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802  
(225) 342-7591 • Fax (225) 342-9439 • <http://www.dnr.louisiana.gov>

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# **Appendix E**

## **PUBLIC COMMENTS**

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
NRCS-A1	Permits	No impacts to unique/prime farmland.	Comment noted.	RPEIS, Section 7
DEQ1	Permits	No objections.	Comment noted	NA
DEQ2	Permits	Obtain necessary approvals and environmental permits (e.g. LPDES).	All required LPDES permits will be obtained at the time of construction as needed.	NA
DEQ3	Permits	If work is located in wetlands, contact the Corps for permitting.	A 404(b)(1) evaluation was prepared for the constructible features see Appendix C of the RPEIS. When the NEPA documents for the programmatic features are prepared a 404(b)(1) evaluation will be prepared if needed.	RPEIS, Section 7; Appendix C
DEQ4	Air	Terrebonne and Lafourche Parishes are classified as attainment with the National Ambient Air Quality Standards.	Comment noted.	RPEIS, Section 7
OCM1	Mitigate	Contact the Mitigation Program Manager.	Contact was made.	NA
OCM2	Mitigate	Compensatory mitigation should be carried out concurrently with project construction impacts. Requested an estimated time schedule of mitigation planning and construction for the project.	Compensatory mitigation would be concurrent with initial construction impacts. The current construction schedule assumes that most of the mitigation would occur between 2015 and 2024, which is when the initial levee lifts and structures would be constructed.	RPEIS, Section 6.19; Appendix K
OCM3	Mitigate	Provide a justification for doing WVAs rather than the Modified Charleston Method that the USACE Regulatory Branch uses.	The modified Charleston method is not a certified model. It does not provide for a 50 year project life in that it provides for impacts now but not a comparison of with and without project in the future.	NA
OCM4	Editorial/Typos	Typos in the RPEIS related to Guideline 2.6.	Changes were made to the consistency determination included in Appendix D of the RPEIS.	RPEIS Appendix D
OCM5	Coastal Use Guidelines	Guideline 3.1 to 3.16 – RPEIS is inconsistent with how LADNR/OC interprets linear facilities.	Response to Guidelines 3.1 to 3.16 have been revised and addressed consistent with LADNR/OC interpretation of linear facilities.	RPEIS Appendix D
NRCS-L1	Direct & Constructibility	Reaches A, G1-G3, H1 & J2 are of concern because of direct impact to wetlands and constructability. NRCS encourages every effort to avoid and minimize impact to sensitive floating marsh in the footprint of each reach.	Attempts have been and will continue to be made to avoid and minimize impacts to all wetland types including floating marsh. During detailed design done during the PED phase an updated NEPA document will be produce that will demonstrate the avoidance and minimization and impacts.	RPEIS, Section 3.5.2; 6.19; Appendix K
NRCS-L2	Direct & Constructibility	Reaches A, G1-G3, and H1 have constructability and maintenance concerns. NRCS encourages alignment that minimizes potential for failure and minimizes/avoids destruction of sensitive marsh areas.	Attempts have been and will continue to be made to avoid and minimize impacts to all wetland types. During detailed design done during PED we will evaluate the construction alignment to minimize the impact to marsh areas and to minimize failure potential. We will employ sound design and construction principles based on the soil conditions in the area. Additional geotechnical field data will be collected to better classify these soil conditions.	RPEIS, Section 3.5.2; 6.19; Appendix K
NRCS-L3	Mitigate	Expect mitigation for areas within Pointe aux Chenes WMA to involve LDWF to offset losses for unavoidable losses.	Coordination with LDWF personnel has occurred and will continue during the design (PED) and construction phases of the portion of the project located in the Pointe aux Chenes WMA.	RPEIS, Section 3.5.2; 6.19; Appendix K
NRCS-L4	GIWW/size change	Encourage consideration of envir consequences of operating flood control structure in GIWW: request eval of dimensions so as to not impede beneficial conveyance to areas of need during normal periods of flow.	The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.  Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.	RPEIS, Section 3.5.1
NRCS-L5	Eco Proj	Support dual purpose of lock, and encourage dev of operations plan for optimal envir benefit w/o compromising other purposes.	Concur, the CEMVN supports the multipurpose use of the HNC Lock Complex to include environment enhancements as planned under the LCA program. The project was designed to not interfere with existing and proposed ecosystem restoration projects. Use of the GIWW to divert freshwater is not a component of the Morganza project, but is a component of the LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project. The LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project is authorized by Congress and therefore should be considered as part of the future without and future with project conditions. The reason that the State requested that the LCA projects be put on hold was not based on the Morganza to the Gulf project. There was no determination by the State that the project would interfere with the LCA projects. In addition, a project similar to the LCA project is included in the State 2012 Master Plan. Furthermore, funding from the recent Deepwater Horizon oil spill fines will be released to impacted states, including Louisiana, for ecosystem restoration efforts. Hence, the authorized LCA project is a reasonably foreseeable project and should be addressed in both the future without and future with project conditons.	NA

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
NRCS-L6	Indirect	Concern for areas of sensitive marsh and swamp (impedance of hydrology and detrimental wetlands effects) both inside and outside project that will be impacted and anticipate thorough justification when details emerge.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Section 3.5.1; Appendix F
NRCS-L7	Indirect/gate closures	23 envr water control structures should also allow for localized drainage; encourage thorough hydro modeling of areas that potentially could be impounded to min unanticipated hydro condition that adversely affect marshes.	During the PED phase Hydro modeling will occur to look for areas of isolated drainage and modifications to the designs will occur. This will be document in supplemental NEPA Documents.	RPEIS, Summary; Section 3.5.1; Appendix F
LPCI	Realign/Gheens	Lafourche Parish Council adopted a resolution requesting that the USACE include the Gheens community to Highway 90 in the Morganza project.	<p>Morganza to the Gulf of Mexico, Louisiana was authorized for construction in the Water Resources Development Act (WRDA) of 2007 (PL-110-114), in accordance with Chief of Engineer's Reports dated August 2002 and July 2003 and a Feasibility Report dated 2002. The project area designated in these reports and authorized for construction lies south of Bayou Lafourche.</p> <p>The 2013 Post Authorization Change (PAC) Report incorporates post-Katrina Hurricane and Storm Damage Risk Reduction (HSDRRS) design criteria into the project designed in the 2002 Feasibility Report and authorized in the 2007 WRDA. The new HSDRRS criteria includes a new method for modeling storm surge inundation; as a result of the new modeling, the 2013 PAC Report predicts deeper and more widespread flooding in a 100-year event than was predicted in the 2002 Feasibility Report. For example, the 2002 Report did not predict that storm surge from a 100-year event would overtop the Bayou Lafourche ridge from the north and cause flooding in the Morganza project area south of Bayou Lafourche. The new modeling shows a statistical probability that a 100-year event could overtop the Bayou Lafourche ridge; in order to maintain the integrity of a 100-year Level of Risk Reduction for the authorized project area, the levee alignment has been extended. We do not have the authority to expand the project area under the current Morganza to the Gulf project authorization.</p> <p>Three options for pursuing a Federal flood risk reduction system for Gheens include:</p> <p>(a) For projects with construction costs of \$7M or less, a flood risk reduction system could be investigated under the Corps CAP (Continuing Authorities Program) project authority.</p> <p>(b) Congress could direct the Corps to incorporate Gheens into the Morganza to the Gulf project area.</p> <p>(c) The Corps and the Non-Federal sponsor could agree to investigate a Locally Preferred Plan (LPP) in a future Morganza to the Gulf Post Authorization Change (PAC) report that would extend the levee alignment to include Gheens. In order for an LPP to be recommended, the LPP must be economically justified (BCR greater than 1.0) and any difference (increase) in construction cost must be funded 100% by the Non-Federal sponsor.</p>	
USFWS1	Indirect/gate closures	...changes in the design and operation of some project features (constructable and programmatic features) were made late in the planning and evaluation process without the knowledge of the HET. Because the HET was not informed of those changes, the HET has not assessed environmental effects of those changes. Consequently, the project impacts disclosed in the RPEIS are incomplete.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
USFWS2	Indirect/gate closures	The salinity closure criterion for the Houma Navigation Canal (HNC) Lock was very recently revised but is still not yet fully developed. As a result, indirect impacts of this constructable feature cannot be determined until the closure criterion is determined.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS3	Indirect/gate closures	Additionally, there is little data available to assess the effects of the proposed salinity criterion for reopening the HNC Lock. Consequently, one cannot determine the duration of HNC Lock closures. It appears that project planning for this feature has not yet progressed such that it may be considered ready for a feasibility level analysis.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
USFWS4	Indirect/gate closures	...clarify the operation plan and make all references to structure operation and impacts consistent with the clarified operation plan.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
USFWS5	Indirect/gate closures	If those floodgates will be closed for non-storm high stage events as the RPEIS indicates, then there will be substantial indirect impacts. Consequently, the RPEIS conclusion that there would be minimal indirect impacts is inaccurate.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET).</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS6	GIWW & Indirect/gate closures	According to the PAC Report and RPEIS, the design of the west Gulf Intracoastal Waterway (GIWW) floodgate has been changed. Because hydrologic modeling was previously conducted using a larger structure design, that modeling to determine system-wide indirect impacts has potentially been invalidated due to this recent design change. To properly satisfy the disclosure requirements of NEPA, the indirect impact assessments need to be redone for some constructable and programmatic project features in the final RPEIS.	<p>The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.</p> <p>Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.</p>	RPEIS, Summary; Section 3.5.1; 3.5.2; 6.18; 6.19; Appendix F and K
			<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET).</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; 3.5.2; 6.18; 6.19; Appendix F and K
USFWS7	Mitigate/Costs	Because substantial indirect impacts may result from the operation plan for the constructable features, mitigation costs for those features could increase considerably. Costs for programmatic features are also subject to substantial increases due to uncertainties such as availability of suitable borrow and mitigation for indirect impacts. These uncertainties and potential cost increases should be reflected in project cost estimates.	Development of the updated \$10.3 billion cost estimate for the 1% AEP plan included a cost and schedule risk analysis. As part of the risk analysis, high risk cost items were identified including structural and geotechnical uncertainty, steel cost, fuel cost, unidentified borrow pit for hauled in material, and construction modifications. Based on the risk analysis, a contingency of 25% was applied to borrow real estate costs, 26% was applied to the mitigation costs, and contingencies of up to 35% were applied to other project feature costs, resulting in a total project contingency of almost \$2.3 billion. Since mitigation costs are generally only 1% to 5% of the total project cost and the total project cost includes substantial contingencies, mitigation uncertainties and potential mitigation cost increases are already reflected in the total project cost estimates.	RPEIS, Section 6.19; Appendix K
USFWS8	GIWW/size change	Because the west GIWW floodgate is the upstream-most structure affecting Atchafalaya River freshwater flow entering the protection system via the GIWW, the now smaller cross-section of this structure potentially invalidates the model-determined hydrologic and salinity impacts of the HNC Lock, the Bayou Grand Caillou floodgate, and the entire Morganza system. Because of this change, it is recommended that the Corps must now assess whether the previous hydrologic modeling is still valid. Additionally, this design change raises the potential that Atchafalaya River freshwater inputs may be reduced in areas currently receiving those seasonal freshwater flows, and this smaller floodgate is more likely to cause elevated stages immediately west of the floodgate – both conditions that could result in marsh loss. It is recommended that these potential impacts will need to be assessed for a feasibility level analysis.	<p>The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.</p> <p>Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.</p>	NA
USFWS9	Editorial/Clarification	Summary-PAC Report, page x, paragraph 4. The sentence identifying the structures on federally-maintained waterways is not written clearly and can be interpreted such that both the west and east GIWW floodgates will include two 125-ft sector gates. The sentence should be re-written to clarify that each of those floodgates will include only one sector gate.	Sentence was revised to clarify that each of the floodgates will include only one sector gate.	PAC page x

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USFWS10	Editorial/Clarification	Summary-PAC Report, page x, paragraph 5. The statement that the project will result in "improved distribution of freshwater inflows using environmental water control structures for tidal exchange" is potentially misleading. This potential environmental benefit is largely unrealized as modeling demonstrates that future-with project salinities would change little compared to future-without project salinities. However, the two Falgout Canal environmental water control structures are the exception. Those structures will introduce freshwater to areas not currently receiving direct freshwater inputs. Because those structures would be operated to provide one-way flow, they technically would not provide two-way "tidal exchange." Furthermore, efforts to incorporate freshwater distribution improvements (Congressional authorized environmental benefits) have not been included within the Morganza project goals but instead are part of the Louisiana Coastal Area (LCA) Convey Atchafalaya River Water to Northern Terrebonne project, and the LCA HNC Lock Multi-purpose Operation project. We, therefore, recommend that this sentence be deleted.	Concur. Sentence deleted as recommended.	PAC page x
USFWS11	Mitigate	Summary-PAC Report, page x, last paragraph. The explanation of mitigation requirements should be amended to explain that the listed requirements cover only the compensation for direct construction impacts and that mitigation for indirect impacts has yet to be determined. This comment also applies to the description of direct impacts in the PAC Report, Section 7.1.	Concur. Additional information has been added regarding mitigation for indirect impacts.	RPEIS, Section 6.19; Appendix K
USFWS12	Direct & Mitigate	The calculated direct construction impacts are based upon 2008 National Wetland Inventory (NWI) habitat acreages. However, historic loss rates were applied to the NWI marsh acreages to estimate impacted marsh acreage at the construction year for each levee reach. If mitigation for construction of some levee reaches has already been completed, then the listed mitigation requirements provided must be reduced by the value of completed mitigation to obtain an estimate of remaining compensation needed.	Concur. For those levee reaches already constructed and for which mitigation has already been completed, the listed mitigation requirements will be revised to account for the value of completed mitigation so that an estimate of compensatory mitigation remaining will be more accurately determined. This will be addressed in the supplemental NEPA document covering that action. Note that this issue is not applicable to the constructible features identified in the RPEIS and thus does not affect the proposed mitigation for habitat impacts generated by these constructible features.	RPEIS Section 6.19; Appendix K
USFWS13	Refuge impacts & Permits	PAC Report, Section 5.1.1, page 41, paragraph 1. With the exception of alignment A1, all of the remaining Reach A levee alignment alternatives would impact Mandalay National Wildlife Refuge (NWR). Well in advance of surveying or construction work on the Refuge, a Special Use Permit must be obtained from the Refuge Manager (985-853-1078). All efforts should be made to avoid impacting NWR lands. All impacts to NWR lands must be mitigated on the Refuge. If levees are constructed on the Refuge, the FWS will determine if the impacted acreage will need to be replaced with an equal acreage of habitat.	All efforts to avoid impacting Mandalay NWR lands will be considered. A special use permit will be obtained for any surveying or construction on NWR lands. If levees or other project features must be constructed on the Mandalay NWR, the USACE will coordinate with the USFWS to determine the unavoidable habitat impacts, the habitat functions/values that would be lost due to these impacts, and appropriate mitigation to ensure there is no net loss of habitat functions/values. The USACE will strive to compensate for unavoidable impacts via mitigation within the Mandalay NWR boundaries and/or its acquisition boundaries. If this is not practicable, the USACE will strive to provide the necessary mitigation in a different NWR within the same NWR complex.	NA
USFWS14	Editorial/Inconsistency	PAC Report, Section 5.1.1, page 41, last paragraph. The first sentence states that each Reach A levee alignment alternative will include two 125-foot floodgates. This appears to be a reference to the design of the west GIWW floodgate. Elsewhere in the PAC Report and RPEIS the west GIWW floodgate is to include only one 125-foot floodgate. All descriptions of this floodgate should be made consistent.	Concur. All descriptions of west GIWW floodgate have been made consistent throughout the documents.	PAC Section 5.1.1
USFWS15	Editorial/Clarification	PAC Report, Section 6.4.2, page 61, paragraph 3. This paragraph mentions the salinity effects associated with the reduction in west GIWW floodgate cross-section. The paragraph also suggests that the eastern GIWW floodgate cross-section has also been reduced, yet this change was not listed as one of the project changes in the Summary-PAC Report. If the east GIWW floodgate design has been changed, this change should be described in the Executive Summary and this paragraph should be clarified.	Concur. This sentence has been clarified and also described in the Executive Summary.	PAC Section 6.4.2
USFWS16	Indirect/gate closures	PAC Report, Section 7.4.1, page 79, paragraph 1. The described operation of the HNC lock and the HNC floodgate for salinity control does not give a specific salinity value or other criteria for closing those structures. Hence, closure frequency and duration cannot be determined, nor can indirect impacts of HNC closure. Specific closure criteria will need to be developed before impacts can be determined for this feature.	Concur. Specific closure criteria has been developed in order to determine potential impacts of this feature. A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	PAC Section 7.4.1; RPEIS, Summary; Section 3.5.1; Appendix F

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
USFWS17	Indirect/gate closures	PAC Report, Section 7.4.1, page 79. The third criteria for re-opening the HNC Complex is a salinity below 13 parts per thousand (ppt) at the Bayou Grand Caillou at Cocodrie gage site. This gage is actually located on Bayou Petit Caillou, and not on Bayou Grand Caillou. Salinity data has not been recently collected at this site, so it is impossible to determine if this criterion is appropriate following tropical storm passage. Salinity data from Coastal Reference Monitoring System (CRMS) Station 434, located near the HNC lock, reveals that for certain storms, salinities may remain high for several days after the storm has passed, depending on rainfall, storm path, and other factors. For example, after Tropical Storm Debby in June 2012, salinity remained above 12 ppt for 5 days after storm passage. Because recent salinity data is not available from the proposed gage site, this gage cannot provide a basis for re-opening the Lock and closure duration therefore cannot be determined.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS18	Indirect/gate closures	The fourth criterion listed for re-opening the HNC Complex is a specific chloride threshold. This criterion should state where those chloride values are to be measured.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS19	Indirect/gate closures	In the concluding paragraph, it is stated that the operation plan is "preliminary and will be refined in the future once the detailed structure design is completed." The lack of near final structure designs and operation plans indicates that this feature is not yet at a feasibility-design stage and it is not yet possible to conduct a feasibility-level impact assessment. We recommend that the operation plan for this feature be fully developed and associated impacts assessed and disclosed.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F

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USFWS20	Indirect/gate closures	PAC Report, Section 7.4.5, page 81, paragraph 1. The last sentence of this paragraph suggests that the +2.5 ft NAVD88 stage criterion may be adjusted in the future. Because no specific adjustments were proposed, and because the text indicates that adjustments "may need to be" made, the impacts of these unknown adjustments cannot be assessed. Consequently, feasibility-level assessment of closure impacts will have to be based on the fixed criterion of +2.5 ft. If the Corps intends to vary the criterion, then a specific method for varying the criterion should be proposed so that the closure frequency and duration can be predicted and impacts assessed.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET).</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 6.18; 6.19; Appendix F and K
USFWS21	Mitigate	PAC Report, Section 7.7.2, page 83, paragraph 1. The first sentence should be revised to indicate that the stated mitigation requirements cover only direct construction impacts and indirect impacts would require additional mitigation.	Concur. This section has been revised to include mitigation requirements for indirect impacts. (same comment as USFWS11)	RPEIS, Section 6.19; Appendix K
USFWS22	Indirect/gate closures	The last sentence of the paragraph states the HET determined that no indirect impact would occur. Actually, the HET chose not to quantify indirect impacts because of uncertainties associated with the lack of needed data to assess indirect impacts. However, changes in the proposed structure operation plans will result in fairly substantial indirect impacts to fisheries access. When needed information is available, the HET will be able to quantify those impacts. Hence, this statement should be revised to state that the HET has determined that indirect impacts will occur and estimates of those impacts will be provided in the final PEIS or other NEPA document.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET).</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS23	Mitigate/Costs	PAC Report, Section 7.8, page 84, last sentence. Under nearly ideal conditions, the organic surface material could achieve 1175 acres of marsh mitigation. However, oxidation of organics and the loss of fluid soil components, and/or compaction of underlying soils may impact the effective use of this material. Therefore, it would be appropriate to factor in some loss of this material when estimating mitigation costs. Additionally, it should be footnoted that mitigation costs will likely increase when indirect impacts are quantified.	Mitigation cost estimates already accounted for the issue mentioned regarding a certain amount of "loss" of any organic materials/organic soils used, in conjunction with other borrow material, to construct earthen platforms for mitigation features. In addition, development of the updated \$10.3 billion cost estimate for the 1% AEP plan included a cost and schedule risk analysis. As part of the risk analysis, high risk cost items were identified including structural and geotechnical uncertainty, steel cost, fuel cost, unidentified borrow pit for hauled in material, and construction modifications. Based on the risk analysis, a contingency of 25% was applied to borrow real estate costs, 26% was applied to the mitigation costs, and contingencies of up to 35% were applied to other project feature costs, resulting in a total project contingency of almost \$2.3 billion. Since mitigation costs are generally only 1% to 5% of the total project cost and the total project cost includes substantial contingencies, mitigation uncertainties and potential mitigation cost increases are already reflected in the total project cost estimates.	RPEIS, Section 6.19; Appendix K
USFWS24	Indirect/Enclosed	PAC Report, Section 10.1.6, page 98. This section should be amended to address the fact that existing road dumps and canal spoil banks, in combination with construction of the proposed levees may create small unintentional impoundments that could result in adverse impacts to enclosed wetlands. Such problems exist within the proposed Barrier Reach levees, Reach A levees, the Larose reaches, and other areas. The text should state that such problems will be addressed during the feasibility phase planning of those levee reaches.	Concur. The following statement was added to Section 10.1.6: "Existing road dumps and canal spoil banks, in combination with construction of the proposed levees, may create small unintentional impoundments that could result in adverse impacts to enclosed wetlands. Such problems exist within the proposed Barrier Reach levees, Reach A levees, the Larose reaches, and other areas. Any such problems will be addressed during the PED of those levee reaches and will be documented in a supplemental NEPA document."	RPEIS, Summary; Section 6.18; 6.19; Appendix F and K
USFWS25	Indirect/Sediment	Draft RPEIS, Section 3.7.2, page 3-12, last paragraph. The first sentence states that storm surge impacts are the primary cause of project area marsh loss. Healthy marshes are able to withstand storm surge impacts and recover from those impacts, whereas unhealthy deteriorating marshes may experience permanent substantial losses. Therefore, losses related to storm impacts are likely the consequence of other chronic stresses affecting these marshes, such as submergence. Consequently, we recommend that the listed causes of marsh loss should also include submergence associated with the combined effects of sediment deprivation, subsidence, and sea level rise.	Concur. This section has been revised to include marsh loss due to submergence associated with the combined effects of sediment deprivation, subsidence and sea level rise as well as anthropogenic impacts associated with oil drilling, and development.	RPEIS, Summary; Section 6.18; 6.19; Appendix F and K

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USFWS26	Indirect/gate closures, Editorial/Clarification & Editorial/Inconsistency	Draft RPEIS, Section 3.8.2, page 3-13, second paragraph. The first sentence states that the 2002 HNC Complex operation plan has not changed. However, the incomplete operation plan presented in the PAC Report, page 79, and the RPEIS on page 4-22 does differ from the 2002 plan in that the 7.5 ppt salinity closure criteria at the Dulac pontoon bridge is no longer in the current plan. Because the current plan has not yet been fully developed, it is likely that there may be additional differences in the future. This sentence should be revised to state that the goals for operating the HNC Complex have remained unchanged, but that some criteria for operation have changed. Also, the details of the operation plan described in this paragraph differ from those listed in the PAC Report, page 79.	The section will be revised as suggested. A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 6.18; 6.19; Appendix F and K
USFWS27	Indirect & Editorial/Clarification	Draft RPEIS, Section 4.4, page 4-25, Table 4-4. The text describing wetland impacts associated with the project alternatives could be more accurately described as follows, "More than 3,000 acres of vegetated wetlands would be lost by construction of project features. These losses would be mitigated through the creation of vegetated wetlands in the project area." The text describing fisheries impacts due to project alternatives indicates that the project would have indirect impacts of "continued loss of coastal habitats supporting fisheries." The use of the word "continued" incorrectly suggests that the pre-existing wetland loss problem is a project effect. Reduced fish access due to increasingly frequent structure closure would be an adverse fisheries impact that is not mentioned, but should be included.	Concur. This section will be revised as suggested. A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 6.18; 6.19; Appendix F and K
USFWS28	T&E & Editorial/Clarification	The text describing impacts to threatened and endangered species states that the project would "benefit T&E species dependent on these habitats." Because there are no T&E species using project area habitats, the mitigation of construction impacts within the project area would not directly benefit T&E species. The statement regarding T&E effects should be limited to the following, "No direct impacts on T&E species or their critical habitat."	Concur. This section will be revised as suggested.	RPEIS Section 6.8
USFWS29	Editorial/Clarification	The description of hydrology under no-action consists of two sentences. As written, the second sentence regarding wetland loss might be attributed to the subject of the first sentence (Atchafalaya River freshwater inputs). To avoid that possible misunderstanding, the second sentence should be revised as follows, "Continued wetland loss would result in higher storm surges . . ."	Concur. This section has been revised as suggested.	RPEIS Section 6.11
USFWS30	Eco Proj & GIWW	Because the No Action description mentioned Atchafalaya River freshwater inputs, the with-project alternatives should also address this issue. However, the effects of reducing the size of the west GIWW structure has not yet been modeled, so therefore, there may not be any model outputs available yet to address this issue.	Do not concur. The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.  Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.	NA
USFWS31	Editorial/Clarification	Draft RPEIS, Section 6.1, page 6-1, last paragraph. The first sentence states that the impact analysis begins when construction is completed. The text should be revised to indicate that the impact analysis began in 2015, when the construction impacts would begin, and that impacts were evaluated over a 70-year period, from 2015 through the end of the project life in 2085.	Concur. This section has been revised as suggested.	RPEIS Section 6.1

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USFWS32	Eco Proj & FWOP	Draft RPEIS, Section 6.2.1, page 6-3, last paragraph. The text states that benefits to wetlands will occur under without-project conditions due to implementation of the two LCA projects. Similar statements are frequently made in later sections as well. This assertion is problematic given that the HNC Multi-purpose Operation Project will be dependent on construction of the Morganza project. Therefore, it cannot occur under the without-project condition. The PAC Report also states in several locations that implementation of these two LCA projects has recently been suspended. Because there is no certainty that these two projects will be constructed, the anticipated effects of these LCA projects should no longer be considered as part of the without-project condition.	Do Not Concur. The project was designed to not interfere with existing and proposed ecosystem restoration projects. Use of the GIWW to divert freshwater is not a component of the Morganza project, but is a component of the LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project. The LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project is authorized by Congress and therefore should be considered as part of the future without and future with project conditions. The reason that the State requested that the LCA projects be put on hold was not based on the Morganza to the Gulf project. There was no determination by the State that the project would interfere with the LCA projects. In addition, a project similar to the LCA project is included in the State 2012 Master Plan. Furthermore, funding from the recent Deepwater Horizon oil spill fines will be released to impacted states, including Louisiana, for ecosystem restoration efforts. Hence, the authorized LCA project is a reasonably foreseeable project and should be addressed in both the future without and future with project conditions.	NA
USFWS33	Indirect	Draft RPEIS, Section 6.2.2, page 6-3, first paragraph. This paragraph states that the WVA was used to determine project impacts. Impacts for the constructable features and associated mitigation were determined using the WVA. However, for the remaining features, impacts were assessed in terms of wetland acres impacted. Estimates of indirect impacts of programmatic features are being prepared using the WVA method.	This section was revised accordingly. WVAs have been run for both the direct and indirect impacts that would result from the constructible elements of the project. For the remaining programmatic elements of the project, direct habitat impacts were simply based on acres and the anticipated mitigation requirements were based on a preliminary mitigation ratio. No indirect habitat impacts have been estimated for the programmatic elements. Future supplemental NEPA documents addressing the programmatic elements will include determinations of both direct and indirect habitat impacts and will employ WVA models to determine the necessary mitigation.	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS34	Indirect/gate closures	Draft RPEIS, Section 6.2.2, page 6-4, Indirect Impacts paragraph. The first sentence is confusing. The HET did determine that loss of wetlands enclosed within the levee system would remain unchanged. However, the HET was unable to conduct a WVA analysis of wetland enclosure impacts which would include fisheries access impact, because of insufficient data and schedule constraints. The HET, therefore, made a qualitative assessment that fisheries access impacts were likely small. However, that initial assessment was based upon an earlier and less restrictive structure operation plan, and the inability to quantify impacts due to insufficient data. However, it appears that the new more restrictive structure operation plan will result in rather substantial fisheries access impacts and those impacts are currently being determined now that more data is available.	Concur. Additional data has only recently been made available and this section will be revised upon completion of re-analysis of impacts. A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS35	Indirect	Draft RPEIS, Section 6.2.3, page 6-5, Indirect Impacts paragraph. The statement is incorrect. The HET was unable to conduct WVA assessments of indirect impacts. However, such assessments are being conducted now and it appears that there will be substantial fisheries access impacts.	Concur. Additional data has only recently been made available and this section will be revised upon completion of re-analysis of impacts. A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.1; Appendix F
USFWS36	Indirect	Draft RPEIS, Section 6.5.2, page 6-11, first paragraph. Where levees are constructed using adjacent borrow, fisheries impacts will also include the conversion of shallow open water habitats to less valuable deep water borrow canals.	Partial Concur. This section has been revised to include deep water habitat, but also describes the potential benefits to fish of deeper water.	RPEIS, Summary; Section 6.5.2; Appendix F
USFWS37	Indirect	Draft RPEIS, Section 6.5.2, page 6-12, Second paragraph. The text references salinity increases illustrated by Figure 6-3. The text should also mention that modeling of this area (the Grand Bayou Unit on the Point au Chene Wildlife Management Area) did not factor in local water management capabilities that would remain unchanged under the with-project condition. Therefore, it is likely that the predicted salinity increase would not occur as management of the Grand Bayou Unit will continue.	Concur. This section has been revised as suggested.	RPEIS, Summary; Section 6.5.2; Appendix F
USFWS38	Indirect	Draft RPEIS, Section 6.5.2, page 6-15, Table 6-3. With-project fish access for the Reach E Falgout Canal structures is stated as being improved. Because those structures are to be operated to create a one-way southward flow of freshwater when freshwater is available, they will provide little improvement in fish access. We recommend that this statement be deleted.	Concur. This section has been modified to explain that there would be slight improvement going from North to south.	RPEIS, Summary; Section 6.5.2; Appendix F

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USFWS39	Indirect/gate closures	Draft RPEIS, Section 6.5.2, page 6-17, Indirect Impacts Section. The text incorrectly states that the indirect impacts for constructable features (the HNC lock and floodgate and the Bayou Grand Caillou floodgate) would be the same as for programmatic features. According to the PAC Report pages 79-80, closure of those constructable feature gates are triggered by the approach of named storms, and HNC closures are also triggered by salinity. Programmatic feature closures are triggered by the more frequent +2.5 ft stage criterion, regardless of cause. In the future, sea level rise will result in very frequent non-storm closures of the programmatic feature gates, whereas the constructable features are not closed due to exceedence of the stage criterion during non-storm conditions.	Concur. This section has been revised as suggested.	RPEIS, Summary; Section 6.5.2; Appendix F
USFWS40	EFH	Draft RPEIS, Section 6.6.1, page 6-18, First sentence. This sentence references "increased storm intensity" as contributing to Essential Fish Habitat (EFH) loss. Methods used in this study to estimate future land loss rates did not incorporate changes in storm intensity. Instead it was assumed that historic marsh loss rates would remain constant into the future, except for increased inundation associated with sea level rise. Given that increased storm intensity was not factored into marsh loss estimates, it would be appropriate to delete it as one of the causes of future marsh (EFH) loss.	Concur. This section has been revised as suggested.	RPEIS, Section 6.6.1,
USFWS41	Indirect/gate closures	Draft RPEIS, Section 6.6.2, page 6-19, Indirect Impact of Programmatic Features. The text states that fish access impacts "are expected to be minor." Given the revised structure operation plans, the frequency and duration of gate closures will increase due to sea level rise and will result in very substantial fish access reductions.	Concur. This section has been revised as suggested.	RPEIS, Summary; Section 6.6.2; Appendix F
USFWS42	Indirect	Draft RPEIS, Section 6.6.2, page 6-19, Indirect Impacts of Constructable Features. The text states that these indirect impacts would be similar to that of the programmatic features. Relative to fish access impacts, this statement is not true. See above comments for page 6-17.	Concur. This section has been revised as suggested.	RPEIS, Summary; Section 6.6.2; Appendix F
USFWS43	Mitigate & Indirect	Draft RPEIS, Section 6.7.2, page 6-22, Indirect Impacts of Programmatic Features. The text references "an overall increase in wetland acreage." Because the HET did not predict any with-project wetland acreage increases, this statement conflicts with the HET analysis. Furthermore, mitigation to offset construction impacts might result in a period of temporal habitat quality losses. Therefore, it is unlikely that an increase in wildlife habitat quantity and quality would occur with-project.	Concur. This section has been revised as suggested.	RPEIS, Section 6.19; Appendix K
USFWS44	Indirect	Draft RPEIS, Section 6.7.2, page 6-22, Cumulative Impacts Section. The text indicates that there will be a cumulative restoration, protection, and enhancement of critical habitat for migratory neotropical songbirds. At best, the Morganza project would result in a no-net loss of such habitat. However, given the historic declines in such habitat due to sea level rise and development pressures, the quality and quantity of this habitat is likely to continue to decrease even within the Morganza system. Other marsh restoration projects are not likely to have a significant positive effect on this habitat type. Therefore, the overall quality and quantity of such habitat is unlikely to be restored, protected, or enhanced. Instead, it will likely continue to decrease as it has in the past.	Concur. This section was revised as suggested. But at a slower rate	RPEIS, Summary; Section 3.5.3; Appendix F
USFWS45	Editorial/Clarification	Draft RPEIS, Section 6.11.1, page 6-26. This section seems to be about local levees and not about hydrology. Hydrology discussions should include information about seasonal Atchafalaya River inputs via the GIWW.	Section was revised to include information about seasonal Atchafalaya River inputs via the GIWW.	Draft RPEIS, Section 6.11.1
USFWS46	GIWW	Draft RPEIS, Section 6.11.2, page 6-28, Plan 3 Direct and Indirect Impacts. McAlpin 2012 (Reference in RPEIS) modeled the west GIWW structure as consisting of one 175-ft-wide sector gate with six 16-ft-wide sluice gates. The design of this structure described in the PAC Report has a total cross-section approximately 18% less than the one modeled. The results of the applicable sensitivity runs to simulate the effects of this reduction in structure cross-section should be presented. Information on structure-induced elevated water levels (magnitude and spatial extent) to the west of this structure should also be provided.	Do not concur. Information on the size of structure and number of sluice gates was corrected in document The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.  Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.	Draft RPEIS, Section 6.11.2
USFWS47	Editorial/Clarification	Draft RPEIS, Section 6.11.2, page 6-28, Cumulative Impacts. The subject of this section appears to be on protection levees rather than hydrology.	Section was revised to discuss the hydrology.	Draft RPEIS, Section 6.11.2
USFWS48	Editorial/Clarification	Draft RPEIS, Section 6.18.5, page 6-57, Table 6-4. The row describing hydrology effects deals with hydrology only in the "Past Actions" column. The other cells in this row describe levee conditions and not hydrology.	The table row on hydrology effects was revised to pertain to hydrology.	Draft RPEIS, Section 6.18.5, page 6-57, Table 6-4
USFWS49	Indirect/gate closures	Draft RPEIS, Section 6.18.5, page 6-58, Table 6-4. In the row for Fishery Resources, it is incorrectly stated that the Tentatively Selected Plan (TSP) would result in minimal fisheries resource impacts. The current more restrictive structure operation plan would result in substantial fisheries impacts. These adverse TSP effects would require reassessment of cumulative effects, especially when one considers the effects of continuing high rates of wetland loss.	Concur. This table was revised as suggested.	RPEIS, Table 6-4
USFWS50	Editorial/Clarification	Draft RPEIS, Section 6.19.4, page 6-62, second paragraph. The last sentence is confusing and needs to be revised. Although the enclosed wetlands themselves would not experience an indirect impact, fish access impacts would result in with-project impacts as assessed by the WVA. Those impacts will likely require additional mitigation.	Concur. This section was revised as suggested. Additional mitigation for indirect impacts has been included in the document (see Appendix K)	Draft RPEIS, Section 6.19.4 Appendix K

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USFWS51	Indirect/gate closures	Draft RPEIS, Section 6.19.4, page 6-70, first paragraph. The last sentence states "The HET determined through WVA modeling that the project would result in no indirect impacts to wetlands." This statement is inaccurate because it refers to an earlier version of the structure operation plan in which the HET chose to not assess indirect impacts using the WVA. The revised structure operation plan provided in the PAC Report (page 79-80) will have more frequent and longer-duration gate closures, and will likely result in substantial indirect impacts. The HET is currently in the process of assessing indirect impacts for the constructable features and for the entire Morganza system, using the WVA.	Concur. This section will be revised as suggested utilizing HET re-analysis results. A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	global changes to EIS.
USFWS52	GIWW	Draft RPEIS, Section 8.3, page 8-2, Table 8-1. The Corps response to FWS comment #1 is that the Corps has verified that the west GIWW floodgates "have no impact on water flowing to the east." Because this structure is described as "two adjacent floodgates" it appears that the Corp's evaluation was conducted for the earlier and larger version of this structure. The FWS and the HET were unaware that the design of this structure had been changed to one floodgate, and we have not seen any analysis of the effects of the revised structure. That analysis, comparing changes in without-project discharge and stage, should be included in the PAC Report and RPEIS. Because the design of the west GIWW floodgate could potentially alter the hydrologic effects of the constructable features, the evaluation of the re-designed west GIWW floodgate should be conducted as soon as possible so that impacts of the constructable features can be accurately determined. These comments are also applicable to the Corp's response to FWS comment #8d.	Information on the size of structure and number of sluice gates will be corrected in document. The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.  Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.	NA
USFWS53	Eco Proj	Draft RPEIS, Section 8.3, page 8-6, Table 8-1. Via comment # 8e, the FWS requested that the Corps determine the effects of the HNC Lock on the CWPPRA North Lake Boudreaux Basin Freshwater Introduction Project. That analysis has apparently not been conducted and is necessary to truly evaluate effects of these constructable features so that those features would be ready for construction. The results of that analysis should be presented in the RPEIS.	Concur. Effects will be investigated during PED. Any effects will be appropriately mitigated	Draft RPEIS, Section 8.3
USFWS54	Editorial/Clarification	Draft RPEIS, Appendix F. The subsection titled "Methodology for Quantifying Environmental Benefits/Impacts" is presented twice. Following that section is a number of unidentified tables that should be sized to fit on one page rather than multiple pages. The memos following those tables should be deleted because they are provided at the beginning of the appendix.	Concur. This section was revised as suggested. The repeated portion was deleted.	Draft RPEIS, Appendix F
USFWS55	Mitigate	PAC Report, Plate 6 of 14. A continuous mitigation area is shown paralleling Falgout Canal. To allow the two environmental water control structures to function properly, breaks in this continuous mitigation area should be provided at each of those water control structures.	Concur. During the PED phase the mitigation area will be designed as suggested to account for each of the water control structures and will be included in a supplemental NEPA document.	NA
USFWS56	Mitigate	PAC Report, Plate 7 of 14. The mitigation area paralleling the levee across Sweetwater Pond would potentially impound Sweetwater Pond and might render the Bayou Sale environment water control structure useless. One or more gaps should be provided in that mitigation area to maintain tidal exchange. Similarly, a gap in the mitigation area should be provided at the reach H-1 environmental water control structure.	Concur. During the PED phase the mitigation area will be designed as suggested to account for each of the water control structures and will be included in a supplemental NEPA document.	NA
USFWS57	Mitigate	PAC Report, Plate 9 of 14. Gaps in the continuous mitigation areas should be provided to maintain the function of planned water control structures and to provide water exchange with the borrow canal.	Concur. During the PED phase the mitigation area will be designed as suggested to account for each of the water control structures and will be included in a supplemental NEPA document.	NA
USFWS58	Mitigate	PAC Report, Plate 10 of 14. Comment same as for Plate 9. Rather than attempt to locate the mitigation features in large deep canals, alternative locations should be sought where the material could be used more effectively.	Concur. During the PED phase the mitigation area will be designed to avoid deep areas.	NA
USFWS59	Indirect	Draft RPEIS, Section 6.2. The document describes the expected changes in salinity under each alternative, and discusses wetland losses from construction, but it does not describe the changes in wetland plant communities that would result from the changes in salinity. We suggest that the Final EIS describe these changes, and any other biotic changes that would result from changes in wetland plant communities. The model in Snedden and Steyer (2013) (reference below) provides information relating salinity and plant community zonation. Snedden, G.A., Steyer, G.D. 2013. Predictive occurrence models for coastal wetland plant communities: Delineating hydrologic response surfaces with multinomial logistic regression. Estuarine, Coastal and Shelf Science, <a href="http://dx.doi.org/10.1016/j.ecss.2012.12.002">http://dx.doi.org/10.1016/j.ecss.2012.12.002</a> (available on line)	Concur. The section was not revised as suggested but the information was added to the risk and uncertainty section.	RPEIS, Summary; Section 3.5.3; Appendix F
NMFS1	Indirect	Contrary to statements and details in the RPEIS, indirect impacts for both the programmatic and constructible features are unknown. NMFS does not concur with the RPEIS statements that: (1) a levee project would benefit estuarine-dependent marine fisheries or EFH, (2) there would be no indirect impacts to enclosed wetlands, or, (3) impacts, whether direct or indirect, are selfmitigating.	Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. Based on Federal agency comments, the Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.	RPEIS, Summary; Section 3.5.3; Appendix F

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
NMFS2	Indirect & Mitigate	Neither the indirect impacts nor their offsetting mitigation have yet to be quantified for either the constructible or programmatic features of this project.	Both the direct and indirect impacts that would result from the constructible elements of the project have now been quantified and WVA models have been run for these impacts. The mitigation plan to compensate for these impacts has been revised such that the mitigation fully compensates for these direct and indirect impacts. For the remaining programmatic elements of the project, direct habitat impacts have been quantified but indirect habitat impacts have not. Future supplemental NEPA documents addressing the programmatic elements will include determinations of both direct and indirect habitat impacts and will employ WVA models to determine the necessary mitigation.	RPEIS, Section 3.5.2; 3.5.3; 6.19; Appendix K
NMFS3	Indirect & Mitigate	To be clear, NMFS does not object to hurricane protection to reduce risks to life or property; however, we do have environmental concerns with the process proposed and described in the RPEIS. The RPEIS provides insufficient information, incomplete impact assessments, and inadequate descriptions of mitigation. Consequently, NMFS requests additional information be included in the Final RPEIS and/or Record of Decision (ROD). The enclosed comments identify areas of concern and where additional information is necessary.	Comment noted	RPEIS, Section 3.5.2; 3.5.3; 6.19; Appendix K
NMFS4	Indirect/gate closures	Impacts, including frequency and duration of closure for all water control structures, should be assessed for reasonably foreseeable future actions. Such an analysis should include operation for non-storm closures at +2.5 ft. NAVD88 at low, intermediate, and high sea level rise scenarios.	In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. The revised Operation Plan was included in the Final RPEIS. The potential adverse environmental and socioeconomic impacts of increased structure closure will be assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).  A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS before the ROD is signed. See major points below: (a) The statements in the Draft RPEIS that there are "no indirect impacts" was removed from the Final RPEIS. (b) The following statement was added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis is being coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" is included in the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure es assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources is more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system are also compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation will be conducted to develop specific design features, implementation procedures, and operational schemes which will specifically focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, the Final EIS includes a qualitative analysis of indirect and cumulative impacts. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc). EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section was revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis will consider the types and number of floodgates and control structures present in levee design; how structures will be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET will run full WVAs for 4 scenarios to give a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling can be conducted to quantify RSLR impacts. (l) Clarified that operation plans, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; Appendix F
NMFS5	Indirect	Indirect impacts should be determined for constructible and programmatic features through coordination with NMFS and other interested natural resource agencies. System-wide modeling should be conducted on features and structure sizes included in the TSP to complete impact assessments. Modeling results of the low sea level rise scenario at the end of the project life should be included in the final RPEIS.	For the PROGRAMMATIC features, the Final EIS includes a qualitative analysis of indirect and cumulative impacts. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc). EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section was revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis will consider the types and number of floodgates and control structures present in levee design; how structures will be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. For the CONSTRUCTIBLE features, the USFWS ran full WVAs for 4 scenarios to give a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085.	RPEIS, Summary; Section 3.5.3; Appendix F
NMFS6	Indirect/gate closures	A clarified operation plan for the HNC lock, floodgates, and environmental water control structures should be developed through coordination with NMFS and other natural resource agencies. Those operation plans should be clarified to show: a. The environmental water control structures along Falgout Canal in Reach E 1 would be operated to discharge fresh water southward only. b. The BG C floodgate would remain open during the HNC lock saltwater closure periods. c. Operation plans for floodgates and water control structures, excluding the Falgout Canal environmental water control structures and the HNC lock, would maximize the open cross sectional area as often and long as possible.	In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was included in the Final RPEIS.	RPEIS, Section 3.5.2; 3.5.3; 6.19; Appendix K
NMFS7	Mitigate	An adequate mitigation plan for constructible and programmatic features should be developed to offset updated direct and indirect impacts through coordination with NMFS and other interested natural resource agencies. The mitigation should consist of marsh creation in open water on the flood side of the proposed levee. The mitigation should be planned, fully funded, and implemented in a concurrent timely manner such that functional and temporal losses of EFH are offset. Revised mitigation details should be made available for public and agency review and comment prior to issuing the Final RPEIS or signing the ROD. Specific mitigation details we recommend be included in the Final REIS include: a. Final sizing of mitigation b. The specific limits of constructible mitigation features c. Spill boxes should be directed into adjacent deteriorating marsh to the greatest extent practicable. d. Construction staging areas should be located to avoid impacts to wetlands. e. Target fill elevations should be based upon a determination of average healthy marsh in the vicinity of the mitigation project in accordance to biobenchmark surveying methods used for restoration programs. The version of geoid height model used when selecting target elevations should be documented. Target elevations and monitoring elevation data should be presented with the same geoid height model correction.	The mitigation plan proposed for the constructible elements of the project has been revised (see Section 6.19 and Appendix K of the RPEIS). It now accounts for mitigation of both direct and indirect habitat impacts and contains specific limits of mitigation features. These revisions were coordinated with the HET. This revised plan now also addresses your comments "a" through "e". The revised mitigation plan for the constructible elements will be included in the final RPEIS and can be reviewed during the 30-day state and agency review period. Further limited refinements to this mitigation plan will likely occur during the PED phase in close coordination with the HET and other PDT members. More specific mitigation plans for habitat impacts associated with the programmatic project elements will be prepared as part of future supplemental NEPA documents	RPEIS, Section 6.19; Appendix K

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
NMFS8	Mitigate	An acceptable gapping/degrading plan for containment dikes constructed for marsh creation mitigation should be included through developmental coordination with NMFS. General design for dike gapping should include: a. If total dike degradation is not feasible, one 25-ft gap (bottom width) every 500 ft. is recommended. Depth of gap is dependent on if it is into open water or adjacent marsh. If into open water, gaps should be to the preproject water depth. If gaps lead into marsh, gap should be to average marsh elevation. b. If scour aprons are included, the bottom should be grubbed out so the gap depth is the pre-project elevation as measured to the top of the armoring. c. Degraded material should be placed on adjacent remaining dikes and not marsh. d. Field adjustments in spacing and dimension based on developing site conditions should be accomplished through coordination with NMFS.	Engineering design criteria was refined with consideration of your suggestions and coordinated with NMFS and the other resource agencies. This is clearly documented in the FRPEIS (refer to revised Section 6.19 and Appendix K).	RPEIS, Section 6.19; Appendix K
NMFS9	Mitigate	Performance standards, monitoring requirements, long-term management, and the adaptive management plan should be revised to be consistent with those currently under development for the Greater New Orleans Hurricane Surge Damage Risk Reduction System.	Concur. Section 6.19 was revised and a new Section K was added to be more consistent with HSDRRS mitigation standards as regards mitigation for the constructible elements of the project. Detailed mitigation performance standards, monitoring requirements, long-term management activities, and adaptive management plans will be provided in future supplemental NEPA documents prepared for the programmatic elements of the project.	RPEIS, Section 6.19; Appendix K
NMFS10	Mitigate	The USACE should remain responsible for mitigation until the mitigation is demonstrated to be compliant with success and performance criteria. At a minimum, this should include compliance with the requisite vegetation, elevation, acreage, and gapping criteria. An acceptable adaptive management plan should be developed through coordination with NMFS and other interested natural resource agencies to cover operation and maintenance of the levees and structures, and mitigation. Sufficient appropriated funds should be set aside to fulfill the plan especially as it relates to mitigation compliance.	In accordance with the project's statutory authority, the proposed mitigation actions will include construction, with the Non-Federal Sponsor (NFS) responsible for operation, maintenance, repair, restoration, and rehabilitation (OMRR&R) of functional portions of work as they are completed. On a cost-shared basis, USACE will monitor completed mitigation to determine whether additional activities (ex. further construction, additional plantings, etc.) are necessary to achieve mitigation success. USACE will undertake additional actions necessary to achieve mitigation success in accordance with cost-sharing applicable to the project and subject to the availability of funds. Once USACE determines that the mitigation has achieved specified initial success criteria, monitoring & maintenance will be performed by the NFS as part of its OMRR&R obligations. If, after meeting initial success criteria, the mitigation fails to meet subsequent success criteria, USACE will consult with other agencies and the NFS to determine whether operational/management changes would be sufficient to achieve ecological success criteria. If, instead, structural changes are deemed necessary to achieve this success, USACE will instruct the NFS to implement adaptive management measures in accordance with contingency plans and subject to OMRR&R cost-sharing requirements, availability of funding, and current budgetary and other guidance.	RPEIS, Section 6.19; Appendix K
NMFS11	EFH	Consistent with Section 305(b)(4)(B) of the Magnuson-Stevens Act and NMFS' implementing regulation at 50 CFR 600.920(k), the USACE is required to provide a written response to our EFH conservation recommendations within 30 days of receipt. If the USACE's response is inconsistent with our EFH conservation recommendations, the USACE must provide a substantive discussion justifying the reasons for not implementing the recommendations. If it is not possible to provide a substantive response within 30 days, the USACE should provide an interim response to NMFS, to be followed by the detailed response. The detailed response should be provided in a manner to ensure that it is received by NMFS at least 10 days prior to the final approval of the action (i.e., signing of the ROD).	Concur. Consistent with the Magnuson-Stevens Act, the USACE has provided a written response to NMFS EFH conservation recommendations.	RPEIS Section 7; Appendix H
NMFS12	Indirect/gate closures & Socioeconomic	However in response to future sea level rise predications, it is probable structures would have to be closed more frequently and for a longer duration over the project life. As closures increase in frequency and duration, substantial socio-economic and environmental risks would likely result. Such impacts should be disclosed in the Final RPEIS.	The potential adverse environmental and socioeconomic impacts of increased structure closure were assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).	RPEIS, Section 3.5.2; 3.5.3; 6.19; Appendix K
NMFS13	Indirect & Mitigate	Operation plans, direct and indirect impact assessments, and mitigation are primary natural resource topics of concern with the RPEIS. NMFS believes resolution of issues associated with these matters is necessary to complete an acceptable environmental impact statement and to develop an appropriate mitigation plan.	The potential project-induced environmental consequences to significant resources will be more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. A revised "Operation Plan" will be included in the Final RPEIS.	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
NMFS14	Indirect/gate closures	Clarity of the operation plan for the Tentatively Selected Plan (TSP) is lacking and impact assessments are incomplete. Information necessary to complete impact analyses have not been provided. Enclosure 2 is a list of information needs to help complete an impact assessment. Items listed in Enclosure 2 have been identified by the draft Fish and Wildlife Coordination Act Report (CAR) and through electronic mail correspondence from the Habitat Evaluation Team (HET) with staff of the USACE.	The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. A revised "Operation Plan" was included in the Final RPEIS and includes clarification that operation plans, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results. The recommendations in the CAR was considered and addressed in the Final RPEIS.	RPEIS, Section 3.5.2; 3.5.3; 6.19; Appendix K
NMFS15	Indirect/gate closures	The operation plan for the project is unclear. The Post-Authorization Change (PAC) Report and RPEIS both are internally inconsistent to determine if the structures would be operated under storm conditions to protect from storm flooding only, or also under non-storm conditions to protect from tidal flooding. The frequency and duration of structure closures in the future and the associated impacts to the environment would change drastically, if the system was operated to reduce non-storm related flooding. No discussion of likely impacts related to non-storm closures is included in the RPEIS. However given predictions of sea level rise, NMFS believes it is reasonably foreseeable that the structures would be operated in the future under non-storm conditions to protect from tidal flooding.	A revised "Operation Plan" was included in the Final RPEIS and includes clarifications that operation plans, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
NMFS16	Indirect/gate closures & Socioeconomic	Therefore, NMFS recommends the Final RPEIS include an assessment of likely impacts of sea level rise on the frequency and duration of water control structure closures under storm and non-storm operations and include environmental impacts from these reasonably foreseeable actions. Assessments based on increasing amount and length of structure closures should also include socio-economic impacts to communities within the proposed levee system which have cultural and economic dependency on water-dependent commerce.	Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling can be conducted to quantify RSLR impacts.	RPEIS, Section 3.5.2; 3.5.3; 6.19; Appendix K
NMFS17	GIWW	Accordingly, the system-wide hydrology and hydraulic modeling conducted to assess environmental impacts and assist in project design was run with the 175-ft wide sector gates. Therefore, the accuracy and usefulness of presently available modeling to assess impacts from the TSP is questionable.	Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.	NA

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
NMFS18	GIWW	A smaller GIWW sector gate west of Houma may influence flows and associated freshwater distribution west of, and within, the levee system and may elevate salinities inside and south of the levee system. In order to assess the environmental impacts of the TSP, the model should be rerun with the 125-ft wide sector gates in both GIWW locations as included in the TSP. The updated impact analysis should be coordinated with the HET and included in the Final RPEIS	The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.	NA
NMFS19	GIWW	Figures throughout the RPEIS depicting salinity projections for the TSP should be updated in the Final RPEIS accordingly.	Do Not Concur.  The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.  Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.	NA
NMFS20	GIWW	Alternatively, the number of sluice gates in both GIWW structures could be increased in the TSP to ensure flows are not impacted and presently available modeling results are applicable.	Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates.	NA
NMFS21	Indirect/Enclosed	NMFS does not concur enclosing wetlands behind levees would benefit marsh or estuarine dependent marine fishery resources.	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS22	Indirect	Impact analyses and associated conclusions in the RPEIS are represented as if they are final, while the analyses are actually preliminary and subject to change based on pending modeling results.	Clarified that operation plans, impact analyses, and associated conclusions in the FRPEIS have been updated based on recent WVA model runs for the indirect impact of constructible features. The impacts for the programmatic features are preliminary and will be update in future NEPA documents.	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
NMFS23	GIWW	Furthermore, the sizes of the GIWW sector gates in the TSP were reduced after the modeling. Therefore, the presently available modeling is not of the actual TSP. System-wide modeling should be conducted with the TSP-sized GIWW sector gates and consider non-storm closures in the future with sea level rise.	The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.	NA
NMFS24	Indirect	Indirect and cumulative impacts to wetlands, fisheries, and EFH likely would result from potential degradation of water quality, ponding stress on wetland vegetation, and reduction or elimination of estuarine dependent fishery species' access to nursery and foraging habitat.	The document was update to reflect these changes.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS25	Indirect & Mitigate	Indirect and cumulative impacts to wetlands, fisheries, and EFH, as well as the mitigation necessary to offset such impacts should be discussed in the Final RPEIS prior to signature of the ROD	The document was update to reflect these changes.	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
NMFS26	Indirect	Conclusions of: (1) benefits to marsh and estuarine dependent fisheries, (2) the project being self-mitigating, or, (3) lack of impacts to hydrology from enclosure within a levee system should be removed where stated throughout the document (e.g., PAC Report Table 4-1, RPEIS Sections 6.5.2 Indirect, 6.16.12 Indirect Impacts, and Appendix C). Those sections of the RPEIS should be revised based upon pending indirect impact assessments once necessary data are made available by the USACE.	The statements in the Draft RPEIS that there are "no indirect impacts" was removed from the Final RPEIS. The following statement was added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." The refined impacts analysis has been coordinated with the interagency Habitat Evaluation Team (HET) and the document has incorporated the results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS27	Mitigate	The mitigation plan proposed for constructible and programmatic features is unacceptable as drafted in the RPEIS. NMFS believes the amount of mitigation is indeterminable at this time because impact assessments are incomplete. Sidecast disposal of overburden material on existing marsh should not be considered as mitigation. In addition, the mitigation plan is incompletely developed for the identified constructible features.	Please refer to the responses to NMFS2 and NMFS9 comments. In addition, the disposal of overburden material on existing marsh habitats is not proposed as mitigation.	RPEIS, Section 6.19; Appendix K
NMFS28	Mitigate	Section 6.19 and maps in Appendix G of the RPEIS indicate mitigation construction for constructible features would consist of filling existing wetlands and open water from near continuous sidecast disposal of organic overburden unsuitable for the levee foundation. Fill placement impacting existing marsh is unacceptable as mitigation. The locations and amount of fill placement in open water to create marsh as mitigation exclusively for the constructible features is not specified or substantiated with a functional based analysis. The only mitigation analyses conducted by the HET to determine the amount of mitigation necessary, evaluated marsh creation in open water constructed by hydraulic dredging. Because this included no fill on existing marsh, development of wetland functions were projected accordingly. Therefore, the only results available thus far did not evaluate the USACE's currently proposed mitigation and no analyses have been undertaken to quantify performance over the life of the project.	The proposed mitigation plan for the constructible elements of the project, including the locations of proposed marsh restoration features, has been revised (see Section 6.19 and Appendix K). This plan proposes marsh restoration features constructed in existing open water areas. The maps in Appendix G have not been revised. These maps do indicate potential mitigation areas but such areas are all related to the mitigation required to compensate for habitat impacts resulting from construction of programmatic elements of the proposed project. While the mitigation areas identified in these maps do overlap existing wetlands (marshes), this overlap was not intended. Mitigation would not occur in existing wetlands, with the possible exception of wetland enhancement activities (ex. enhancement of existing forested wetlands, marsh nourishment but not fill in existing marshes to restore marsh habitat) and limited work necessary to access and construct mitigation features. Accurate mitigation plans for the programmatic elements of the project will be provided in future supplemental NEPA documents.	RPEIS, Section 6.19; Appendix K
NMFS29	Mitigate	NMFS recommends marsh creation be conducted in open water areas only and the siting and sizing of the mitigation areas be coordinated with the HET and substantiated with a functional based analysis.	Concur. The primary intent is to construct the mitigation where possible on the flood side. The intent is to us the overburden from the borrow canals to create marsh in open water areas without impacting existing marsh.	RPEIS, Section 6.19; Appendix K
NMFS30	Indirect/gate closures & Mitigate	The quantification of mitigation necessary to offset indirect impacts is contingent upon the reasonably foreseeable non-storm operation plan and modeling of the frequency and duration of closures.	In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" is included in the Final RPEIS. The potential adverse environmental and socioeconomic impacts of increased structure closure were assessed in greater detail.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS31	Mitigate	Signature of the ROD should be held in abeyance until issues related to mitigation for both direct and indirect impacts are resolved, in particular for the constructible features, through coordination with NMFS.	Concur	NA

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NMFS32	Mitigate	NMFS finds the "12 items" required by the 2008 mitigation regulations are insufficient as included in the RPEIS.	Please refer to the response to the NMFS9 comment.	RPEIS, Section 6.19; Appendix K
NMFS33	Mitigate	The mitigation plan in Section 6.19 and cost details related to financial assurances in Appendix G need updating based on revised mitigation design, sizing, siting, and performance and monitoring provisions.	Please refer to the response to the NMFS9 comment regarding revisions to the mitigation plan for constructible elements. Appendix G is the "mapbook" and does not contain cost details concerning mitigation. Refer to response to NMFS10 comment for information related to financial assurances and refer to response to USFWS7 comment regarding mitigation costs.	RPEIS, Section 6.19; Appendix K
NMFS34	EFH	Based on our review of the RPEIS, we have determined that although the document contains the four items required of an EFH assessment, the details in those items are insufficient. An EFH assessment includes an analysis of effects, including mitigation, to determine the net and cumulative impact to EFH.	Concur. The EFH assessment and documentation was revised for the FRPEIS to be consistent with suggestions.	RPEIS Section 6.6
NMFS35	Indirect/gate closures & Mitigate	NMFS finds TSP impacts have not been quantified at this time. Therefore, the amount of compensatory mitigation is unknown and the net effects on EFH are undeterminable. However, we acknowledge project effects on EFH could be offset, if impacts are adequately quantified and a sufficient acreage of tidally influenced marsh is created in open water. Such cannot be accomplished until indirect impacts are determined for reasonably foreseeable operation including non-storm closures.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS36	CAR	NMFS provided comments on the draft CAR on January 8, 2013. Those comments should be addressed and resolved through coordination with NMFS prior to proceeding to the final RPEIS. When corrected impact analyses are available, a final CAR should be prepared. Recommendations in the final CAR should be resolved in the Final RPEIS.	Concur. The USACE coordinated with the NMFS and USFWS to address and resolve NMFS comments on the January 8, 2013 draft CAR as well as NMFS present comments. The FRPEIS includes updated coordinated resolutions to NMFS recommendations. The USACE worked with the USFWS to include changes into the revised CAR.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; 7; Appendix F, H and K
NMFS37	Indirect/gate closures	Triggers for closing structures are unclear. Although the USACE's intent may be to close structures only under storm conditions (whether named or un-named storms), departure from the present level of protection and operation would be a significant change for the non-Federal sponsor. This section should be revised to disclose that water control structure operation over the project life is an unresolved issue.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS38	EFH	Table 1-1. The Magnuson-Stevens Act should be added under the Federal Statutes section.	Table 1-1 Updated	RPEIS Table 1-1
NMFS39	Eco Proj	Section 3.11.3 Coastal Wetlands Planning, Protection and Restoration Act The North Lake Boudreaux Project (TE-32a) should be added to the list of CWPRA projects in the study area. The project is sponsored by the U.S. Fish and Wildlife Service.	Concur with suggested revision.	RPEIS Section 3.11.3

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NMFS40	Indirect/gate closures	Section 4. 3. 8 Operation of Structures The draft RPEIS and PAC Report are inconsistent regarding operation plans for the floodgates and environmental water control structures. Therefore, NMFS recommends the documents be revised throughout to include the potential for non-storm operation and to evaluate likely impacts of such actions on resources of concern.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS41	Indirect/gate closures	Section 4.3.8.1 Operation of the HNC Lock Complex Data are needed to complete impact assessments. The closure trigger is identified as, "If a gage on the outside of the HNC Lock exceeds a salinity value that has been correlated with preventing exceedance of the maximum allowable chloride level. . ."; however, it does not identify the specific salinity trigger, thereby leaving impacts indeterminable until specified. Opening is identified as occurring once salinity falls below 13 parts per thousand at Cocodrie. There are limited to no salinity data presently available from the Cocodrie gage to determine the likely frequency of closure of the lock based on salinity triggers. The USACE should provide the exact closure and opening triggers, the locations where they are measured, and sufficient salinity data on which to base impact projections. For post construction operations and monitoring purposes, a salinity gage should be established on the flood side of the HNC.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS42	Mitigate	Section 4.3.9 Mitigation To compensate for impacts to marsh, NMFS prefers marsh creation (i.e., fill placement in open water) on the flood side of the proposed levee. The map details in Appendix G are generic concepts. The design, location, and amount of mitigation have not been coordinated with the interagency HET and are in need of substantial revision both for programmatic and constructible features, as well as to offset direct and indirect impacts. Marsh creation in open water should be the primary focus and filling existing marsh should be avoided.	Please refer to the responses to NMFS7, NMFS9, and NMFS29 comments.	RPEIS, Section 6.19; Appendix K
NMFS43	Mitigate	Also, the layout of the mitigation should be revised to avoid altering hydrology and impeding flow from environmental water control structures under Falgout Canal Road in Reach E-1.	Concur. During the PED phase the mitigation area will be designed as suggested to account for each of the water control structures and will be included in a supplemental NEPA document.	RPEIS, Section 6.19; Appendix K
NMFS44	Indirect & Mitigate	A thorough analysis of direct and indirect impacts of the constructible features should be completed and this section of the Final RPEIS should be revised by including corrected plates identifying the specific limits for the mitigation work.	Please refer to the responses to NMFS2 and NMFS7 comments. As mentioned, the drawings in Appendix G will be modified in future supplemental NEPA documents to depict specific limits of mitigation features proposed as compensation for the programmatic elements of the project.	RPEIS, Section 3.5.2; 3.5.3; 6.19; Appendix K
NMFS45	Mitigate	Construction access corridors, staging areas, and borrow areas to supplement any shortfalls from sidecast disposal of organic overburden should be identified and discussed. Any dedicated dredging borrow sites to create marsh should be sited and designed to avoid inducing erosion (e.g., wave or slope-failure) of existing marsh bank lines.	Delineation of construction access corridors, additional borrow areas, and staging areas (if needed) necessary to build the marsh creation features proposed as compensation for impacts resulting from the constructible project elements will be accomplished during the PED phase in coordination with the HET and other PDT members. Borrow material in addition to use of organic overburden will definitely be required to construct these marsh features. Borrow sites will be located in keeping with your recommendation. Construction access corridors, staging areas, and borrow areas necessary to construct mitigation features needed for the programmatic project elements will be identified and discussed in future supplemental NEPA documents covering the programmatic elements.	RPEIS, Section 6.19; Appendix K
NMFS46	Borrow	If borrow is expected from bayous, the borrow sites should be segmented with undredged reaches to serve as under water plugs to minimize saltwater intrusion. The borrow areas should be designed to minimize adverse impacts to water quality to the extent practicable. The implications of borrow sites on water quality should be discussed. The USACE is encouraged to include dissolved oxygen monitoring to assess if impacts occur and to identify the potential need to alter borrow designs in the future. These matters should be resolved and discussed in the Final RPEIS and ROD.	Concur: These borrow site recommendations will be examined during PED, coordinated with the HET and resource agencies before being clearly documented in the future NEPA Documents.	NA

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NMFS47	Indirect	Section 4.4 Comparison of Environmental Consequences of Alternatives Table 4-4. For the one percent and three percent alternatives, wetland impacts in the table should be revised from "displaced" to "destroyed". Impacts to aquatic habitat, fisheries, and EFH should be revised to include indirect impacts from increasing closures of floodgates and water control structures. The Hydrology section should be augmented to indicate localized increases in flooding and salinity are expected on the protected and flood side of the levees and to provide a description of where that is projected to occur.	Table 4-4 has been updated the wording displaced has been removed and more detail has been added.	RPEIS, Summary; Section 3.5.2
NMFS48	Indirect	Section 5.2.4 Fisheries This section should be expanded to include a description of the existing marsh management projects, their operation, and limitations structural marsh management have on estuarine-dependent fishery species. This information previously was provided to staff of the US ACE for consideration in the system-wide modeling and is available again, upon request.	This information will be added to the Supplemental NEPA document for this levee reach.	RPEIS Section 5.2.4
NMFS49	EFH	Section 5.2.5 Essential Fish Habitat Gulf stone crab and gray snapper should be removed from the discussion and Table 5-7.	Section 5.2.5 information updated	RPEIS Section 5.2.5
NMFS50	Indirect	Section 6.1 Environmental Consequences Introduction and Appendix F. These sections should be expanded to make clear the period of analysis captures temporal losses of wetland function from the time impacts occur from levee construction until functional mitigation is achieved. The starting and ending points of the period of analysis by levee reach and mitigation would illustrate how temporal losses are considered. In addition, the USACE should clarify if the end year to calculate the amount of sea level rise included in the systemwide modeling was 2085 and included years 2004 to 2015. This section acknowledges constructed CWPPRA projects are within the project area, but does not describe how they are handled in the impact assessment or Appendix F on the Wetland Value Assessment analysis. This section should be revised to discuss potential impacts to CWPPRA constructed restoration projects.	The document was updated through out to explain the impact begin in 2015 with the start of construction, that the system will have its base elevation by 2035 and the period of analysis will end	RPEIS, Section 6.19; Appendix K
NMFS51	Direct	Section 6.2.2 1% AEP Alternative Direct Impacts A table and discussion should be added disclosing a breakdown of wetland impacts by habitat type.	Concur with suggested revisions.	RPEIS Section 6.2.2
NMFS52	BMPs	Section 6.5.1.2 1% AEP Alternative This section indicates direct impacts would be minimized with the use of Best Management Practices (BMP); however, no description or reference to the BMPs are provided. The document should be revised to include BMPs or to indicate supplemental National Environmental Policy Act documents will disclose BMPs.	Concur with suggested revisions.	RPEIS Section 6.5.1
NMFS53	Indirect/gate closures	Section 6.5 Fisheries The direct, indirect, and cumulative impact sections need revision. These sections should include impacts based on the projected frequency and duration of structure closures in the future under the three sea level rise scenarios and under storm and non-storm operations. These sections should specifically describe the likely impacts of frequent and extended water control structure closures on estuarine-dependent fishery resources.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS54	Indirect	Table 6.3 The information pertaining to Reach F should be revised. Specifically, the HNC Lock is projected to be closed frequently due to salinity and storm provisions, which would limit fisheries access north of the lock to Bayou Grand Caillou. Further, the levee alignment eliminates access from the HNC into the Bayou Platte drainage area from its drainage point south near Deep Bayou. Fisheries access with Reach Kin place would not be improved over existing conditions because water control structures already allow fisheries access into the marsh management units on the Point aux Chenes Wildlife Management Area.	Concur with suggested revisions.	RPEIS, Section 6.19; Appendix K

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NMFS55	Indirect, EFH, & BMPs	Section 6.6 EFH. NMFS does not concur with the impact assessments to EFH. Indirect and cumulative impacts are incomplete at this time. Impacts presented were based on preliminary and in progress assessments. Indirect and cumulative impacts to EFH should be assessed and described in the Final RPEIS based on revised system-wide modeling for the TSP and include foreseeable nonstorm structure closures. The amounts of flooding and salinity changes have not been substantiated at this time and cannot be concluded as minimal. BMPs are not defined. The EFH section should include acres of open water impacted. Revised analysis should assess potential impacts to water quality, ponding stress on wetland vegetation, and reduction or elimination of estuarine fisheries access with increases in structure closures in the future.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Section 6.6; 6.19; Appendix K
NMFS56	Indirect/gate closures & Socioeconomic	Section 6.14 Socioeconomics The direct, indirect, and cumulative impact sections need revision. These sections should include impacts based on the projected frequency and duration of structure closures in the future under the three sea level rise scenarios and under storm and non-storm operations. These sections should specifically describe the likely impacts of frequent and extended water control structure closures on navigation to ports and marinas enclosed within the project area. In addition, this section should evaluate how storm water drainage will be accomplished in the future with various sea level rise projections.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Section 6.6;6.14; Appendix K
NMFS57	Mitigate	Section 6.19 Mitigation NMFS finds the mitigation plan is unacceptable for constructible features and for programmatic considerations for reasons discussed both above and below.	Acknowledged. Please refer to the responses to NMFS2 and NMFS7 comments.	RPEIS, Section 6.19; Appendix K
NMFS58	Mitigate	Section 6.19.4 Wetland Mitigation Plan for Constructible Features The method to convert from impact Average Annual Habitat Units (AAHUs) to mitigation acres is not disclosed and has not been coordinated with the HET. The acreage of necessary mitigation can be determined based upon the mitigation potential (AAHUs/acre) by type of mitigation project. The mitigation potential provides an initial scaling that must be refined based upon a final WVA conducted on Preliminary Engineering and Design (PED) level information for the mitigation. PED level information for the constructible feature mitigation has not been disclosed and therefore final scaling to ensure a one to one functional replacement is not possible at this time.	Do not Concur: The mitigation potential (AAHUs/acre) for open water marsh creation on the flood side of the constructible features was coordinated with the HET by USFWS.	RPEIS, Section 6.19; Appendix K
NMFS59	Mitigate	Table 6-5 This table presents the 12 components of the compensatory mitigation plan. Some of those items are incomplete and/or unacceptable.	Acknowledge. Please refer to the response to NMFS9 comment. Note that the added Appendix K no longer employs a tabular format for components of the mitigation plan.	RPEIS, Section 6.19; Appendix K
NMFS60	Mitigate	Site selection for marsh creation in many reaches overlaps existing marsh, which itself could require separate mitigation actions. NMFS is concerned the layout of the mitigation sites may be presently determined based on the need for sidecast disposal of overburden and not the best layout to compensate for lost ecological services. In addition, the USACE has not conducted an analysis of how such a use of overburden will perform over the life of the project. For the final RPEIS, the site plan should be revised substantially by relocating all overburden disposal and marsh creation to open water areas only, and to include an analysis of likely performance over the life of the project.	As mentioned, the mitigation plan for the constructible elements of the project has been revised such that marsh creation areas no longer overlap existing marsh habitats. The mitigation plan for the programmatic elements of the project will be revised in future supplemental NEPA documents and will seek to avoid mitigation impacts to existing marsh habitats to the extent practicable. WVA models generated for the constructible mitigation predict the long-term performance of the proposed mitigation features. However, further engineering/geotechnical analyses of these proposed mitigation features will occur in the PED phase to specifically examine how the use of organic overburden materials as partial fill for these features may affect the long-term mitigation objectives.	RPEIS, Section 6.19; Appendix K
NMFS61	Mitigate	The mitigation work plan should be resolved through coordination with the natural resource agencies to resize the mitigation sites after they have been relocated to open water to ensure adequate compensation is provided.	Concur. Please refer to the responses to NMFS2, NMFS7, and NMFS9 comments. Further refinements to the revised mitigation features for the constructible elements of the project will likely occur during the PED phase and would be coordinated with the HET and other PDT members.	RPEIS, Section 6.19; Appendix K

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NMFS62	Mitigate & HSDRRS	Table 6-5. Draft marsh creation work plans developed for the Greater New Orleans Hurricane Surge Damage Risk Reduction System (HSDRRS) should be used for the Morganza to the Gulf Project. Greater specificity and clarity commensurate with constructible features are provided in the HSDRRS performance, success, and monitoring/reporting criteria. Because it was only developed for fresh, intermediate, and brackish marsh, the HSDRRS mitigation work plan should be expanded to address needs for salt marsh mitigation associated with the Morganza to the Gulf Project. In addition, performance standards, monitoring requirements, long-term management plan, and adaptive management provisions should be revised to be consistent with the most current standards developed for HSDRRS.	Concur. The mitigation plan (including work plan, success criteria, monitoring plan, etc.) for constructible project elements has been revised to be similar to marsh mitigation plans developed for HSDRRS.	RPEIS, Section 6.19; Appendix K
NMFS63	Mitigate	Table 6-5. Section 6 of this table discusses access corridors, construction staging areas, and target elevations. Regarding target elevations, this section recommends use of geotechnical analyses and elevations surveys to determine appropriate target elevation ranges. No specific plans have been disclosed for the constructible features mitigation. Settlement curves and survey data have not been provided to substantiate the mitigation plan for the constructible features. Detailed plans identifying the limits of the constructible feature mitigation including access corridors and staging areas have not been disclosed. The vegetation section is unclear as to whether marsh vegetation would be planted. If plantings are proposed, then clarification is needed on what species would be planted and when planting would occur under the proposed plan.	Comments noted. The mitigation plan/mitigation program for the constructible project elements has been revised in an attempt to rectify many of these comments. More comprehensive and detailed engineering design will take place during the PED phase (ex. geotechnical investigations, development of settlement curves, collection of survey data, etc.).	RPEIS, Section 6.19; Appendix K
NMFS64	Mitigate	Table 6-5. Section 8 of this table discusses performance standards. Inclusion of a gapping plan is noted and appreciated. However, we request the spacing and gap dimensions in the plan be revised to increase potential tidal function. Also, a provision should be included for field adjustments in spacing for site conditions.	Concur. The proposed mitigation plan has been revised accordingly. Note that the plan now calls for mechanical degradation of earthen retention dikes to alleviate the need for "gapping" where practicable without causing adverse impacts. However, the plan also allows for the possibility of there being armored or rock dikes that may need to incorporate gaps/fish dips and provides for field adjustments in their spacing. Such design elements will be addressed in the PED phase, if necessary.	RPEIS, Section 6.19; Appendix K
NMFS65	Mitigate	Table 6-5. The final RPEIS should be revised throughout to indicate gapping/degrading would occur manually rather than dependent on sufficient erosion and settlement of dikes over time.	Concur. Refer to response to NMFS64 comment	RPEIS, Section 6.19; Appendix K
NMFS66	Mitigate	Table 6-5. The basis for the proposed target (initial and settled) fill elevation for the marsh creation site is not provided. Target elevations should be based upon a determination of average healthy marsh in the vicinity of proposed mitigation sites. It is recommended those elevations be determined by surveys in accordance to bio-benchmark survey protocols used for marsh creation designs under restoration programs. That methodology includes: Average marsh elevation (NAVD88) should be determined from no less than three locations in the vicinity of a mitigation project. The marsh surface is reached when the survey rod is resting among living stems or is supported by soil containing living roots. In order to get a consistent reading, it may be necessary to cut vegetation stems where stem density is extremely high. A minimum of 20 elevations (each separated by 20 to 40 ft.) at each of the sites should be required for this determination.	Concur. The mitigation section has been revised to include this guidance. Please note, however, that the proposed target elevations for the marsh creation/restoration features proposed as mitigation for the constructible project elements are preliminary at this stage. Refined target elevations will be developed during the PED phase based on the guidance you provided.	RPEIS, Section 6.19; Appendix K
NMFS67	Mitigate	Table 6-5. Elevations measured during the design surveys and all monitoring should indicate the geoid height model used and be corrected to the same geoid if it differs during the monitoring period to ensure like comparisons.	concur: Information was added to the mitigation section.	RPEIS, Section 6.19; Appendix K
NMFS68	Mitigate	Table 6.5. The proposed duration of the construction phase is unclear. The US ACE should remain responsible for marsh mitigation until such mitigation is demonstrated to be compliant with success and performance criteria. At a minimum, this should include compliance with the requisite vegetation, elevation, acreage, and gapping criteria.	The mitigation section (Section 6.19 & Appendix K) has been revised in an effort to clarify the duration of construction phase for mitigation slated as compensation for constructible project elements and to help clarify responsibilities. Also, please refer to the response to NMFS10 comment regarding general USACE and Non-Federal Sponsor responsibilities pertaining to mitigation.	RPEIS, Section 6.19; Appendix K
NMFS69	Mitigate	Table 6-5. Section 11 of this table discusses an Adaptive Management Plan. This section specifies corrective actions if openings do not develop in a "continuous breakwater." A "continuous breakwater" is not a component of the project and that statement should be deleted from the text. In addition, this section should be revised to include gapping of marsh creation containment dikes.	The mitigation plan for the constructible project elements has been revised (see Appendix K). Proposed marsh restoration features do not include any breakwaters, rock dikes, or armored dikes at this stage. All earthen retention dikes (containment dikes) will be manually degraded to equal the final target marsh elevations where practicable. However, should complete degradation of one or more containment dikes be impractical, then NFMS "gapping" guidelines would be followed and the plan for gapping would be coordinated with NFMS and other HET members.	RPEIS, Section 6.19; Appendix K
NMFS70	Mitigate	Table 6-5. Section 12 of this table discusses financial assurances and describes responsible parties, but not the amount of financial assurances. The amount should be developed based on the acreage of mitigation, operations, and monitoring to ensure sufficient funds are programmed to accomplish the mitigation. Furthermore, funds (contingency or otherwise) should be included to ensure completion of the Adaptive Management Plan.	Applicable guidance for mitigation plans do not require specification of the amount of financial assurances. The Project Partnership Agreement between the Non-Federal Sponsor (NFS) and the Federal Government provides the required financial assurance for the proposed mitigation. In the event that the NFS fails to perform, the USACE has the right to complete, operate, maintain, repair, rehabilitate or replace any project feature, including mitigation features, but such action would not relieve NFS of its responsibility to meet its obligations and would not preclude the USACE from pursuing any remedy at law or equity to ensure the NFS's performance.	RPEIS, Section 6.19; Appendix K
NMFS71	Mitigate	Appendix F The dollar amounts listed relate to the amount of funds necessary for financial assurance to complete mitigation. It is unclear if the dollar amounts for monitoring are estimated based upon the scope of details in Table 6-5. Dollar amounts included for mitigation construction and monitoring should be revised based on necessary revisions to the mitigation plan consistent with HSDRRS.	The dollar amount is based on numbers generated from the HSDRRS program and is appropriate for the programmatic features. Detailed cost estimates for the constructible feature has been added.	RPEIS, Section 6.19; Appendix K

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NMFS72	Indirect/gate closures	<p>ENCLOSURE2</p> <p>NOAA's National Marine Fisheries Service (NMFS) Comments on the Draft Revised Programmatic Environmental Impact Statement (RPEIS) entitled "Mississippi River and Tributaries-Morganza to the Gulf of Mexico, Louisiana"- Preliminary List of Pending Information Needed to Complete Impact Analyses</p> <p>1. Operation Plan</p> <p>a. Operation for non-storms</p> <p>b. Verification of the elevation trigger for closures</p> <p>c. Determine the frequency and duration of structures closures both under storm and non-storms conditions at +2.5 ft. NAVD88 in the future under the low, intermediate, and high sea level rise scenario; reconcile differences projected by the USACE and the U.S. Fish and Wildlife Service</p> <p>d. HNC Lock salinity closure criteria should be established</p> <p>e. HNC Lock opening criteria needs to be defined for a location outside of the lock</p> <p>f. Determine when structures on the southeast side of the project area would be closed more frequently</p> <p>g. Operation for water control structures in the constructible features should be provided</p>	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
NMFS73	Indirect/gate closures	<p>Enclosure 2. 2. Data Needs</p> <p>a. Determination by the USACE if the system-wide model results based on 175-ft wide sector gates in the GIWW remain valid for the TSP that has 125-ft wide gates</p> <p>b. System-wide model runs for the TSP (i.e., 125-ft sector gates in the GIWW structures)</p> <p>c. Stage data needed for locations other than HNC at Dulac</p> <p>d. Need salinity data under low sea level rise at the end of the project life (e.g., system-wide modeling of Future Without Project, Plan1, and Plan3, under low SLR scenario at the end of the project life)</p> <p>e. Tidal exchange flux or equivalent from system-wide model (re: WVA Variable 6, Average Tidal Flux method)</p> <p>f. Salinity data for HNC opening criteria to assess if data are available to base 1) a 13 ppt opening criteria and 2) measured at Bayou Petite Caillou at Cocodrie is feasible</p>	<p>Concur: Information on the correct size of GIWW flood gates, the number of associated sluice gates and volume of water they can pass are included in the PAC and EIS</p>	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
NMFS74	Indirect/gate closures	<p>Enclosure 2. 3. Impact Analyses</p> <p>a. Updated indirect impacts based upon non-storm operation in the future under the three sea level rise scenarios b. Updated indirect impacts based upon 125-ft sector gates in the GIWW structures and revise all indirect and cumulative impacts.</p> <p>c. Assess the frequency of the +2.5 ft. NAVD88 threshold on the SE side of the project area. d. Updated impacts based on the HNC lock operation for the closure and opening criteria</p> <p>e. AdH without-project baseline salinities are low consider TABS baseline salinities f. Complete revisions for fish access, Variable 6</p> <p>1. Resolve Method(s) selection</p> <p>n. Assigning values under selected method(s)</p> <p>iii. FWOP values for existing marsh management structures</p>	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
CPRA1	Buyout	<p>PAC 1. Page vii: Further discussions are warranted in the future on the scope of the "preliminary buyout plan", including proposed concepts/alternatives, and how future sea level rise/landloss factors are utilized in determining impacts, if any.</p>	<p>The exact mitigation measures for the structures identified in the preliminary buyout plan has not yet been determined. Presently, detailed information regarding the differences in frequency, depth, and duration of the flooding between the future without-project and future with-project conditions is not available. This detailed information typically would be assessed in light of the uses to which the particular land is zoned, and the appropriate mitigation methods, if any, would be implemented to address the effects of the Federal project. To ensure that the public is informed of all potential impacts of the project and to prevent future delays to project schedule, for purposes of this report, the worst case scenario (most expensive option) has been assumed, which would be a 100 percent buy-out of all of the structures in the impacted areas. The potential induced damages and mitigation for economic damages would be further addressed during detailed design and supplemental NEPA documents. Individual investigation and devising mitigation for each structure, if appropriate, would be done during PED. Additional factors (height of structures vs. induced stages, type of residential structure, social concerns, etc.) would have to be investigated under PED. Each structure would have to be evaluated under PED to determine if mitigation is appropriate. Further modeling would be performed during PED to determine whether there is a potential taking. A Takings Analysis would be prepared during PED to address this issue, and at that time, it would be determined what real estate interest, if any, would be acquired.</p>	PAC page vii

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
CPRA2	WIK	PAC 2. Interim protection measure in advance of the PPA should be factored as a creditable features that will serve until such time as these are incorporated into the Federal System.	<p>(a) In order to balance the accounts when moving from the 75% Federal/25% Non-Federal cost share in Pre-Construction Engineering and Design (PED) phase to the 65% Federal/35% Non-Federal cost share in Construction phase, the Non-Federal Sponsor will have to make up any difference in the cost share between the Design Agreement and the Project Partnership Agreement (PPA) in the first year of the PPA. All costs for design and construction will be rolled up in to one sum in the PPA, and the conditions set forth in the PPA will apply. If the PPA stipulates that the Non-Federal sponsor shall be credited for Work In Kind (WIK) in lieu of cash payment, then the WIK credit (subject to all applicable requirements) may be used to balance the accounts forwarded from PED. The non-Federal sponsor is encouraged to submit an official written request to the Corps for any additional clarification on applying WIK credit to account balances forwarded from PED. Note that the PPA cannot be executed until the project is designated as a Construction New Start. Requirements for a Construction New Start include congressional authorization, congressional appropriation of Construction funds and a signed Record of Decision (ROD) on the environmental document.</p> <p>(b) The PAC Report includes feasibility-level designs, which are considered approximately 25% designs that have been completed based on limited data collection (soil borings, surveys, environmental investigations, etc.). As the Corps proceeds to the detailed design phase for features of the Morganza to the Gulf project, we will continue to refine designs as we acquire additional information. Following completion of the 2002 Feasibility Report, several features of the project were refined based on additional soils data obtained and opportunities to reduce environmental impacts and project costs. These features included the Houma Navigation Canal Lock Complex (wider sector gate, different configuration), and Levee Reaches A, G, H and J (smaller footprint). Similarly, features recommended in the 2013 PAC Report may be refined as those features get to the detailed design phase.</p> <p>Reach J-1 was constructed prior to execution of a Project Partnership Agreement (PPA), and prior to execution of a Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. In order to receive Work In Kind (WIK) Credit for Reach J-1, Congress would specifically have to include a provision for look-back credit and a PPA must be executed between the Department of the Army and the non-Federal sponsor.</p> <p>(c) Mitigation is considered a construction cost and may be creditable as Work In Kind (WIK) depending on the terms and conditions set forth in the Project Partnership Agreement (PPA) or the Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. The non-Federal sponsor is not eligible for WIK credit unless a PPA has been executed, an MOU has been executed in advance of a PPA, or WIK credit has been specifically authorized by Congress.</p>	PAC
CPRA3	Buyout	PAC 3. Page 64, Section 6.5.1 Impacts on Structures Outside of the Risk Reduction System: Further discussions are warranted in the future on the scope of the "preliminary buyout plan", including proposed concepts/alternatives, and how future sea level rise/landloss factors are utilized in determining impacts, if any.	The exact mitigation measures for the structures identified in the preliminary buyout plan has not yet been determined. Presently, detailed information regarding the differences in frequency, depth, and duration of the flooding between the future without-project and future with-project conditions is not available. This detailed information typically would be assessed in light of the uses to which the particular land is zoned, and the appropriate mitigation methods, if any, would be implemented to address the effects of the Federal project. To ensure that the public is informed of all potential impacts of the project and to prevent future delays to project schedule, for purposes of this report, the worst case scenario (most expensive option) has been assumed, which would be a 100 percent buy-out of all of the structures in the impacted areas. The potential induced damages and mitigation for economic damages would be further addressed during detailed design and supplemental NEPA documents. Individual investigation and devising mitigation for each structure, if appropriate, would be done during PED. Additional factors (height of structures vs. induced stages, type of residential structure, social concerns, etc.) would have to be investigated under PED. Each structure would have to be evaluated under PED to determine if mitigation is appropriate. Further modeling would be performed during PED to determine whether there is a potential taking. A Takings Analysis would be prepared during PED to address this issue, and at that time, it would be determined what real estate interest, if any, would be acquired.	PAC Section 6.5.1
CPRA4	Indirect/gate closures	PAC/EIS 4. PAC Report and PEIS should remove references to closures to +2.5 Feet NAVD88 and instead closure criteria should be defined based upon prevention of flooding and protection of life and property.	After this comment was made, USACE, non-Federal sponsors (including commenter), and Habitat Evaluation Team agreed on closure assumptions for purpose of determining indirect impacts for the constructible features. Some gates still have a stage closure trigger.	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
CPRA5	HSDRRS/Site adapt	PAC 5. Report does not indicate alternative measures to reduce cost that may or may not deviate from the current HSDRRS standards based upon the unique characteristics of the project area while still maintaining the appropriate measures of risk reduction and levee certification.	<p>Potential opportunities to site-adapt the HSDRRS standards has been added to the Final PAC report.</p> <p>The Draft PAC report reflects cost estimates based on a project designed using the Hurricane and Storm Damage Risk Reduction System (HSDRRS) guidelines. These peer-reviewed guidelines were developed in response to recommendations made by the Interagency Performance Evaluation Task force (IPET), a team composed of members from USACE, industry and academia that evaluated the Greater New Orleans levee system after Hurricane Katrina. The Assistant Secretary of the Army (Civil Works) has directed that USACE apply the HSDRRS guidelines to all hurricane and coastal storm system work in Louisiana, including the Morganza to the Gulf PAC project. Comments were received both supporting the use of the HSDRRS criteria, and suggesting adaptation of some of the HSDRRS criteria for the site specific characteristics of the Morganza to the Gulf project area. Parallel to the PAC analysis, the USACE Risk Management Center and New Orleans District jointly evaluated the proposed Morganza to the Gulf levee system and concluded that site adapting three specific HSDRRS criteria could significantly reduce project costs while producing only minimal changes in potential consequences. A section on site adapting the HSDRRS standards has been added to the main PAC report, including a recommendation to change Factor of Safety for end of construction global stability, change the Design Overtopping Rate for well-maintained grass covered levee slopes, and eliminate the structural superiority requirement. If these changes are approved, modifications would be made to designs and costs during the next phase of implementation, Pre-construction Engineering and Design (PED). The USACE is also conducting a national-level risk assessment to ensure risk is addressed consistently across the country.</p>	NA
CPRA6	HSDRRS/Site adapt	PAC 6. Unlike the levee system in the Greater New Orleans Area with its current allowable overtopping rate, the Morganza project contains a large retention basin that could allow for additional storage capacity. As such, the project should ensure optimization of overtopping rates which would allow decreased heights for levees and structures and thereby reducing project costs.	<p>Potential opportunities to site-adapt the HSDRRS standards, including overtopping rates, has been added to the Final PAC report.</p> <p>The Draft PAC report reflects cost estimates based on a project designed using the Hurricane and Storm Damage Risk Reduction System (HSDRRS) guidelines. These peer-reviewed guidelines were developed in response to recommendations made by the Interagency Performance Evaluation Task force (IPET), a team composed of members from USACE, industry and academia that evaluated the Greater New Orleans levee system after Hurricane Katrina. The Assistant Secretary of the Army (Civil Works) has directed that USACE apply the HSDRRS guidelines to all hurricane and coastal storm system work in Louisiana, including the Morganza to the Gulf PAC project. Comments were received both supporting the use of the HSDRRS criteria, and suggesting adaptation of some of the HSDRRS criteria for the site specific characteristics of the Morganza to the Gulf project area. Parallel to the PAC analysis, the USACE Risk Management Center and New Orleans District jointly evaluated the proposed Morganza to the Gulf levee system and concluded that site adapting three specific HSDRRS criteria could significantly reduce project costs while producing only minimal changes in potential consequences. A section on site adapting the HSDRRS standards has been added to the main PAC report, including a recommendation to change Factor of Safety for end of construction global stability, change the Design Overtopping Rate for well-maintained grass covered levee slopes, and eliminate the structural superiority requirement. If these changes are approved, modifications would be made to designs and costs during the next phase of implementation, Pre-construction Engineering and Design (PED). The USACE is also conducting a national-level risk assessment to ensure risk is addressed consistently across the country.</p>	PAC
CPRA7	Economic analysis/BCR	PAC 7. As currently understood, benefits have not been calculated for eastern side of Bayou Lafourche. The exclusion of these benefits results in a reduced benefits to cost ratio.	Based on a preliminary analysis on the eastern side of Bayou Lafourche, the potential benefits are minimal because most of the structures are located along the ridge and there are only about 100 structures below the 100-yr elevation. Adding these benefits would have a negligible impact on the benefit-to-cost ratio.	PAC
CPRA8	Costs	PAC 8. It is understood that this is an authorization document that utilized the best available assumptions. As the project moves forward in the design/construction phase, it is understood that additional cost-savings can be realized in the future based on real-world data and thus provide a lower overall project cost.	Comment noted.	NA
CPRA9	Direct	PAC 9. Report may not clearly identify that impacts identified are based on existing marsh which will change over time and possibly reducing the impacts that are currently projected.	Wetland impact are determined by comparing with and without project impact using the Wetland Value Assessment (see appendix K. WVA accounts for the change in wetland over the 50 year period of analysis including the back ground loss rates.	RPEIS Appendix K
CPRA10	Mitigate	RPEIS 1. Section 6-69, Mitigation Plan: State should assume OMRR&R after successful completion of a mitigation project. If project fails to meet criteria, then re-construction to ensure these criteria are met should be considered a project expense.	In accordance with the project's statutory authority, the proposed mitigation actions will include construction, with the Non-Federal Sponsor (NFS) responsible for operation, maintenance, repair, restoration, and rehabilitation (OMRR&R) of functional portions of work as they are completed. On a cost-shared basis, USACE will monitor completed mitigation to determine whether additional activities (ex. further construction, additional plantings, etc.) are necessary to achieve mitigation success. USACE will undertake additional actions necessary to achieve mitigation success in accordance with cost-sharing applicable to the project and subject to the availability of funds. Once USACE determines that the mitigation has achieved specified initial success criteria, monitoring & maintenance will be performed by the NFS as part of its OMRR&R obligations. If, after meeting initial success criteria, the mitigation fails to meet subsequent success criteria, USACE will consult with other agencies and the NFS to determine whether operational/management changes would be sufficient to achieve ecological success criteria. If, instead, structural changes are deemed necessary to achieve this success, USACE will instruct the NFS to implement adaptive management measures in accordance with contingency plans and subject to OMRR&R cost-sharing requirements, availability of funding, and current budgetary and other guidance.	RPEIS, Section 6.19; Appendix K
CPRA11	Buyout	RPEIS 2. Page 1-8, Environmental Justice: Further discussions are warranted in the future on the scope of the "preliminary buyout plan", including proposed concepts/alternatives, and how future sea level rise/landloss factors are utilized in determining impacts, if any.	The exact mitigation measures for the structures identified in the preliminary buyout plan has not yet been determined. Presently, detailed information regarding the differences in frequency, depth, and duration of the flooding between the future without-project and future with-project conditions is not available. This detailed information typically would be assessed in light of the uses to which the particular land is zoned, and the appropriate mitigation methods, if any, would be implemented to address the effects of the Federal project. To ensure that the public is informed of all potential impacts of the project and to prevent future delays to project schedule, for purposes of this report, the worst case scenario (most expensive option) has been assumed, which would be a 100 percent buy-out of all of the structures in the impacted areas. The potential induced damages and mitigation for economic damages would be further addressed during detailed design and supplemental NEPA documents. Individual investigation and devising mitigation for each structure, if appropriate, would be done during PED. Additional factors (height of structures vs. induced stages, type of residential structure, social concerns, etc.) would have to be investigated under PED. Each structure would have to be evaluated under PED to determine if mitigation is appropriate. Further modeling would be performed during PED to determine whether there is a potential taking. A Takings Analysis would be prepared during PED to address this issue, and at that time, it would be determined what real estate interest, if any, would be acquired.	RPEIS Summary; Section 6.14.8; Appendix J
CPRA12	Nonstructural/Other	RPEIS 3. Page 6-37, Section 6.14.4: Has impacts from the construction of levees to hurricane evacuation been identified for those communities located outside of the levee system?	Hurricane evacuation is a local responsibility, but temporary impacts to transportation system from the construction of levees will be documented in supplemental NEPA documents.	RPEIS Section 6.14.4

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
CPRA13	Economics/BCR	Economic Appendix: 1. Please clarify if the USACE factored as a benefit any potential reduction in cost of flood insurance policies or the number of policies required.	Current Corps policy prohibits including in the benefit-cost analysis a category representing the reduction in the cost of administering flood insurance policies when properties are removed from the 100-year floodplain under with-project conditions. To the contrary, the Corps encourages all property owners in a study area to maintain NFIP coverage as one of a wide array of available measures to reduce flood risk in a community.	Economic Appendix
CPRA14	Editorial/Clarification	PAC 1. Page iii, Funding Since Authorization: Please verify start date of PED and required contributions (PED for the Lock started in January 2000 and first contributions to the M2G project started in September 2002. Reference to WRDA should include appropriate references, including sections.	Reference to WRDA 1986 (PL99-662), Section 105(c) added to the second paragraph. First paragraph revised as follows: The Energy and Water Appropriations Act of 1998 (PL105-62) included funds to initiate design on the HNC lock feature of the Morganza to the Gulf project, which initiated the Preconstruction Engineering and Design (PED) phase for the HNC lock feature in advance of completing the Feasibility Report (2002) and signing of Chief's report (also 2002). The USACE and non-Federal sponsor signed a Design Agreement for the HNC lock in January 2000, and the non-Federal sponsor first contributed matching funds for PED in 2000. The first non-Federal contributions to the overall Morganza to the Gulf project were in September 2002. Approximately \$61,650,000 has been allocated for the Morganza to the Gulf PED phase, which includes the PAC report. Most of the PED funds have been spent on engineering design and geotechnical investigations rather than on the PAC feasibility-level analysis.	PAC Page iii
CPRA15	Editorial/Clarification	2. Page vi, Levee and structure elevations: Page VI: Clarification is requested regarding increase by 6 feet to 18 feet (levee increases range between those values?). Clarification is also requested regarding the statement "authorized levee elevations varied from 9 to 15 feet (levee increases range between those values?)."	Bullet revised as follows: Levee and structure elevations increased by several feet in all reaches and more than doubled in some reaches. Authorized levee and structure elevations along the authorized alignment vary from a minimum elevation of 9 ft National Geodetic Vertical Datum (NGVD) to a maximum elevation of 15 ft NGVD. Post-authorization levee elevations (for future conditions at year 2085) range from 15 ft North American Vertical Datum (NAVD88 epoch 2004.65) at the lowest point to 26.5 ft NAVD88 at the highest point, and structure elevations range from 17 ft NAVD88 at the lowest structure to 33 ft NAVD88 at the highest structure.	PAC page VI;
CPRA16	Editorial/Clarification	3. Page vii, Environmental mitigation features: Clarification is requested regarding the statement of "creation of 1,352 acres of wetlands". This differs from the direct impacts of approximately 4,113 acres.	Bullet revised as follows: Environmental mitigation features for the previously authorized project included creation of 1,352 acres of marsh habitat. Mitigation for the post-authorization constructible features only (levee reaches F-1, F-2, G-1; the HNC lock complex; and the Bayou Grand Caillou floodgate) include creation of 136 acres of intermediate marsh and 780 acres of brackish marsh. For the remaining programmatic project features, mitigation costs and land requirements were estimated, but the exact number of acres will be determined in the future as more specific designs are completed and impacts are assessed in future NEPA documents. Overall, the post-authorization project could directly impact 4,113 acres of wetlands.	PAC Page vii
CPRA17	Editorial/Clarification	4. PAC Summary Report Page ix, Environmental Considerations: Note should be included clarifying that future wetlands loss would occur without the project.	Do not concur: Wetland impact are determined by comparing with and without project impact using the Wetland Value Assessment (see appendix XX). WVA accounts for the change in wetland over the 50 year period of analysis including the back ground loss rates.	PAC Summary
CPRA18	Editorial/Clarification	5. Page xi, Summary of the Post-Authorization Project: Please clarify between FY14 Program Year Cost and Fully Funded Year Cost	Reports clarified as follows: Construction of the project would be funded 65 percent by the Federal Government and 35 percent by the non-Federal sponsor. Federal implementation of the post-authorization Morganza to the Gulf project would be subject to the non-Federal sponsor agreeing to comply with applicable Federal laws and policies as described in this report. The total first cost for the project, inclusive of associated investigation, environmental, engineering and design, construction, real estate, mitigation, supervision and administration, and contingency costs, is \$10,265,100,000 (October 2012 dollars). The fully funded total project cost (includes inflation) is approximately \$12,872,846,000. These costs do not include the non-Federal sponsor's OMR&R costs.	PAC xi
CPRA19	Editorial/Clarification	6. Page 14, Funding and Cost-Share: Please verify start date of PED and required contributions (PED for the Lock started in January 2000 and first contributions to the Morganza to the Gulf project started in September 2002.	Revised consistent with the response and revised text in response to CPRA 14.	PAC pg 14
CPRA20	Editorial/Clarification	7. Page 19, Figure 2-2: Please reference the statement in this figure "Damages when Federal levees fail due to erosion from wave overtopping. Damages from overtopping and rainfall not calculated." If these two statements are separate conditions then they should be listed separately to limit possible confusion.	Figure 2-2 has been revised to clarify.	PAC Figure 2-2
CPRA21	Editorial/Clarification	8. Page 21, Table 6.1: Please clarify whether the note referencing sea level rise was applied to the still water level or if it is contained in the wave heights.	Sea level rise was considered in both the still water level and the wave heights.	PAC Page 21
CPRA22	Editorial/Typos	9. Page 35, Section 4.2: The last sentence on this page references Section 5.5.1; however, there does not appear to be any relevant section.	The reference to section 5.5.1 was a typo; the correct reference is 6.5.1.	PAC page 6.5.1
CPRA23	Editorial/Clarification	10. Page 54, Table 6-1: Please clarify the relationship between the C-North levee section and the Larose to Golden Meadow levee system regarding what assumptions were made on still water and wave heights.	Section 2.8.2 of the Engineering Appendix explains the methodology used to determine the design elevations for these reaches. Tables in this section show the still water levels and wave heights used. For the Larose C-North reach base hydraulic boundary conditions from the 2010 Morganza to the Gulf ADCIRC model were used. The Lockport to Larose and GIWW reaches used the 2010 West Shore Lake Pontchartrain ADCIRC base hydraulic boundary conditions.	PAC Engineering Appendix Section 2.8.2
CPRA24	Editorial/Clarification	11. Page 63: Section 6.5.1: Paragraph states that 1,000 structures would remain outside the system. However, page 35 states that 6,000 residential structures in lower Bayou du Large and Bayou Grand Caillou an additional 70 structures in Isles de Jean Charles are in the 100-year floodplain. Clarification is requested regarding the differences between these figures.	Revised the section to clarify that the 6,000 residential structures from the 2002 report included areas along the bayou ridges south of Houma (including some structures that are now inside the authorized/PAC alignment) and the 1,000 structures is the number of structures outside the authorized/PAC alignment.	PAC Section 6.5.1
CPRA25	Editorial/Clarification	12. Page 65, Table 6-8 : Does the 2% AEP elevations for Larose to Golden Meadow utilize the same sea level rise calculations and/or the same methodologies for determining wave elevations?	Yes.	NA
CPRA26	Editorial/Typos	13. Page 68, Section 6.8.1.1: Please clarify reference to "worker years of labor annually"? Is this the correct reference to utilize or should it be based on hours?	It should have been total worker years of labor (not annually). The units have been corrected in the PAC report and the Economic RED Appendix.	PAC Section 6.8.1.1 Economic RED appendix
CPRA27	Editorial/Clarification	14. Page 80, section 7.4.3: Paragraph states "The environmental control structures would be used for drainage of isolated areas within a certain timeframe and maximum inundation of the marsh areas." If this information is contained in the Engineering Appendix, then please include a reference. If information is not contained that defines time durations then estimated values, definition or methodology should be included.	The generic reference to the Engineering Appendix was deleted because the information is located in a reference to the Engineering Appendix, not in the Engineering Appendix that is part of the PAC report. The reference is "Annex 1 Hydrology, Hydraulics and Water Quality Appendix H MTOG-Environmental Control Structures Study," which can be provided upon request.	PAC Section 7.4.3
CPRA28	Editorial/Clarification	15. Page 80, table 7-2: It would be more informative to also list the total number of days per year each structure was closed, if available.	A spreadsheet with the closing and opening dates/times for each floodgate closure can be provided but is too detailed to include in the main PAC report. Text intro to the table has been revised to indicate: "Most closure durations were less than 48 hours. The longest closure was during Tropical Storm Alex in 2010 when the Humble Canal and Little Caillou floodgates were closed 10 to 12 days."	PAC Table 7-2
CPRA29	Editorial/Clarification	16. Page 84, Section 7.7.2: Paragraph states "If, instead, structural changes are deemed necessary to achieve ecological success, the USACE would implement appropriate adaptive management measures in accordance with the contingency plan and subject to cost sharing requirements, availability of funding, and current budgetary and other guidance. Please clarify as to what the contingency plan entails or include references to the appropriate section of the report.	The mitigation plan for habitat impacts associated with the constructible project elements has been revised (see RPEIS Section 6.19 and Appendix K), and now includes an adaptive management plan component. Be advised, however, that it is impossible to anticipate all possible corrective actions that might be required to ensure mitigation success following transfer of the project to the Non-Federal Sponsor. If unanticipated problems occur, then the NFS, HET, and USACE would need to work together to develop a plan (contingency plan) to correct or minimize these problems.	PAC Section 7.7.2; RPEIS Section 6.19; Appendix K
CPRA30	Editorial/Clarification	17. Page 84, Section 7.8: For clarity, it would be beneficial to include figures for the total marsh acres needed and the "additional" mitigation costs to construct the remaining acres.	Concur. A footnote will be added to Table 7-3.	PAC Section 7.8 Table 7-3
CPRA31	Editorial/Clarification	18. Attachment 3, Inundation Maps: MTOG Inundation Maps (50 Year and 100 Year Inundation for Years 2010, 2035, 2085): Were the depth damage analysis model runs entered for the Thibodaux area and no impacts were identified?	The Thibodaux area south of Bayou Lafourche was modeled. As shown on the maps, under existing conditions (2010) and base conditions (2035), Thibodaux is not impacted until the 500-year event. Under future/end of period of analysis conditions (2085), Thibodaux is impacted for the 100-year event and less frequent events.	PAC attachment 3
CPRA32	Editorial/Typos	19. Figures 12 and 14, C-north and Lockport to Larose Levee Alignment: Figures appear to incorrectly show the location of the GIWW floodgates instead of further east where the alignment crosses this waterway.	Noted. Figure was updated in Final Report to show correct location for GIWW gate at Larose.	PAC figures 12 and 14
CPRA33	Editorial/Typos	RPEIS 1. Page 1-8, Environmental Justice: In reference to the statement "This study complies with the requirements of Executive Order 12989." The correct Executive Order is 12898.	Typo corrected	RPEIS Summary
CPRA34	T&E	RPEIS 2. Appendix A, Environmental Supporting Information: Information does not appear to include current information pertaining to recent changes to Endangered and Threatened Species Act. Please clarify if there are any new study data in the project area that would warrant inclusion.	Concur. Errata to BA being prepared to address	RPEIS Appendix A
CPRA35	T&E	RPEIS 3. Appendix A, Environmental Supporting Information: Please clarify why this document lists species that are not found in the project area (i.e. Finback Whales) and listing of locations that would appear to be outside of the project area (i.e. Raccoon Island).	Concur. Errata to BA being prepared to address	RPEIS Appendix A

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CPRA36	Editorial/Clarification & Inconsistency	RPEIS 4. Appendix C: Clean Water Act 404b, page 37, Section G - Determination of Cumulative Effects on the Aquatic Ecosystem: Please clarify the whether the statement that the project would cause a decrease in water temperature and an increase in dissolved oxygen levels is correct. Please note that on page 16, it states that the project could cause a decrease in dissolved oxygen, which is the opposite of what is contained in Section G.	Comment note; corrected in document	RPEIS Appendix C
CPRA37	Economics	Economic Appendix: 1. Table 8, FEMA Flood Claims by Parish 1978-2011: The table references number of claims paid; however, a claim amount was not included for each respective parish. Additionally, it is clearly noted that there are two separate sources for damage claims during flood events, those that would be claimed under the FEMA policy and those that fall outside of the FEMA flood policies.	This table does not include loss incurred by residents without flood insurance.	PAC Economic Appendix
LDWF1	Indirect/gate closures	Info is both insufficient & inconsistent, espec floodgate and envr structure design and op plans. Cumulative impacts of structural protection to productivity and sustainability of La estuarine areas are difficult to determine. Particular concern is high prob that floodgates & envr structures will close for salinity control purposes more often and for longer periods in future. Suggest design & op uncertainties be resolved in order so reliable predictions of impacts can be determined.	Concur A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
LDWF2	Indirect/gate closures	WVA does not adequately quantify impacts to fisheries prod. Need to incorporate types and # of floodgates & envr control structures that will be present in levee design; how structures will be operated; how structures could affect fish access to & from critical habitats; & how structures could affect recruitment of commercially and recreationally important aquatic species. Unclear how aquatic organisms respond to/use these structures. Don't assume comparability to natural conditions. Species of concern: white & brown shrimp, blue crab, eastern oyster, gulf menhaden, redfish, spotted seatrout, black drum, striped mullet, bay anchovy, and Atlantic croaker.	The mitigation of the indirect and direct impacts to wetlands using the WVA will mitigate for fisheries resources. The WVA is a habitat model that was built not to determine the best wetlands but provide a benefit for fish and wildlife that use the wetland habitat. During PED additional fisheries impact analysis (such as CASM) can be done to determine if there are any additional impacts. This would use the updated H&H model that will include sea level rise	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LDWF3	Mitigate	Need detailed wetland & fisheries mitigation plan outlying specific projects; include LT monitoring & be flexible. Clarify that projects aren't part of levee mitigation plan. Envir benefits of levee construction are exaggerated in document. Additional fisheries production impact analysis( w & w/o separate restoration projects) for each species of concern listed in #2 should also be conducted.	The mitigation of the indirect and direct impacts to wetlands using the WVA will mitigate for fisheries resources. The WVA is a habitat model that was built not to determine the best wetlands but provide a benefit for fish and wildlife that use the wetland habitat. During PED additional fisheries impact analysis (such as CASM) can be done to determine if there are any additional impacts. This would use the updated H&H model that will include sea level rise	RPEIS, Section 6.19; Appendix K
LDWF4	Eco Proj	Other restoration projects deserve more discussion in No Action Alt scenarios. Should also discuss 1% and 3% AEP if and how presence of a levee could negatively impact effectiveness of other restoration projects.	The levee system was designed to have minimum impacts on existing ecosystem projects. These effects may change under different sea level rise scenarios and operation schemes.	NA
LDWF5	Indirect	Cum impact benefits from levee construction need supporting evidence, espec when most benefit appears to be provided by other restoration programs & negative impacts from presence of a levee are more likely. Cum impact sections in main doc list only benefits and minimal impacts, where in App C it shows that more frequency and longer duration structure closures could lead to more substantial impacts.	Concur. Cumulative impacts analysis and documentation were revised accordingly.	RPEIS Section 3.5.3; 6.18

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LDWF6	Indirect/gate closures	Sec 6.5.2 needs clarification on salinity reduction and its effects on both inside & outside system. Lack of research on fish passage thru various structures. No detailed descriptions of closure impacts due to timing & duration espec w/regards to increased SLR.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LDWF7	Nonstructural/Other	Sec 6.14.5 needs discussion of non-structural alt including, but not ltd to elevating structures & roads	A discussion of the use of nonstructural measure and ring levees to address the uncertainty in sea level rise is included in the risk and uncertainty section	RPEIS Section 6.14.5
LDWF8	Indirect	Sec 6.16.2 doesn't address rec & commercial boats being trapped outside system during storm events, subsequent closures, and assoc econ impacts.	Notifications of a gate closure before storm events is a local responsibility. TLDC already has an email list to notify interested parties of potential closures. The HNC will have a lock on it which will be operable for a longer time into a storm event.	RPEIS Section 6.16.2
LDWF9	T&E	LNHP records show potential impact to a bald eagle nesting site. If work for project commences during nesting season, conduct a field visit to worksite to look for evidence of nesting colonies no more than 2 wks before project starts. If active nesting colonies are found, further consultation with LDWF is reqd.	Concur. This section was revised to include LDWF restrictions on work near colonial nesting birds and bald eagle nests and consultation requirements with LDWF as required.	RPEIS Section 6.7
EPA1	EJ	EPA recommends that the USACE perform an appropriately detailed EJ analysis, immediately begin additional outreach and public involvement, consider alternatives to a buyout, and provide a detailed analysis of how buyout alternatives would avoid additional or cumulative, disproportionate impacts on EJ areas and communities.	<p>Based on the EPA comments, additional detailed EJ analysis is on-going. The results of the analysis have been incorporated into the FRPEIS. Major points are as follows:</p> <p>(a) Based on conversations with Sharon Osowski at the EPA, the analysis included Census block level analysis for race/ethnicity and Census tract level analysis for income/poverty for the entire study area using 2010 US Census data and the 2007 - 2011 American Community Survey 5-Year Estimates.</p> <p>(b) The analysis considered communities inside and outside of the existing and proposed levee system. Data at the Census block level for race/ethnicity from the 2010 US Census and the Census tract level for income/poverty obtained from the 2007 - 2011 American Community Survey 5-Year Estimates was used to identify potential EJ communities.</p> <p>(c) The additional analysis incorporated potential buyouts and uniform relocation assistance.</p> <p>(d) analysis was conducted on communities located partially within and outside of the proposed levee system in order to determine impacts on community cohesion.</p> <p>(e) The analysis for EJ was conducted at the Programmatic EIS level. In the future, additional analysis, outreach and public involvement would be conducted during Planning and Engineering Design and documented in supplemental NEPA reports that are tiered to the Programmatic EIS. See section 8 of the FRPEIS for a list of public and stakeholder meetings that has already occurred. Representatives of the following state recognized tribes, Biloxi-Chitimacha-Choctaw tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation were invited to these public meetings.</p>	RPEIS Summary; Section 5.2.13; 6.14.8; 7; Appendix J
EPA2	EJ & Tribes	Compliance with Executive Order (E.O.) 13175 (environmental justice) and formal government to government coordination with all federally recognized tribes (especially Chitimacha Tribe) was not documented or conducted. Also engage state recognized tribes and other stakeholders.	E.O. 13175 "Consultation and Coordination with Indian Tribal Governments" does not apply to state-recognized tribes or stakeholders. State-recognized tribes identified by the EPA include the Isle de Jean Charles Band, Point au Chien Tribe, the United Houma Nation, and the Biloxi-Chitimacha Confederation. CEMVN may engage state-recognized tribes and other stakeholders through the NEPA process and/or as interested parties through the Section 106 process. Federally-recognized tribes were engaged through both the NEPA and Section 106 processes. Hill and Hughbanks concur that consultation with federally-recognized tribes was not documented in the draft RPEIS and that the consultation with federally-recognized tribes in accordance with E.O. 13175, the National Historic Preservation Act (NHPA), and the National Environmental Policy Act (NEPA), as well as additional laws, executive orders, presidential memoranda, and USACE policies, regarding any activity that has the potential to significantly affect protected tribal resources, tribal rights, and/or Indian lands, should be documented in the final RPEIS. In an effort to continue government-to-government consultation in partial fulfillment of responsibilities under Executive Order 13175, the National Environmental Policy Act, and Section 106 of the National Historic Preservation Act, in a letter dated March 5, 2013, the CEMVN offered federally-recognized tribes the opportunity to review and comment on the potential of the proposed action described in the draft RPEIS to significantly affect protected tribal resources, tribal rights, or Indian lands. Government-to-government consultation with federally-recognized tribes will continue as the plans for the programmatic features are refined.	RPEIS Summary; Section 7
EPA3	Buyout	USACE should develop and refine its preliminary buyout plan; Buyout options should include relocation of intact communities where the potential for irreparable harm exists for unique cultures, languages, and traditions that may be lost if the community is broken up, such as in the case of the Isle de Jean Charles. USACE should provide a schedule and detailed information for the proposed sequence of construction and buyout alternatives.	The exact mitigation measures for the structures identified in the preliminary buyout plan has not yet been determined. Presently, detailed information regarding the differences in frequency, depth, and duration of the flooding between the future without-project and future with-project conditions is not available. This detailed information typically would be assessed in light of the uses to which the particular land is zoned, and the appropriate mitigation methods, if any, would be implemented to address the effects of the Federal project. To ensure that the public is informed of all potential impacts of the project and to prevent future delays to project schedule, for purposes of this report, the worst case scenario (most expensive option) has been assumed, which would be a 100 percent buy-out of all of the structures in the impacted areas. The potential induced damages and mitigation for economic damages would be further addressed during detailed design and supplemental NEPA documents. Individual investigation and devising mitigation for each structure, if appropriate, would be done during PED. Additional factors (height of structures vs. induced stages, type of residential structure, social concerns, etc.) would have to be investigated under PED. Each structure would have to be evaluated under PED to determine if mitigation is appropriate. Further modeling would be performed during PED to determine whether there is a potential taking. A Takings Analysis would be prepared during PED to address this issue, and at that time, it would be determined what real estate interest, if any, would be acquired.	NA

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EPA4	Indirect	In addition to avoiding and minimizing direct wetland impacts, the design and implementation of this levee system must focus on the larger and more complex challenge of minimizing indirect impacts to these valuable aquatic resources.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA5	Indirect & Socioeconomic	The Final Revised PEIS (FRPEIS) and highlighted in the summary should ensure that the public and decision-makers are informed of major long-term environmental and socioeconomic risk associated with the potential for increased frequency of gate and water control structure closure of this proposed levee system. These impacts should be assessed in the section on environmental consequences and how might these be addressed in the future.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Section 6.19; Appendix K
EPA6	Indirect	Finally, the USACE should consider discussing in the FRPEIS section regarding "unresolved issues", as there does not appear to be a clear path forward identified for addressing this concern and ensuring adequate hydrology and navigation in the long term.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
EPA7	Risk/Induced	USACE should endeavor to ensure that residents in the area understand the residual flood risk that would remain while the project is being constructed and when it is complete, and work to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	The main PAC report has been updated to explain Residual Risk. Levees are only one of many steps to reduce risk. Even with the Morganza project in place, some risk of flooding remains, as well as other residual risks such as wind damage. An important step is for parish and state governments to develop evacuation plans and for individuals to heed them. USACE will continue their coordination/communication with the public and improve on the discussion disclosing potential flood risk reduction. The FRPEIS includes a description of residual flood risk and describes the specific efforts taken to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	PAC Residual Risk
EPA8	FWOP	Section 3.7.2 Wetland Loss should be revised to include all actions, past and present, that have led to coastal wetland loss. These actions include oil and gas extraction, pipeline canals, navigational projects, commercial and residential development, and global sea level rise.	Concur. Section 3.7.2 Wetland Loss was revised to include a more detailed account of all primary actions, past and present, that have led to coastal wetland loss. The 2004 programmatic Louisiana Coastal Area (LCA) Ecosystem Restoration Study has extensive documentation about wetland loss; this information is included by reference into the FRPEIS.	RPEIS Section 3.7.2
EPA9	Indirect	Although the full extent of such negative impacts has not been adequately assessed, statements regarding the net indirect environmental effects of this levee system should at a minimum indicate that there is the potential for negative effects in the future – effects which might outweigh any potential near-term environmental benefits.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA10	Buyout & EJ	EPA recommends assess if implementation of constructible features would result in increased surge risk. If so, FRPEIS should include non-structural measures to address increased risk and assess disproportionate EPA recommends the USACE assess whether implementation of the constructible features would result in increased surge risk to properties and people outside the proposed levee system. If so, we recommend that the FRPEIS include as constructible features those non-structural measures needed to address such increased risk and assess this disproportionate impact in the EJ analysis.	A takings analysis will be prepared during PED to address this issue. At that time it will be determined what real estate interest, if any, would be acquired. Any inducted damages, if appropriate will be addressed during construction.	NA
EPA11	Air	Please include a discussion to clarify that 110(a)(1) maintenance areas are not subject to the air quality conformity requirements of Clean Air Act Section 176(c). Also include the distinction that EPA's March 24, 2008 approval of the Lafourche Parish 110(a)(1) maintenance plan pertains to the 1997 8-hour ozone NAAQS. EPA completed the designations process under the 2008 8-hour ozone NAAQS on April 30, 2012 (77 FR 30088), and Lafourche Parish was designated as unclassifiable/attainment for this standard.	The Air Quality section in the Final RPEIS has been revised to include the following: (A) The Lafourche Parish 110(a)(1) maintenance areas are not subject to the air quality conformity requirements of Clean Air Act Section 176(c). EPA's March 24, 2008 approval of the Lafourche Parish 110(a)(1) maintenance plan pertains to the 1997 8-hour ozone NAAQS. The EPA completed the designations process under the 2008 8-hour ozone NAAQS on April 30, 2012 (77 FR 30088), and Lafourche Parish was designated as unclassifiable/attainment for this standard. In a telephone communication with the Louisiana Department of Environmental Quality on March 19, 2013, it was noted that the maintenance plan for Lafourche Parish was lifted in 2004. It was also confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to conform to the de minimis levels of emissions.  (B, C, D) In a telephone communication with the LDEQ on March 19, 2013, it was confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to meet the general conformity requirements for construction. No mitigation measures are necessary because Lafourche Parish is not required to conform to the de minimis levels of emissions. However, best management practices would be utilized to reduce all air emissions and particulate matter during construction.	RPEIS Section 5.2.9; 6.10; 7
EPA12	EJ	The FRPEIS should include a detailed socioeconomic analysis for potential EJ impacts comparing the demographics and potential environmental impact of those inside the levees with those who are outside the system. In addition, the USACE should consider the potential impacts of increased storm surge and flooding due to the timing of levee construction in the EJ analysis.	Based on the EPA comments, additional detailed EJ analysis is on-going. The results of the analysis have been incorporated into the FRPEIS. Major points are as follows: (a) Based on conversations with Sharon Osowski at the EPA, the analysis included Census block level analysis for race/ethnicity and Census tract level analysis for income/poverty for the entire study area using 2010 US Census data and the 2007 - 2011 American Community Survey 5-Year Estimates. (b) The analysis considered communities inside and outside of the existing and proposed levee system. Data at the Census block level for race/ethnicity from the 2010 US Census and the Census tract level for income/poverty obtained from the 2007 - 2011 American Community Survey 5-Year Estimates was used to identify potential EJ communities. (c) The additional analysis incorporated potential buyouts and uniform relocation assistance. (d) analysis was conducted on communities located partially within and outside of the proposed levee system in order to determine impacts on community cohesion. (e) The analysis for EJ was conducted at the Programmatic EIS level. In the future, additional analysis, outreach and public involvement would be conducted during Planning and Engineering Design and documented in supplemental NEPA reports that are tiered to the Programmatic EIS. See section 8 of the FRPEIS for a list of public and stakeholder meetings that has already occurred. Representatives of the following state recognized tribes, Biloxi-Chitimacha-Choctaw tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation were invited to these public meetings.	RPEIS Summary; Section 5.2.13; 6.14.8; 7; Appendix J
EPA13	Buyout	The USACE should develop additional alternatives for residents that are outside the proposed levee system (e.g., Isle de Jean Charles). This should include the buyouts as stated in the DRPEIS, but should also include non buyout alternatives like ring levees, house elevation, etc. Alternatives should recognize and protect the uniqueness of the Isle de Jean Charles community and maximize community cohesion by developing alternatives that have a concerted effort to protect, buyout, or move Isle de Jean Charles residents as an intact community. USACE should also determine whether the Point au Chien Indian Tribe and United Houma Nation would experience similar potential impacts.	The exact mitigation measures for the structures identified in the preliminary buyout plan has not yet been determined. Presently, detailed information regarding the differences in frequency, depth, and duration of the flooding between the future without-project and future with-project conditions is not available. This detailed information typically would be assessed in light of the uses to which the particular land is zoned, and the appropriate mitigation methods, if any, would be implemented to address the effects of the Federal project. To ensure that the public is informed of all potential impacts of the project and to prevent future delays to project schedule, for purposes of this report, the worst case scenario (most expensive option) has been assumed, which would be a 100 percent buy-out of all of the structures in the impacted areas. The potential induced damages and mitigation for economic damages would be further addressed during detailed design and supplemental NEPA documents. Individual investigation and devising mitigation for each structure, if appropriate, would be done during PED. Additional factors (height of structures vs. induced stages, type of residential structure, social concerns, etc.) would have to be investigated under PED. Each structure would have to be evaluated under PED to determine if mitigation is appropriate. Further modeling would be performed during PED to determine whether there is a potential taking. A Takings Analysis would be prepared during PED to address this issue, and at that time, it would be determined what real estate interest, if any, would be acquired.	NA
EPA14	EJ	The USACE should use Census Block Groups or a geographic unit smaller than Tracts, to perform socioeconomic and EJ assessments in order to obtain a more accurate estimate of the demographics of the area and thus a more accurate depiction of the potential impacts of the proposed project. The USACE should discuss its rationale for the criteria used (e.g., 50% minority, etc.). A more in-depth analysis is needed in order to describe the minority make-up of the communities (e.g. Asian, Native American, etc.) and analyze the potential impacts of the proposed project that may affect each ethnic group differently.	Based on the EPA comments, additional detailed EJ analysis is on-going. The results of the analysis have been incorporated into the FRPEIS. Major points are as follows: (a) Based on conversations with Sharon Osowski at the EPA, the analysis included Census block level analysis for race/ethnicity and Census tract level analysis for income/poverty for the entire study area using 2010 US Census data and the 2007 - 2011 American Community Survey 5-Year Estimates. (b) The analysis considered communities inside and outside of the existing and proposed levee system. Data at the Census block level for race/ethnicity from the 2010 US Census and the Census tract level for income/poverty obtained from the 2007 - 2011 American Community Survey 5-Year Estimates was used to identify potential EJ communities. (c) The additional analysis incorporated potential buyouts and uniform relocation assistance. (d) analysis was conducted on communities located partially within and outside of the proposed levee system in order to determine impacts on community cohesion. (e) The analysis for EJ was conducted at the Programmatic EIS level. In the future, additional analysis, outreach and public involvement would be conducted during Planning and Engineering Design and documented in supplemental NEPA reports that are tiered to the Programmatic EIS. See section 8 of the FRPEIS for a list of public and stakeholder meetings that has already occurred. Representatives of the following state recognized tribes, Biloxi-Chitimacha-Choctaw tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation were invited to these public meetings.	RPEIS Summary; Section 5.2.13; 6.14.8; 7; Appendix J

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
EPA15	EJ	The USACE should perform an EJ analysis characterizing and comparing these two populations. The DRPEIS should provide a similar level of detail on the buyout activities as it does for the engineering and economic aspects of levee construction.	Based on the EPA comments, additional detailed EJ analysis is on-going. The results of the analysis have been incorporated into the FRPEIS. Major points are as follows: (a) Based on conversations with Sharon Osowski at the EPA, the analysis included Census block level analysis for race/ethnicity and Census tract level analysis for income/poverty for the entire study area using 2010 US Census data and the 2007 - 2011 American Community Survey 5-Year Estimates. (b) The analysis considered communities inside and outside of the existing and proposed levee system. Data at the Census block level for race/ethnicity from the 2010 US Census and the Census tract level for income/poverty obtained from the 2007 - 2011 American Community Survey 5-Year Estimates was used to identify potential EJ communities. (c) The additional analysis incorporated potential buyouts and uniform relocation assistance. (d) analysis was conducted on communities located partially within and outside of the proposed levee system in order to determine impacts on community cohesion. (e) The analysis for EJ was conducted at the Programmatic EIS level. In the future, additional analysis, outreach and public involvement would be conducted during Planning and Engineering Design and documented in supplemental NEPA reports that are tiered to the Programmatic EIS. See section 8 of the FRPEIS for a list of public and stakeholder meetings that has already occurred. Representatives of the following state recognized tribes, Biloxi-Chitimacha-Choctaw tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation were invited to these public meetings.	RPEIS Summary; Section 5.2.13; 6.14.8; 7; Appendix J
EPA16	EJ	The USACE should directly contact the Chief of the Isle de Jean Charles Band of the Biloxi-Chitimacha-Choctaw Indians, the Point au Chien Indian Tribe, and United Houma Nation, and appropriate residents of these communities, so they can have meaningful participation in the NEPA and buyout processes. Given the remote and rural nature of these locations, solely advertising a public meeting in the Houma newspaper is inadequate. A more concerted effort to contact individuals in these communities is necessary because people may not speak English, receive local newspapers, and/or may have a fear of governmental authorities.	Based on the EPA comments, additional detailed EJ analysis is on-going. The results of the analysis have been incorporated into the FRPEIS. Major points are as follows: (a) Based on conversations with Sharon Osowski at the EPA, the analysis included Census block level analysis for race/ethnicity and Census tract level analysis for income/poverty for the entire study area using 2010 US Census data and the 2007 - 2011 American Community Survey 5-Year Estimates. (b) The analysis considered communities inside and outside of the existing and proposed levee system. Data at the Census block level for race/ethnicity from the 2010 US Census and the Census tract level for income/poverty obtained from the 2007 - 2011 American Community Survey 5-Year Estimates was used to identify potential EJ communities. (c) The additional analysis incorporated potential buyouts and uniform relocation assistance. (d) analysis was conducted on communities located partially within and outside of the proposed levee system in order to determine impacts on community cohesion. (e) The analysis for EJ was conducted at the Programmatic EIS level. In the future, additional analysis, outreach and public involvement would be conducted during Planning and Engineering Design and documented in supplemental NEPA reports that are tiered to the Programmatic EIS. See section 8 of the FRPEIS for a list of public and stakeholder meetings that has already occurred. Representatives of the following state recognized tribes, Biloxi-Chitimacha-Choctaw tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation were invited to these public meetings.	RPEIS Summary; Section 5.2.13; 6.14.8; 7; Appendix J
EPA17	Indirect	EPA believes that a majority of the resources were not properly evaluated for their environmental consequences. In most cases, impacts are stated in generalities and only the magnitude (the amount of change) is specified. However, the extent (how vast is the change), direction (how dynamic is the change), duration (how lasting is the change), and speed (how rapid is the change) of the impact should be disclosed as well. Otherwise stated, the Environmental Consequences chapter should discuss and analyze how and why the proposed project affects the overall health of the resources within the study area.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below: (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. 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For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Section 6.19; Appendix K
EPA18	Indirect	EPA believes that the indirect impacts analysis has not fully disclosed the entirety of indirect impacts.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below: (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K

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EPA19	Indirect/gate closures	The Draft PAC Report asserts that the proposed environmental control structures in the levee system "mitigate for indirect impacts of the levee system by matching and/or enhancing existing drainage patterns during non-storm conditions" (Draft PAC Report, page ii). This statement should be amended to account for the potential long-term indirect impacts associated with the projected increase in the closure frequency of the system's gates and water control structures.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA20	Indirect/gate closures	The Draft PAC Report states on page 83 that "The Habitat Evaluation Team determined that no indirect impacts to wetlands would result from the project." A similar statement is made on page 6-62 of the DRPEIS. EPA takes issue with this assertion. While potential near-term hydrologic effects of the levee system could theoretically be negligible, the USACE's own analysis regarding the frequency of gate and water control structure closure in the future strongly suggests that the project could result in significant long-term adverse impacts to wetlands, water quality, and fisheries (along with navigation).	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA21	Indirect/gate closures & Hydrology Impacts	The last sentence on page 19 of Appendix C states that "...the project would not induce significant changes on the hydrology of the estuary." It is not clear how this could be consistent with the USACE's projections regarding increased closure frequency of gates and water control structures in the long-term. While this section does discuss the possibility that the sponsor might wish to modify the closure criteria to address non-storm water stages, there is no discussion of the potentially significant changes in circulation that could occur with the increased closure frequency projected using the current closure criteria. As with other portions of the DRPEIS, EPA recommends the USACE describe the potential indirect impacts that could occur due to increased closure frequency of gates and water control structures due to relative sea level rise, with the focus in this section being on estuarine flow and current patterns.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA22	Indirect/gate closures	The discussion of cumulative effects on the aquatic ecosystem on page 37 of Appendix C states that "No long-term, negative cumulative impacts are anticipated." Here again, it is unclear how the projections regarding future frequency of gate and structure closure could support such a conclusion.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K

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EPA23	Indirect	The FRPEIS should include a comprehensive indirect impacts analysis and fully disclose all effects caused by the action that occur later in time or are farther removed in distance.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA24	Indirect	The FRPEIS should include a comprehensive cumulative impacts analysis by establishing spatial and temporal boundaries for significant resources and including a list and description of past, present, and reasonably foreseeable future projects. An attempt was made to establish boundaries and list projects; however, much more detail is required. The analysis should include the overall impacts to the environment that can be expected if the individual projects and their impacts, including the proposed project, are allowed to accumulate.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. 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If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA25	Editorial/Inconsistency	Table 6-1 direct wetland impact numbrs are inconsistent with Appendix C; numbers should be reconciled in the RFPEIS.	The mitigation plan for compensating habitat impacts produced by the constructible project elements has been revised (see RPEIS, Appendix K). This appendix has updated information concerning direct and indirect wetland impacts. Appendix C has been revised to be consistent with with these revised data.	RPEIS Table 6-1; Appendix K
EPA26	Borrow	The FRPEIS should include information demonstrating that there are no less environmentally damaging borrow sources for the constructible levee reaches. This same analysis of borrow site alternatives would also be needed for subsequent environmental reviews of the programmatic features. On this point, we would note that the avoidance of jurisdictional wetlands for borrow material is one of the significant environmental accomplishments of the expedited NEPA process for the Greater New Orleans Hurricane and Storm Damage Risk Reduction System. We would encourage the USACE to work to repeat this important precedent.	<p>Partial concur: Can not concur with the total avoidance of jurisdictional wetlands.</p> <p>Borrow sites have only been identified for the constructible features (levee reaches F-1, F-2, and G-1; the HNC lock complex; and the Bayou Grand Caillou floodgate). For the remaining programmatic features, additional EISs or EAs would address borrow site impacts once borrow sites are identified. Since the borrow sources for the programmatic features are unknown at this time, the exact quantity and habitat types of impacted wetlands are unknown as well. The location of borrow sources for the programmatic features and the quantity and habitat types of impacted wetlands would be documented in supplemental EISs or EAs. Additional information will be provided in supplemental EISs or EAs to better demonstrate selection of the least environmentally damaging borrow sources. Additional discussion of the avoidance of jurisdictional wetlands would also be included. Furthermore, all necessary information disclosing the actions to avoid, minimize and reduce potential adverse impacts of borrow sources are documented in the Final RPEIS.</p>	
EPA27	Air	Mitigation measures should be included in a construction emissions mitigation plan or similar document in order to reduce air quality impacts associated with emissions of NOx, CO, PM, SO2, and other pollutants from construction-related activities: provide specified mitigation measures for fugitive dust source controls	<p>The Air Quality section in the Final RPEIS has been revised to include the following:</p> <p>(A) The Lafourche Parish 110(a)(1) maintenance areas are not subject to the air quality conformity requirements of Clean Air Act Section 176(c). EPA's March 24, 2008 approval of the Lafourche Parish 110(a)(1) maintenance plan pertains to the 1997 8-hour ozone NAAQS. The EPA completed the designations process under the 2008 8-hour ozone NAAQS on April 30, 2012 (77 FR 30088), and Lafourche Parish was designated as unclassifiable/attainment for this standard. In a telephone communication with the Louisiana Department of Environmental Quality on March 19, 2013, it was noted that the maintenance plan for Lafourche Parish was lifted in 2004. It was also confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to conform to the de minimis levels of emissions.</p> <p>(B, C, D) In a telephone communication with the LDEQ on March 19, 2013, it was confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to meet the general conformity requirements for construction. No mitigation measures are necessary because Lafourche Parish is not required to conform to the de minimis levels of emissions. However, best management practices would be utilized to reduce all air emissions and particulate matter during construction.</p>	RPEIS Section 5.2.9; 6.10; 7
EPA28	Air	Provide specified mitigation measures for air quality mobile and stationary source controls	<p>The Air Quality section in the Final RPEIS has been revised to include the following:</p> <p>(A) The Lafourche Parish 110(a)(1) maintenance areas are not subject to the air quality conformity requirements of Clean Air Act Section 176(c). EPA's March 24, 2008 approval of the Lafourche Parish 110(a)(1) maintenance plan pertains to the 1997 8-hour ozone NAAQS. The EPA completed the designations process under the 2008 8-hour ozone NAAQS on April 30, 2012 (77 FR 30088), and Lafourche Parish was designated as unclassifiable/attainment for this standard. In a telephone communication with the Louisiana Department of Environmental Quality on March 19, 2013, it was noted that the maintenance plan for Lafourche Parish was lifted in 2004. It was also confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to conform to the de minimis levels of emissions.</p> <p>(B, C, D) In a telephone communication with the LDEQ on March 19, 2013, it was confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to meet the general conformity requirements for construction. No mitigation measures are necessary because Lafourche Parish is not required to conform to the de minimis levels of emissions. However, best management practices would be utilized to reduce all air emissions and particulate matter during construction.</p>	RPEIS Section 5.2.9; 6.10; 7

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EPA29	Air	Provide specified mitigation measures for air quality administrative controls.	The Air Quality section in the Final RPEIS has been revised to include the following: (A) The Lafourche Parish 110(a)(1) maintenance areas are not subject to the air quality conformity requirements of Clean Air Act Section 176(c). EPA's March 24, 2008 approval of the Lafourche Parish 110(a)(1) maintenance plan pertains to the 1997 8-hour ozone NAAQS. The EPA completed the designations process under the 2008 8-hour ozone NAAQS on April 30, 2012 (77 FR 30088), and Lafourche Parish was designated as unclassifiable/attainment for this standard. In a telephone communication with the Louisiana Department of Environmental Quality on March 19, 2013, it was noted that the maintenance plan for Lafourche Parish was lifted in 2004. It was also confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to conform to the de minimis levels of emissions.  (B, C, D) In a telephone communication with the LDEQ on March 19, 2013, it was confirmed that Lafourche Parish is designated as "in attainment" for ozone standards and, therefore, is not required to meet the general conformity requirements for construction. No mitigation measures are necessary because Lafourche Parish is not required to conform to the de minimis levels of emissions. However, best management practices would be utilized to reduce all air emissions and particulate matter during construction.	RPEIS Section 5.2.9; 6.10; 7
EPA30	EJ	EPA strongly disagrees with statement on page 6-41 states "we have determined that there is no disproportionate impact to a minority or low income community. There is not adequate information in the DRPEIS to determine how the USACE came to the conclusion that there are no potentially disproportionate impacts to minority and/or low income communities. In addition to our comments regarding obtaining a more accurate estimate of the demographics of the area, the USACE should consider the potential EJ impacts of the timing of levee construction on minority and/or low income populations that may be directly, indirectly, or cumulatively impacted by the proposed action. In order to avoid disproportionate impacts to the Isle de Jean Charles tribal community, any buyout would need to relocate the community intact in an appropriate location with access to subsistence resources and with other attributes agreeable to the tribe. The tribal leader should be contacted immediately to begin appropriate discussions. Although not mentioned in the DRPEIS, USACE should also determine whether the Point au Chien Indian Tribe and United Houma Nation would experience similar potential impacts. As discussed in our Cumulative Impacts comments on page 9, the FRPEIS should include a more thorough cumulative impacts analysis and include those impacts on minority and low income populations.	Based on the EPA comments, additional detailed EJ analysis is on-going. The results of the analysis have been incorporated into the FRPEIS. Major points are as follows: (a) Based on conversations with Sharon Osowski at the EPA, the analysis included Census block level analysis for race/ethnicity and Census tract level analysis for income/poverty for the entire study area using 2010 US Census data and the 2007 - 2011 American Community Survey 5-Year Estimates. (b) The analysis considered communities inside and outside of the existing and proposed levee system. Data at the Census block level for race/ethnicity from the 2010 US Census and the Census tract level for income/poverty obtained from the 2007 - 2011 American Community Survey 5-Year Estimates was used to identify potential EJ communities. (c) The additional analysis incorporated potential buyouts and uniform relocation assistance. (d) analysis was conducted on communities located partially within and outside of the proposed levee system in order to determine impacts on community cohesion. (e) The analysis for EJ was conducted at the Programmatic EIS level. In the future, additional analysis, outreach and public involvement would be conducted during Planning and Engineering Design and documented in supplemental NEPA reports that are tiered to the Programmatic EIS. See section 8 of the FRPEIS for a list of public and stakeholder meetings that has already occurred. Representatives of the following state recognized tribes, Biloxi-Chitimacha-Choctaw tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation were invited to these public meetings.	RPEIS Summary; Section 5.2.13; 6.14.8; 7; Appendix J
EPA31	Tribes	The DRPEIS does not provide enough information to determine whether the USACE is in full compliance with National Historic Preservation Act (NHPA), E.O. 12898, and others. The USACE should initiate consultation with Tribes regarding NHPA and initiate formal consultation with any federally-recognized Tribes under E.O. 13175 before finalizing the EIS.	Documentation of formal consultation with federally-recognized tribes pursuant to the 36 C.F.R. §800 regulations implementing Section 106 of the NHPA is included in the final RPEIS. The following eleven federally-recognized tribes were consulted pursuant to the regulations implementing Section 106 of the NHPA: Alabama-Coushatta Tribe of Texas Caddo Nation of Oklahoma Chitimacha Tribe of Louisiana Choctaw Nation of Oklahoma Coushatta Tribe of Louisiana Jena Band of Choctaw Indians Mississippi Band of Choctaw Indians Quapaw Tribe of Oklahoma Seminole Nation of Oklahoma Seminole Tribe of Florida Tunica-Biloxi Tribe of Louisiana CEMVN concluded that "the constructible features will have no impacts to cultural resources," and this finding was coordinated with the Louisiana State Historic Preservation Officer (SHPO) and federally-recognized tribes on June 15, 2012. In a letter dated February 26, 2013, the SHPO concurred that "no historic properties were identified within the constructible features of Reaches F1, F2, G1, the Houma Navigation Canal Lock Complex and the Bayou Grand Caillou Floodgate," and as such "have no objections to the implementation of this portion of the project." The SHPO concurrence was coordinated with federally-recognized tribes in a letter dated March 5, 2013. CEMVN will continue Section 106 consultation for the programmatic features through the identification and evaluation of historic properties as the plans for the features are refined. Future NEPA documents will assess the environmental effects of the programmatic features. See response to EPA2 regarding consultation pursuant to Executive Order 13175.	RPEIS Section 6.15; 7; Appendix H
EPA32	Indirect & Mitigate	Table 4-1 of the Draft PAC Report includes a reference to marsh impacts from the levee which are "self mitigated". It is not clear what this means, but it appears to be a reference to the idea that indirect hydrologic effects of the proposed levee project could provide wetland benefits that compensate for wetland impacts due to levee construction. EPA does not support such an assertion.	The term self mitigated has been removed. Note that the marsh impacts for this analysis were planned to be mitigated by calculating the amount of marsh that could be created using the organic overburden from the adjacent borrow to create marsh on site. This process provided both a cost saving from not having to haul off the overburden and by not having to locate a source of material for mitigation. There was no intent to imply that indirect hydrologic effect provided mitigation benefits.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
EPA33	Editorial/Clarification	Table 4-4 states that more than 3,000 acres of wetlands would be "displaced" by the preferred alternative. This wording suggests that fully compensating for wetland impacts is a simple endeavor with guaranteed success. We would suggest using more accurate wording such as "permanently eliminated" or "destroyed" instead of "displaced", followed by the caveat that the USACE will seek to provide full compensatory mitigation to offset such impacts.	Table 4-4 was revised with more precise and accurate terminology of "destroyed" wetlands. In addition this is caveated that the USACE will seek to provide full compensatory mitigation to offset the value of such impacts.	RPEIS Table 4-4
EPA34	Editorial/Clarification	Page 6-71 of the DRPEIS states that "In most cases, the establishment of mitigation sites would be done at the same time as construction of the levees and other project features." This statement is somewhat vague and may fall short of an explicit commitment to provide mitigation in advance of or concurrent with project implementation. For example, what is meant by "establishment of mitigation sites"? And what is meant by "In most cases..."? This statement should be re-written to include a commitment to provide mitigation in advance of or concurrent with project implementation, to the maximum extent practicable.	This section of the FRPEIS was revised to be more consistent with the standard mitigation timing set forth in regulations and to provide a more explicit commitment of the USACE to provide mitigation in advance of or concurrent with project implementation.	RPEIS Section 6.19.4; Appendix K
EPA35	EJ	Mitigation efforts should be developed and described that avoid potential disproportionate impacts of the proposed action that could result in the loss of community cohesion in all of the potentially affected communities south of the proposed levee system, in particular, the tribal community of Biloxi-Chitimacha on Isle de Jean Charles.	Concur all project features including mitigation sites have been and will be designed to the extent to avoid impacts including those that could induce an Environmental Justice issue.	RPEIS Summary; Section 5.2.13; 6.14.8; 7; Appendix J
EPA36	EJ	The FRPEIS should provide documentation of recent scoping and public involvement events and actions. If scoping and public involvement did not take place for this revised action, the USACE should directly and immediately engage all interested, concerned, and affected stakeholders, including low income, minority, and tribal populations, including the Biloxi-Chitimacha tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation, before finalizing the EIS. EPA emphasizes that there is a need for continued interagency coordination on the constructible and programmatic features of the proposed project to ensure that wetland impacts are avoided and minimized in the subsequent NEPA processes. This is particularly the case for those levee reaches that would enclose wetland areas that are currently un-impounded and new portions of the overall levee alignment (e.g., the proposed Lockport to Larose Ridge levee extension)	Concur: Section 8 of the EIS was updated to include a list of meetings that were held for this project and specific meetings that included member of potential Environmental Justice Communities.	RPEIS Section 9
LDNR1?	Duplicate comment letter	References an attachment that is the same as the February 15 letter from Jimmy Anthony. See LDWF1.	The attachments to the email are the same as C20130001.pdf and C20130001.doc are the same as the February 15, 2013 LDWF letter signed by Jimmy Anthony. See response to LDWF1.	NA

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
TLCD1	Editorial/Clarification	Overall Costs (pg. xi of summary)-the estimated costs in 2014 dollars is \$10.544 Billion. But, the "fully funded" total is approx. \$12.978 Billion. What makes the \$2.443 Billion difference? Is it the inflation expected between 2014 and 2035 (the first year we get a closed Federal System)? Does it also include the local sponsor's 50 year O&M cost?	The total first cost (2014) does not include inflation and the fully funded cost includes inflation. This distinction has been clarified in the report. The local sponsor's 50 year OMRR&R cost is not included in the total project cost or the fully funded cost.	PAC Report Costs
TLCD2	WIK	Funding and Cost Share (Sec 1.7-pg. 14)-states that expenditures for the completed feasibility study (1995-2002) were \$9.32 Million, which was cost shared on a 50-50 Federal-Non Federal Basis. About \$61.650 Million has been spent on PED on a 75-25 Federal-Non Federal basis. Most of this \$61 million was spent of E&D and geotechnical investigations since 2003. The Non-Federal partners will have to pay the Corps 10% of this \$61 Million (\$6.165 Million) because "WRDA stipulates that the non-Federal costs of design is the same percentage as the non-Federal share for construction costs, which in this case is 35%" The draft report states that the remaining 10% has to be paid to the Corps in the first year after the PPA is executed. When will the PPA be executed, before or after re-authorization from Congress? If the non-Federal partners take on the E&D costs of any project feature, I think the non-Federal partners should get credit for these efforts. In other words, rather than paying the Corps the \$6.165 million we would spend our non-Federal funds on E&D of a MTG project, like the Lock Complex.	(a) In order to balance the accounts when moving from the 75% Federal/25% Non-Federal cost share in Pre-Construction Engineering and Design (PED) phase to the 65% Federal/35% Non-Federal cost share in Construction phase, the Non-Federal Sponsor will have to make up any difference in the cost share between the Design Agreement and the Project Partnership Agreement (PPA) in the first year of the PPA. All costs for design and construction will be rolled up in to one sum in the PPA, and the conditions set forth in the PPA will apply. If the PPA stipulates that the Non-Federal sponsor shall be credited for Work In Kind (WIK) in lieu of cash payment, then the WIK credit (subject to all applicable requirements) may be used to balance the accounts forwarded from PED. The non-Federal sponsor is encouraged to submit an official written request to the Corps for any additional clarification on applying WIK credit to account balances forwarded from PED. Note that the PPA cannot be executed until the project is designated as a Construction New Start. Requirements for a Construction New Start include congressional authorization, congressional appropriation of Construction funds and a signed Record of Decision (ROD) on the environmental document.  (b) The PAC Report includes feasibility-level designs, which are considered approximately 25% designs that have been completed based on limited data collection (soil borings, surveys, environmental investigations, etc.). As the Corps proceeds to the detailed design phase for features of the Morganza to the Gulf project, we will continue to refine designs as we acquire additional information. Following completion of the 2002 Feasibility Report, several features of the project were refined based on additional soils data obtained and opportunities to reduce environmental impacts and project costs. These features included the Houma Navigation Canal Lock Complex (wider sector gate, different configuration), and Levee Reaches A, G, H and J (smaller footprint). Similarly, features recommended in the 2013 PAC Report may be refined as those features get to the detailed design phase.  Reach J-1 was constructed prior to execution of a Project Partnership Agreement (PPA), and prior to execution of a Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. In order to receive Work In Kind (WIK) Credit for Reach J-1, Congress would specifically have to include a provision for look-back credit and a PPA must be executed between the Department of the Army and the non-Federal sponsor.  (c) Mitigation is considered a construction cost and may be creditable as Work In Kind (WIK) depending on the terms and conditions set forth in the Project Partnership Agreement (PPA) or the Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. The non-Federal sponsor is not eligible for WIK credit unless a PPA has been executed, an MOU has been executed in advance of a PPA, or WIK credit has been specifically authorized by Congress.	NA
TLCD3	WIK	Non-Federal Sponsor Work Independent of the Federal Authority (Sec 1.8--pg. 15)—In the original 2003 Chief's report, the non-Federal sponsor (State DOTD and TLCD) had agreed to build 21.5 of the original 72 miles of levee and 2 floodgates (Bayou Pointeaux-Chenes and Bush Canal) with the 3 mile Reach J-1 being separately authorized by Congress in 2004 at a \$4 million cost. The original 21.5 miles in the Chief's report included Reaches H-2, H-3, I, J-2, J-1, and J-3 covering from the location of the MTG Little Caillou Floodgate eastward to the parish line in Pointe-aux-Chenes. The first levee lift of all of this 21.5 miles of the alignment has either been constructed or will be under construction by 2015. The 3 mile first lift of Reach J-1 was built by TLCD (and CPRA) in 2006-2008 for a total cost of \$18 million. Will the re-authorization of MTG under the PAC report account for the difference in costs of Reach J-1 or will we need special language to account for this?  With the continued support from the State and the fact that TLCD has recently passed a second local sales tax to help build the MTG project, it is the Non-Federal sponsor's intent to build much of the first lift of this system from the Upper part of Reach Bon the west side of Bayou Dularge to the east side of Reach Lin Cut Off, LA in Lafourche Parish. We also intend on building flood protection improvements along the MTG Western Tie-in along Bayou Black in western Terrebonne. We understand that Congress would have to enact express authority for the nonfederal sponsors to get "look back credit" for the advance work undertaken by the nonfederal sponsors. We have and will continue asking our Federal Congressional Delegation to include such language in any future WRDA bill.	(a) In order to balance the accounts when moving from the 75% Federal/25% Non-Federal cost share in Pre-Construction Engineering and Design (PED) phase to the 65% Federal/35% Non-Federal cost share in Construction phase, the Non-Federal Sponsor will have to make up any difference in the cost share between the Design Agreement and the Project Partnership Agreement (PPA) in the first year of the PPA. All costs for design and construction will be rolled up in to one sum in the PPA, and the conditions set forth in the PPA will apply. If the PPA stipulates that the Non-Federal sponsor shall be credited for Work In Kind (WIK) in lieu of cash payment, then the WIK credit (subject to all applicable requirements) may be used to balance the accounts forwarded from PED. The non-Federal sponsor is encouraged to submit an official written request to the Corps for any additional clarification on applying WIK credit to account balances forwarded from PED. Note that the PPA cannot be executed until the project is designated as a Construction New Start. Requirements for a Construction New Start include congressional authorization, congressional appropriation of Construction funds and a signed Record of Decision (ROD) on the environmental document.  (b) The PAC Report includes feasibility-level designs, which are considered approximately 25% designs that have been completed based on limited data collection (soil borings, surveys, environmental investigations, etc.). As the Corps proceeds to the detailed design phase for features of the Morganza to the Gulf project, we will continue to refine designs as we acquire additional information. Following completion of the 2002 Feasibility Report, several features of the project were refined based on additional soils data obtained and opportunities to reduce environmental impacts and project costs. These features included the Houma Navigation Canal Lock Complex (wider sector gate, different configuration), and Levee Reaches A, G, H and J (smaller footprint). Similarly, features recommended in the 2013 PAC Report may be refined as those features get to the detailed design phase.  Reach J-1 was constructed prior to execution of a Project Partnership Agreement (PPA), and prior to execution of a Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. In order to receive Work In Kind (WIK) Credit for Reach J-1, Congress would specifically have to include a provision for look-back credit and a PPA must be executed between the Department of the Army and the non-Federal sponsor.  (c) Mitigation is considered a construction cost and may be creditable as Work In Kind (WIK) depending on the terms and conditions set forth in the Project Partnership Agreement (PPA) or the Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. The non-Federal sponsor is not eligible for WIK credit unless a PPA has been executed, an MOU has been executed in advance of a PPA, or WIK credit has been specifically authorized by Congress.	NA
TLCD4	Economics/BCR	Analysis Years (Sec 2.1--pg. 17)--The 50 year "life" of the Federal MTG system would be between 2035-2085. The soonest time we could expect a completed 1% AEP is 2035, however we should be able to have some benefits of a closed system by 2024. Does the "closed system" mean that the entire 98 miles of levee has to have a first lift? Has the Corps included benefits of a partially closed system such as connecting some of the existing ridges. For example, it seems that having a partially closed system between Bayou Dularge to Bayou Lafourche (Reaches E-L) would provide some benefit to the project area.	The term "closed system" indicates that a continuous flood risk reduction system is in place. The proposed construction schedule for the recommended plan in the PAC Report produces a continuous alignment of structures (some existing, some newly constructed) and levees (first and second lifts) across the entire project by 2024, and allows for partial benefits to begin accruing in that year. A partially-closed system would only provide risk reduction for storms approaching from specific tracks. Since there is no way to statistically isolate specific storm tracks in our economic benefits models, there is no way to extract project benefits out of the model for a partially-closed system.	NA
TLCD5	Editorial/clarification	Location of Structures Outside of Risk Reduction System (Figure 4-1--pg. 35)--The area of lower Chauvin/Cocodrie is mislabeled as Bayou Grand Caillou/Dulac. I suggest a brief summary of the 4 areas outside of the MTG alignment in Terrebonne would be beneficial. They are as follows (from east to west): 1. Isle de Jean Charles. 2. Lower Chauvin/Cocodrie 3. The Four Point area in lower Bayou Grand Caillou/Dulac. 4. Lower Bayou Dularge.	Map has been corrected and the descriptions provided above have been added to the PAC report.	PAC Figure 4-1
TLCD6	Editorial/clarification	Preliminary Evaluation of Alternative Levee Alignments (Sec 4.3--pgs. 36-40)--In 2008, the N.O. Dist. Corps evaluated 4 alternative alignments before moving forward with the PAC Report. One of these alternatives was (#3) suggested by NGOs and it is referred to as the "Multiple Lines of Defense Strategy". After this analysis, it was determined that the authorized alignment would be the most cost effective and least damaging to the wetlands. I suggest that the Final PAC report should refer back to the Memo from Gen Walsh to Col Lee in Nov, 2008 directing the Alignment to follow the authorized alignment. A copy of this Memo should be made part of the Report Appendices.	USACE guidance memos are not incorporated as appendices to feasibility reports because they are deliberative, internal agency discussions.	NA
TLCD7	Compliment	Modifications to the Authorized Alignment (Sec 5.1--pgs. 41--50)--This section of the draft report has a very good and detailed explanation of the process used for the 5 modifications that have been made along the authorized alignment. I can appreciate the effort this has taken, having participated and witnessed this process for 2 of the 5 modifications.	Comment appreciated.	NA
TLCD8	WIK	Non-Federal Responsibilities (Sec 8.3(b)--pg. 87)--States that the Non-Federal sponsor shall not use funds from other Federal Programs as part of the non-Federal match. Any funds expended from other Federal sources, such as FEMA or CDBG, will not be counted as the non-Federal 35% match. One future source of funding should be clarified as to whether OCS funds can be used toward the non-Federal 35% requirement. Considering Congress granted this revenue to the 5 gulf states in 2006, I assume it would be eligible.	WRDA 2007 changed that prior standard of not using Federal funds to meet non-Federal cost sharing. Section 2007 of WRDA 2007 "USE OF OTHER FEDERAL FUNDS", states: "The non-Federal interest for a water resources study or project may use, and the Secretary shall accept, funds provided by a Federal agency under any other Federal program, to satisfy, in whole or in part, the non-Federal share of the cost of the study or project if the Federal agency that provides the funds determines that the funds are authorized to be used to carry out the study or project."	NA

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TLCD9	Realign/Lower Dularge	Non-Federal Responsibilities (Sec 8.3(s)--pg. 89)--This paragraph deals with "betterments" of the Federal system. This states that the non-Federal sponsor has to "Pay all costs due to any project betterment" to the Fed Government. My question is that if the non-Federal sponsors are paying regardless, I assume we do not have to use the Corps for project betterments. The best example of a project betterment for the MTG alignment would be the lower Dularge area discussed above. I think we, as non-Federal sponsors, would want to handle all these efforts on our own.	Lower Dularge area was not included in the project authorized in WRDA 2007 and is not part of the recommended plan in the 2013 Post Authorization Change (PAC) Report. Options for pursuing a Federal flood risk reduction system for this area include:  (a) For projects with construction costs of \$7M or less, a flood risk reduction system could be investigated under the Corps CAP (Continuing Authorities Program) project authority.  (b) Congress could direct the Corps to incorporate Lower Dularge into the Morganza to the Gulf project area.  (c) The Corps and the Non-Federal sponsor could agree to investigate a Locally Preferred Plan (LPP) in a future Morganza to the Gulf Post Authorization Change (PAC) report that would extend the levee alignment to include lower Dularge. In order for an LPP to be recommended, the LPP must be economically justified (BCR greater than 1.0) and any difference (increase) in construction cost must be funded 100% by the Non-Federal sponsor.	NA
TLCD-PM1	WIK	1. How are deviations from the Report accepted or considered in PED phase? Will J-1 be approved as work in kind upon authorization or signing of PPA?	(a) In order to balance the accounts when moving from the 75% Federal/25% Non-Federal cost share in Pre-Construction Engineering and Design (PED) phase to the 65% Federal/35% Non-Federal cost share in Construction phase, the Non-Federal Sponsor will have to make up any difference in the cost share between the Design Agreement and the Project Partnership Agreement (PPA) in the first year of the PPA. All costs for design and construction will be rolled up in to one sum in the PPA, and the conditions set forth in the PPA will apply. If the PPA stipulates that the Non-Federal sponsor shall be credited for Work In Kind (WIK) in lieu of cash payment, then the WIK credit (subject to all applicable requirements) may be used to balance the accounts forwarded from PED. The non-Federal sponsor is encouraged to submit an official written request to the Corps for any additional clarification on applying WIK credit to account balances forwarded from PED. Note that the PPA cannot be executed until the project is designated as a Construction New Start. Requirements for a Construction New Start include congressional authorization, congressional appropriation of Construction funds and a signed Record of Decision (ROD) on the environmental document.  (b) The PAC Report includes feasibility-level designs, which are considered approximately 25% designs that have been completed based on limited data collection (soil borings, surveys, environmental investigations, etc.). As the Corps proceeds to the detailed design phase for features of the Morganza to the Gulf project, we will continue to refine designs as we acquire additional information. Following completion of the 2002 Feasibility Report, several features of the project were refined based on additional soils data obtained and opportunities to reduce environmental impacts and project costs. These features included the Houma Navigation Canal Lock Complex (wider sector gate, different configuration), and Levee Reaches A, G, H and J (smaller footprint). Similarly, features recommended in the 2013 PAC Report may be refined as those features get to the detailed design phase.  Reach J-1 was constructed prior to execution of a Project Partnership Agreement (PPA), and prior to execution of a Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. In order to receive Work In Kind (WIK) Credit for Reach J-1, Congress would specifically have to include a provision for look-back credit and a PPA must be executed between the Department of the Army and the non-Federal sponsor.  (c) Mitigation is considered a construction cost and may be creditable as Work In Kind (WIK) depending on the terms and conditions set forth in the Project Partnership Agreement (PPA) or the Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. The non-Federal sponsor is not eligible for WIK credit unless a PPA has been executed, an MOU has been executed in advance of a PPA, or WIK credit has been specifically authorized by Congress.	NA
TLCD-PM2	Editorial/clarification	2. In the timeline presented on page 11, I think it would be prudent to show the FEMA claim events or tropical events that have occurred over the existing timeline. Table 3-2 in RPEIS depicts this information but it could be shown in this timeline as well.	Added the tropical storms from table 3-2 in the RPEIS to the timeline in the main PAC report.	PAC page 11 Timeline
TLCD-PM3	HSDRRS/Site adapt	3. Section 1.5 How can the standards applied in HSDRRS be adapted to fit MTG?	The Draft PAC report reflects cost estimates based on a project designed using the Hurricane and Storm Damage Risk Reduction System (HSDRRS) guidelines. These peer-reviewed guidelines were developed in response to recommendations made by the Interagency Performance Evaluation Task force (IPET), a team composed of members from USACE, industry and academia that evaluated the Greater New Orleans levee system after Hurricane Katrina. The Assistant Secretary of the Army (Civil Works) has directed that USACE apply the HSDRRS guidelines to all hurricane and coastal storm system work in Louisiana, including the Morganza to the Gulf PAC project. Comments were received both supporting the use of the HSDRRS criteria, and suggesting adaptation of some of the HSDRRS criteria for the site specific characteristics of the Morganza to the Gulf project area. Parallel to the PAC analysis, the USACE Risk Management Center and New Orleans District jointly evaluated the proposed Morganza to the Gulf levee system and concluded that site adapting three specific HSDRRS criteria could significantly reduce project costs while producing only minimal changes in potential consequences. A section on site adapting the HSDRRS standards has been added to the main PAC report, including a recommendation to change Factor of Safety for end of construction global stability, change the Design Overtopping Rate for well-maintained grass covered levee slopes, and eliminate the structural superiority requirement. If these changes are approved, modifications would be made to designs and costs during the next phase of implementation, Pre-construction Engineering and Design (PED). The USACE is also conducting a national-level risk assessment to ensure risk is addressed consistently across the country.	NA
TLCD-PM4	WIK	4. Section 1.7 Instead of cash payment can we put money towards design or construction? This comment refers to bringing the 75/25 Report cost share to the 65/35 construction cost share.	(a) In order to balance the accounts when moving from the 75% Federal/25% Non-Federal cost share in Pre-Construction Engineering and Design (PED) phase to the 65% Federal/35% Non-Federal cost share in Construction phase, the Non-Federal Sponsor will have to make up any difference in the cost share between the Design Agreement and the Project Partnership Agreement (PPA) in the first year of the PPA. All costs for design and construction will be rolled up in to one sum in the PPA, and the conditions set forth in the PPA will apply. If the PPA stipulates that the Non-Federal sponsor shall be credited for Work In Kind (WIK) in lieu of cash payment, then the WIK credit (subject to all applicable requirements) may be used to balance the accounts forwarded from PED. The non-Federal sponsor is encouraged to submit an official written request to the Corps for any additional clarification on applying WIK credit to account balances forwarded from PED. Note that the PPA cannot be executed until the project is designated as a Construction New Start. Requirements for a Construction New Start include congressional authorization, congressional appropriation of Construction funds and a signed Record of Decision (ROD) on the environmental document.  (b) The PAC Report includes feasibility-level designs, which are considered approximately 25% designs that have been completed based on limited data collection (soil borings, surveys, environmental investigations, etc.). As the Corps proceeds to the detailed design phase for features of the Morganza to the Gulf project, we will continue to refine designs as we acquire additional information. Following completion of the 2002 Feasibility Report, several features of the project were refined based on additional soils data obtained and opportunities to reduce environmental impacts and project costs. These features included the Houma Navigation Canal Lock Complex (wider sector gate, different configuration), and Levee Reaches A, G, H and J (smaller footprint). Similarly, features recommended in the 2013 PAC Report may be refined as those features get to the detailed design phase.  Reach J-1 was constructed prior to execution of a Project Partnership Agreement (PPA), and prior to execution of a Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. In order to receive Work In Kind (WIK) Credit for Reach J-1, Congress would specifically have to include a provision for look-back credit and a PPA must be executed between the Department of the Army and the non-Federal sponsor.  (c) Mitigation is considered a construction cost and may be creditable as Work In Kind (WIK) depending on the terms and conditions set forth in the Project Partnership Agreement (PPA) or the Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. The non-Federal sponsor is not eligible for WIK credit unless a PPA has been executed, an MOU has been executed in advance of a PPA, or WIK credit has been specifically authorized by Congress.	NA
TLCD-PM5	Editorial/clarification	5. Section 1.9 TLCD does not control or maintain 92 miles of levees. This may be a combination of TPCG local drainage levees and TLCD levees.	In Table 1-3, changed "Terrebonne Levee and Conservation District (TLCD)" to "Non-Federal Levees in Terrebonne Parish" and the description to "In Terrebonne Parish, there are approximately 92 miles of non-Federal levees, along with several pump stations and floodgates, which are operated and maintained by either the Terrebonne Parish Consolidated Government or the Terrebonne Levee and Conservation District (TLCD). The TLCD has recently started building components of the authorized Morganza to the Gulf project, including 9 miles of first-lift levees and interim barge gate structures on several critical bayous."	PAC Table 1-3
TLCD-PM6	Editorial/clarification	6. Section 2.7 Not enough distinction describing local levees that are built as a base of MTG and parish drainage levees.	Added the following section headings to better differentiate: 2.7.1 Drainage Levees and Levee-Like Features in Terrebonne Parish, 2.7.2 Non-Federal Levees Constructed as a Base for the Morganza to the Gulf Project, and 2.7.3 Development of Fragility Curves for Local Levees and Levee-Like Features.	PAC Section 2.7.1; 2.7.2; 2.7.3
TLCD-PM7	HSDRRS/Site adapt	7. Section 2.8 Overtopping criteria could be better adapted to account for the interior reservoir capacity of MTG thus reducing footprints. This refers back to developing MTG standards adapted from HSDRRS standards.	The Draft PAC report reflects cost estimates based on a project designed using the Hurricane and Storm Damage Risk Reduction System (HSDRRS) guidelines. These peer-reviewed guidelines were developed in response to recommendations made by the Interagency Performance Evaluation Task force (IPET), a team composed of members from USACE, industry and academia that evaluated the Greater New Orleans levee system after Hurricane Katrina. The Assistant Secretary of the Army (Civil Works) has directed that USACE apply the HSDRRS guidelines to all hurricane and coastal storm system work in Louisiana, including the Morganza to the Gulf PAC project. Comments were received both supporting the use of the HSDRRS criteria, and suggesting adaptation of some of the HSDRRS criteria for the site specific characteristics of the Morganza to the Gulf project area. Parallel to the PAC analysis, the USACE Risk Management Center and New Orleans District jointly evaluated the proposed Morganza to the Gulf levee system and concluded that site adapting three specific HSDRRS criteria could significantly reduce project costs while producing only minimal changes in potential consequences. A section on site adapting the HSDRRS standards has been added to the main PAC report, including a recommendation to change Factor of Safety for end of construction global stability, change the Design Overtopping Rate for well-maintained grass covered levee slopes, and eliminate the structural superiority requirement. If these changes are approved, modifications would be made to designs and costs during the next phase of implementation, Pre-construction Engineering and Design (PED). The USACE is also conducting a national-level risk assessment to ensure risk is addressed consistently across the country.	NA
TLCD-PM8	Editorial/clarification & typos	8. Section 4.2 Information is not detailed enough and section 5.5.1 seems to be omitted from the report	Section 4.2 was expanded to provide a brief description of each of the four communities (approximately 1,000 structures) residing outside the authorized Morganza to the Gulf alignment. The reference to section 5.5.1 was a typo; the correct reference is 6.5.1.	PAC Section 4.2

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
TLCD-PM9	Cost	9. 6.2 While I know geotechnical considerations are very conservative in this report, as they should be, recent construction projects have yielded better results. Especially along the natural bayou ridges and consolidated portions of the alignment. In light of these conservative estimates and the massive quantities associated with this project, actual conditions could change the borrow needs greatly. This could change the estimated project costs by orders of magnitude. Likewise, changes in criteria could also reduce quantities, settlement, and cost greatly.	Comment acknowledged.	NA
TLCD-PM10	WIK	Section 6.4 Should local mitigation efforts be mentioned and is it creditable work?	<p>(a) In order to balance the accounts when moving from the 75% Federal/25% Non-Federal cost share in Pre-Construction Engineering and Design (PED) phase to the 65% Federal/35% Non-Federal cost share in Construction phase, the Non-Federal Sponsor will have to make up any difference in the cost share between the Design Agreement and the Project Partnership Agreement (PPA) in the first year of the PPA. All costs for design and construction will be rolled up in to one sum in the PPA, and the conditions set forth in the PPA will apply. If the PPA stipulates that the Non-Federal sponsor shall be credited for Work In Kind (WIK) in lieu of cash payment, then the WIK credit (subject to all applicable requirements) may be used to balance the accounts forwarded from PED. The non-Federal sponsor is encouraged to submit an official written request to the Corps for any additional clarification on applying WIK credit to account balances forwarded from PED. Note that the PPA cannot be executed until the project is designated as a Construction New Start. Requirements for a Construction New Start include congressional authorization, congressional appropriation of Construction funds and a signed Record of Decision (ROD) on the environmental document.</p> <p>(b) The PAC Report includes feasibility-level designs, which are considered approximately 25% designs that have been completed based on limited data collection (soil borings, surveys, environmental investigations, etc.). As the Corps proceeds to the detailed design phase for features of the Morganza to the Gulf project, we will continue to refine designs as we acquire additional information. Following completion of the 2002 Feasibility Report, several features of the project were refined based on additional soils data obtained and opportunities to reduce environmental impacts and project costs. These features included the Houma Navigation Canal Lock Complex (wider sector gate, different configuration), and Levee Reaches A, G, H and J (smaller footprint). Similarly, features recommended in the 2013 PAC Report may be refined as those features get to the detailed design phase.</p> <p>Reach J-1 was constructed prior to execution of a Project Partnership Agreement (PPA), and prior to execution of a Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. In order to receive Work In Kind (WIK) Credit for Reach J-1, Congress would specifically have to include a provision for look-back credit and a PPA must be executed between the Department of the Army and the non-Federal sponsor.</p> <p>(c) Mitigation is considered a construction cost and may be creditable as Work In Kind (WIK) depending on the terms and conditions set forth in the Project Partnership Agreement (PPA) or the Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. The non-Federal sponsor is not eligible for WIK credit unless a PPA has been executed, an MOU has been executed in advance of a PPA, or WIK credit has been specifically authorized by Congress.</p>	NA
TLCD-PM11	Buyout	11. Section 6.5.1 The buyout assumption stated here assume complete structure buyout when there is existence of elevated structures which will not be bought out or be bought out at a reduced rate. As stated this is the most conservative scenario and the actual costs realized could be reduced from estimates.	The exact mitigation measures for the structures identified in the preliminary buyout plan has not yet been determined. Presently, detailed information regarding the differences in frequency, depth, and duration of the flooding between the future without-project and future with-project conditions is not available. This detailed information typically would be assessed in light of the uses to which the particular land is zoned, and the appropriate mitigation methods, if any, would be implemented to address the effects of the Federal project. To ensure that the public is informed of all potential impacts of the project and to prevent future delays to project schedule, for purposes of this report, the worst case scenario (most expensive option) has been assumed, which would be a 100 percent buy-out of all of the structures in the impacted areas. The potential induced damages and mitigation for economic damages would be further addressed during detailed design and supplemental NEPA documents. Individual investigation and devising mitigation for each structure, if appropriate, would be done during PED. Additional factors (height of structures vs. induced stages, type of residential structure, social concerns, etc.) would have to be investigated under PED. Each structure would have to be evaluated under PED to determine if mitigation is appropriate. Further modeling would be performed during PED to determine whether there is a potential taking. A Takings Analysis would be prepared during PED to address this issue, and at that time, it would be determined what real estate interest, if any, would be acquired.	NA
TLCD-PM12	Costs	12. Section 6.6 Can we have a detailed breakdown of O & M costs and assumptions to be understand the local obligations for the project?	Detailed O&M spreadsheet was provided to the commenter.	NA
TLCD-PM13	Economics/BCR	13. It is stated that the HNC lock complex is a part of other projects or studies. Is MTG given credit for fully bearing the costs of this project?	The Morganza to the Gulf project only claims the National Economic Development (NED) benefits of the HNC lock complex, which could have been achieved less expensively with a floodgate, but Congress authorized the HNC structure as a multipurpose lock, not a floodgate. The National Ecosystem Restoration (NER) benefits of the HNC lock complex were quantified in the LCA study "Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock."	NA
TLCD-PM14	RSLR & Costs	14. The incorporation of relative sea level rise add material, mitigation to the MTG project. Should the estimated levels be lower levees may not need to be lifted to the final design elevations. Structures would however be designed at these conservative heights. The intermediate seal level assumption is chosen for MTG but it seems that low level assumption would be acceptable for the same reason the intermediate level was chosen. Please provide more detail. As stated this could change the overall costs of the project by 99 million dollars.	The Low RSLR scenario was not selected as the basis for design because the Low RSLR scenario is based on RSLR trends continuing into the future at historic rates, and the three National Research Council (NRC) future projections are all based on accelerating sea level rise. The Intermediate RSLR scenario is actually based on the lowest acceleration projected by the NRC. Section 6.9 of the main PAC report provides a sensitivity analysis of potential cost savings or additions if Relative Sea Level Rise (RSLR) is lower or higher than expected under the Intermediate RSLR scenario.	NA
TLCD-PM15	Editorial/Clarification	15. Section 7.3.2 Will environmental structures be built to final design elevations and what sequence will they be constructed as they relate to the reaches they are contained in.	Environmental structures would be built to their final (2085) design elevations. In general, the construction schedule assumes that environmental structures would be built towards the end of the first levee lift and/or at the beginning of the second levee lift within each reach. All environmental structures would be constructed in the 2016 to 2024 timeframe. The environmental structures in reaches E, J, G, H, and K would be the first to be built (2016 to 2019) and the environmental structures in reaches A, L, Barrier, and Larose to Lockport would be the last to be built (2020 to 2024).	NA
TLCD-PM16	Costs	16. Average haul distances can be greatly reduced (25 miles one way) thus changing the construction costs for these projects greatly.	Response noted.	NA
TLCD-PM17	Cost share	17. Non Federal Responsibilities in this report are listed in several pages in this report while federal obligations are listed only in several sentences. This would not seem to reflect the 65/35 federal/non federal cost share.	A complete list of non-Federal sponsor cost sharing requirements is required by ER 1105-2-100 para. 4-3(b)(2).	NA
TLCD-PM18	Editorial/Clarification	18. Please clarify the differences between fully funded MTG and FY14 costs.	The total first cost (2014) does not include inflation and the fully funded cost includes inflation. This distinction has been clarified in the report.	PAC Costs
TLCD-PM19	Editorial/Clarification	RPEIS Comment 1. Section 3.7.2 Would the implementation of MTG reduce the amount of converted open water areas?	This determination cannot be made at this time. The levee and mitigation will fill some open water area, but borrow pits may create more open water areas.	NA
TLCD-PM20	Editorial/Inconsistency	RPEIS Comment 2. Lake Boudreaux Freshwater Introduction does not seem to appear in the list of CWPPRA Projects	Concur: Lake Boudreaux Freshwater Introduction has been added.	RPEIS Section 3.11.3
TLCD-PM21	FWOP	RPEIS 3. Section 5.1 Would it be pertinent to list the things that have greatly affected the environmental setting of this area such as closure of Bayou Lafourche in 1903, the construction of channels, canals, roads and oilfield activity? These are mentioned in the Section 5.2.10 and also in Section 6.2 but I think it is important to note that all of these things make up the environmental setting in addition to the fact that the basin is a freshwater/sediment starved system.	Concur. Section 5.1 is a brief summary of generally important aspects of the environmental setting. Each significant resource also include historic and existing information about the environmental setting pertinent to that specific resource.	RPEIS Section 5.1
BEND1	Floating levee	Floating levee idea.	The floating levee design does not meet the geotechnical or structural requirements of the HSDRRS criteria which are currently being used in the design of the project. If, in the future, the design criteria for the Morganza to the Gulf project change the floating levee concept could be reinvestigated.	NA
JOHN1	EIS Request	Requested a copy of the EIS.	Website provided.	NA
HUTC1	Contracts	How can contractors get on the bidders list?	Information on the Bid process can be found at <a href="http://www.mvn.usace.army.mil/ebs/cont_doingbiz.asp">http://www.mvn.usace.army.mil/ebs/cont_doingbiz.asp</a>	NA
KRON1	EIS Request	Requested a copy of the EIS.	Website provided.	NA
STRA1	Realign/Private Landowner	Provided a map of CL&F property.	Just as the PAC alignment was re-evaluated and changes were made to some levee reaches after the original authorization (as described in section 5 of the PAC report), if the Morganza to the Gulf project is reauthorized, each levee reach alignment would be re-evaluated in more detail during the Preconstruction Engineering and Design (PED) phase. If real estate rights are purchased for levee construction, the government would offer market value of the property to be acquired. All acquisitions would be performed in accordance with the terms of P.L. 91-646.	NA
HALE1	Realign/Private Landowner	Levee alignment impacts future development.	Just as the PAC alignment was re-evaluated and changes were made to some levee reaches after the original authorization (as described in section 5 of the PAC report), if the Morganza to the Gulf project is reauthorized, each levee reach alignment would be re-evaluated in more detail during the Preconstruction Engineering and Design (PED) phase. If real estate rights are purchased for levee construction, the government would offer market value of the property to be acquired. All acquisitions would be performed in accordance with the terms of P.L. 91-646.	NA

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
GICA1	GIWW	GIWW sector gate size in PAC vs. what was modeled	<p>The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.</p> <p>Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.</p>	NA
GICA2	GIWW	Concerns over safety of narrower gates	<p>The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.</p> <p>Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.</p>	NA
GICA3	GIWW	Conduct additional modeling with different data	<p>Nonconcur</p> <p>The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.</p> <p>Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.</p>	NA
GICA4	GIWW	Include navigation stakeholders in additional modeling	<p>The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.</p> <p>Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.</p>	NA
GICA5	GIWW	Include second order navigation impacts	<p>The GIWW gate sizes were changed in the PAC report from the original feasibility report as a cost saving measure. Gates are designed to the authorized channel width (125'). (Note: WRDA 07 language does not mention gate widths, but authorizes project in accordance with 2002 and 2003 Chief's Reports. The 2002 Chief's report calls out one 125' floodgate on GIWW below Bayou Lafourche and two 125' floodgates on GIWW near Houma. The 2003 Chief's report does not mention GIWW gates.). In order to assure flows through the structures could be maintained at speeds less than 3 mph for safety reasons, ERDC modeled a 175 ft sector gate at the Houma site with six 16 ft sluice gates. At the Lafourche site ERDC modeled a 125 ft sector gate with three 16 ft sluice gates. Further analysis of the Houma site revealed that a more cost effective plan that still achieved the target flow levels, is one that has a 125 ft sector gate with nine 16 ft sluice gates. Both the modeled gates and designed gates have substantially similar openings to ensure the same velocities.</p> <p>Safety: If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.</p>	NA
RESTOR1	Eco Proj	This levee would utilize the GIWW, and presumably include structures to allow freshwater to be released to the south when levels permit, but it also raised questions about impacts to hydrology to the north as well as the south.	The Floodgates on the GIWW would be designed in such a way as not to interfere with the predicted future flows along the GIWW.	NA
RESTOR2	Eco Proj	A basic question that arises is the compatibility of the project's recommended alignment with coastal restoration. La Coastal Prot & Rest Authority Board sent Aug 20 & Oct 16, 2012 letters that suspended study & design on 3 CR projects. If the State thinks that restoration projects aren't compatible with impacts of preferred levee alignment, that raises questions about how the levee project will ultimately impact the area...Report doesn't say why State requested the Atchafalaya project to be put on hold	The project was designed to not interfere with existing and proposed ecosystem restoration projects. Use of the GIWW to divert freshwater is not a component of the Morganza project, but is a component of the LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project. The LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project is authorized by Congress and therefore should be considered as part of the future without and future with project conditions. The reason that the State requested that the LCA projects be put on hold was not based on the Morganza to the Gulf project. There was no determination by the State that the project would interfere with the LCA projects. In addition, a project similar to the LCA project is included in the State 2012 Master Plan. Furthermore, funding from the recent Deepwater Horizon oil spill fines will be released to impacted states, including Louisiana, for ecosystem restoration efforts. Hence, the authorized LCA project is a reasonably foreseeable project and should be addressed in both the future without and future with project conditions.	NA
RESTOR3	Risk	Levees create a false sense of security among people who believe that they, their children, and their investments will be safe from harm, no matter what.	The main PAC report has been updated to explain Residual Risk. Levees are only one of many steps to reduce risk. Even with the Morganza project in place, some risk of flooding remains, as well as other residual risks such as wind damage. An important step is for parish and state governments to develop evacuation plans and for individuals to heed them. USACE will continue their coordination/communication with the public and improve on the discussion disclosing potential flood risk reduction. The FRPEIS includes a description of residual flood risk and describes the specific efforts taken to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	PAC Residual Risk
RESTOR4	Sustainability	Sustainability is the key concept.	Comment noted	NA
OSTH1	Realign/Private Landowner	Requests levee realignment	Just as the PAC alignment was re-evaluated and changes were made to some levee reaches after the original authorization (as described in section 5 of the PAC report), if the Morganza to the Gulf project is reauthorized, each levee reach alignment would be re-evaluated in more detail during the Preconstruction Engineering and Design (PED) phase. If real estate rights are purchased for levee construction, the government would offer market value of the property to be acquired. All acquisitions would be performed in accordance with the terms of P.L. 91-646.	PAC Section 5
LEAN1	RSLR	First, sea level rise as a result of global warming is accelerating. The most recent scientific studies have concluded that at least one meter of sea level rise over the next century is likely.	The rate of future RSLR is highly uncertain. The High RSLR scenario was not selected as the basis for design because it could lead to unnecessary expenditures associated with overbuild if the actual RSLR is less than the High RSLR scenario (4.75 ft over the next 75 years). By 2085, the High RSLR scenario is approximately 2.5 ft higher than the Intermediate RSLR scenario, which is the basis for design. Since the structures were designed to include 2 ft of structural superiority (2 ft higher than the levees), the Morganza project could be adapted to the High RSLR scenario with additional lifts added to the earthen levees. Section 6.9 of the main PAC report provides a sensitivity analysis of potential cost savings or additions if RSLR is lower or higher than expected under the Intermediate RSLR scenario.	PAC Section 6.9
LEAN2	Resiliency	Levees with wetlands and other natural barriers in front of them stand the best chance of surviving major storms, rather than levees in direct or near direct contact with open water.	The protection for levees provided by wetlands and other natural barriers is a function of the amount of storm surge and wave attenuation provided by those features. The degree of protection provided by those features is unknown and varies depending on storm intensity, direction, speed and other factors. There is currently no verified modeling or other information that quantifies the amount of protection provided by these features or the extent of those features needed to have a measurable impact.	NA

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LEAN3	RSLR	Coastal marshes can respond to sea level rise to some degree by vertical accretion, provided they have sufficient inputs of freshwater and nutrient	Concur: LCA Project Convey Atchafalaya waters to Northern Terrebonne and Multipurpose use of the HNC lock would have had the potential to provide that freshwater and nutrient input.	NA
LEAN4	Cost	Estimated costs of the Morganza to the Gulf Project have increased significantly over the life of the project	Implementation of more robust Hurricane and Storm Damage Risk Reduction System (HSRRS) design standards and storm surge modeling are the major causes of the cost increases.	NA
LEAN5	RSLR	High level RSLR scenario for the project area is the most accurate and should be the reference for the project design	The rate of future RSLR is highly uncertain. The High RSLR scenario was not selected as the basis for design because it could lead to unnecessary expenditures associated with overbuild if the actual RSLR is less than the High RSLR scenario (4.75 ft over the next 75 years). By 2085, the High RSLR scenario is approximately 2.5 ft higher than the Intermediate RSLR scenario, which is the basis for design. Since the structures were designed to include 2 ft of structural superiority (2 ft higher than the levees), the Morganza project could be adapted to the High RSLR scenario with additional lifts added to the earthen levees. Section 6.9 of the main PAC report provides a sensitivity analysis of potential cost savings or additions if RSLR is lower or higher than expected under the Intermediate RSLR scenario.	PAC Section 6.9
LEAN6	Resiliency	Levees with wetlands (marshes, swamps) and other natural barriers in front of them are more sustainable than those exposed to open water	The protection for levees provided by wetlands and other natural barriers is a function of the amount of storm surge and wave attenuation provided by those features. The degree of protection provided by those features is unknown and varies depending on storm intensity, direction, speed and other factors. There is currently no verified modeling or other information that quantifies the amount of protection provided by these features or the extent of those features needed to have a measurable impact.	NA
LEAN7	Eco Proj	Design for the authorized Louisiana Coastal Area Study (LCA) project to divert Atchafalaya River water to Terrebonne Marshes. A long distance sediment pipeline project from the Atchafalaya River to the eastern and central Terrebonne basin will apparently be retained.	The LCA Project Convey Atchafalaya waters to Northern Terrebonne and multipurpose use of the HNC lock is not a long distance sediment pipeline project. The MtoG project will not interfere with the LCA Project, but the LCA Project was put on hold per letter from the State.	NA
LEAN8	Eco Proj	The LCA also included a Terrebonne Basin Barrier Shoreline Restoration Project, and a Land Bridge between Caillou Lake and the Gulf	Comment noted	NA
LEAN9	Eco Proj	Scientific researchers and some private organizations are working to demonstrate the value of oyster reefs for both habitat restoration and storm surge buffers. Oyster reefs have the added value of being able to establish themselves quickly, enhancing their value as "speed bumps" for storm surge from the Gulf	Comment noted	NA
LEAN10	Cost	The Project's estimated costs rose by more than 20% following Hurricane Katrina and subsequent changes in hurricane levee standards, necessitating a reauthorization process under the Water Resources Development Act Section 902	Concur with this statement.	NA
LEAN11	WIK	non-federal sponsors of the project have undertaken construction of up to 9 miles of "what would amount to first lift levees" along several reaches, integrating the efforts will be critical for efficiency	Concur (a) In order to balance the accounts when moving from the 75% Federal/25% Non-Federal cost share in Pre-Construction Engineering and Design (PED) phase to the 65% Federal/35% Non-Federal cost share in Construction phase, the Non-Federal Sponsor will have to make up any difference in the cost share between the Design Agreement and the Project Partnership Agreement (PPA) in the first year of the PPA. All costs for design and construction will be rolled up in to one sum in the PPA, and the conditions set forth in the PPA will apply. If the PPA stipulates that the Non-Federal sponsor shall be credited for Work In Kind (WIK) in lieu of cash payment, then the WIK credit (subject to all applicable requirements) may be used to balance the accounts forwarded from PED. The non-Federal sponsor is encouraged to submit an official written request to the Corps for any additional clarification on applying WIK credit to account balances forwarded from PED. Note that the PPA cannot be executed until the project is designated as a Construction New Start. Requirements for a Construction New Start include congressional authorization, congressional appropriation of Construction funds and a signed Record of Decision (ROD) on the environmental document.  (b) The PAC Report includes feasibility-level designs, which are considered approximately 25% designs that have been completed based on limited data collection (soil borings, surveys, environmental investigations, etc.). As the Corps proceeds to the detailed design phase for features of the Morganza to the Gulf project, we will continue to refine designs as we acquire additional information. Following completion of the 2002 Feasibility Report, several features of the project were refined based on additional soils data obtained and opportunities to reduce environmental impacts and project costs. These features included the Houma Navigation Canal Lock Complex (wider sector gate, different configuration), and Levee Reaches A, G, H and J (smaller footprint). Similarly, features recommended in the 2013 PAC Report may be refined as those features get to the detailed design phase.  Reach J-1 was constructed prior to execution of a Project Partnership Agreement (PPA), and prior to execution of a Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. In order to receive Work In Kind (WIK) Credit for Reach J-1, Congress would specifically have to include a provision for look-back credit and a PPA must be executed between the Department of the Army and the non-Federal sponsor.  (c) Mitigation is considered a construction cost and may be creditable as Work In Kind (WIK) depending on the terms and conditions set forth in the Project Partnership Agreement (PPA) or the Memorandum of Understanding (MOU) for Work Provided or Performed Prior to Execution of a PPA. The non-Federal sponsor is not eligible for WIK credit unless a PPA has been executed, an MOU has been executed in support of PPA, or WIK credit has been specifically provided by Congress.	NA
LEAN12	State master plan	"a major challenge for the Morganza project is how to integrate it into... coastal protection and restoration as outlined by the State Master Plan."	Comment noted.	NA
LEAN13	Indirect/gate closures	Closure under current conditions would occur approximately 1.5 days per year, but under the High RSLR Scenario this would rise to 24 days per year by 2035 and 365 days per year by 2085. Those estimates, like the ones for maintenance costs, do not include possible responses to major storm impacts in the interim, which could result in the system becoming largely or totally closed much sooner.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
LEAN14	Indirect/gate closures	Increased closure of the structures would have significant effects on the fishery resources of the area and the communities who depend on them. Egress for estuarine species, access for fishermen, water quality	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET).</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LEAN15	Rainfall	there does not seem to be discussion of the possibility of high water on the inside of the levee system while surge is approaching from the Gulf. Combination of rain and surge and multiple storms not addressed	The proposed Federal levee is not expected to impact rainfall damages in the populated areas during or after construction. The populated areas are located within forced drainage levee systems. Rainfall would continue to be pumped outside of the local forced drainage levee systems and into an area that would be surrounded by the proposed hurricane levee, leaving storage between the Federal and local levee systems. When impacts of the proposed Federal levee on the interior area were modeled, the only appreciable difference in water surface occurs when the levees are overtopped at the less frequent return intervals. Given the large storage areas behind the Federal levee (e.g. Lake Boudreaux), and environmental control structures throughout the levee alignment, additional pumping capacity for rainfall is not needed.	NA
LEAN16	Cost	series of lifts of substantial portions of the levee...adds substantially to the project cost, and to the engineering challenge involved in building and raising these sections, and rebuilding would be necessary after storms	Comment noted.	NA
LEAN17	Realign/MLODS	We are not convinced that the other option – the "Multiple Lines of Defense" (MLOD) alignment – has been adequately assessed, or that it has been too quickly dispensed with as less cost-effective, since the engineering and repair costs of the more southerly authorized alignment are likely to be higher than estimated due to the effects of sea-level rise and storms on construction and maintenance	The MLODS alternative was a preliminary alternative that was not carried forward and evaluated to the same level of detail as the other two alternatives along the authorized alignment. As described in section 4 of the PAC report, the MLODS alternative was screened out because it would cause more induced flooding and have less internal storage in the case of overtopping (higher residual risk). There is also a greater impact on BLH that has a higher mitigation cost compared to impacts to marsh.	NA
LEAN18	Realign/MLODS	The MLOD 2008 Report proposed an alternative incorporating a series of ring levees and natural barriers outside the levees to increase their stability/resiliency, including marshes and cypress stands. If increasing salinity levels render cypress stands unworkable, there has been substantial research at Louisiana universities on the expansion of black mangroves in the coastal zone and their utility as storm surge buffers.	Comment noted	NA
LEAN19	Time	estimated 20 year-plus time frame for completion of the authorized alignment, along with its escalating costs, only serves to elevate the question of whether this option truly represents the best means of "protection"	Comment noted.	NA
LEAN20	Time & Reformulate	The need for protection is real and urgent enough to allow for a re-evaluation of alternatives and the potential for new combinations of actions that could provide that benefit in a more effective and timely manner.	Comment noted.	NA
LAC1	NEPA Compliance	Will the Final EIS need to have additional supplements to fulfill the legal requirements of NEPA?	This document fulfills the the legal requirements of NEPA for a programmatic EIS. Per the programmatic NEPA document that this is, supplemental NEPA would be required once authorization and details are developed on the programmatic features, but not on the constructable features.	NA
LAC2	Realign/MLODS	There is no detailed review of the MLOD Alternative 3, (USACE 2013b, p. 36) in the DPAC nor the DRPEIS. It appears the only criterion used to reject the MLOD alternative is that it abandons the location of the HNC structure used in the TSP. If a moveable sill as placed in the Canal to stop the saltwater intrusion, the main structure could be moved north to coincide with the MLOD protection levee where it would cross the Canal.	The MLODS alternative was a preliminary alternative that was not carried forward and evaluated to the same level of detail as the other two alternatives along the authorized alignment. As described in section 4 of the PAC report, the MLODS alternative was screened out because it would cause more induced flooding and have less internal storage in the case of overtopping (higher residual risk). There is also a greater impact on BLH that has a higher mitigation cost compared to impacts to marsh.	NA
LAC3	Economics/BCR	What are the costs and benefits fo using the MLOD Alternative 3	Based on the preliminary B/C analysis conducted in 2008, the MLOD Alternative 3 was similar in cost to Alternative 1 (authorized alignment) but the benefits were lower, so it was screened out and not included in the final array of alternatives evaluated in 2013.	NA
LAC4	Economics/BCR	A benefit/cost analysis, Table 4-1 (DPAC, p. 38), includes all the alignments but was completed in 2008 (5 years ago). Is there a B/C analysis for 2013?	The B/C analysis conducted in 2008 was for the preliminary alternatives only, which included the MLODS alignment. The B/C analysis conducted in 2013 was for the final alternatives only, i.e. the 1% and 3% AEP levels of risk reduction along the authorized alignment.	NA
LAC5	Economics/BCR	Since the alignments of segments have been changed and there is now 98 miles of levees (a 26 mile expansion), these changes must be included in an updated B/C analysis.	The updated B/C analysis for the final array of alternatives included costs for the entire 98-mile alignment.	NA
LAC6	Economics/BCR	The B/C Ratio for Alternative 1 (TSP) is only 1.07, which is barely over 1.0. These calculations came before new structures and an addition of 26 miles of levees were added to the project.	The updated B/C analysis for the final array of alternatives included costs for the entire 98-mile alignment. The updated B/C ratio for the TSP is 1.3.	NA
LAC7	CAR	The DRPEIS is incomplete as voiced by USF&WS. "...this Supplemental Coordination Act Report does not fulfill the requirements of the Fish and Wildlife Coordination Act and does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of that Act." (Dec. 6, 2012, USF&WS letter to Col. Fleming).	A more rigorous design analysis, impacts assessment to all significant resources and related mitigation analysis, including coordination with the USFWS for revisions to the CAR were conducted, consistent with all laws, regulations and policies, and coordinated with the HET and resource agencies before being clearly documented in the FRPEIS before the ROD is signed.	RPEIS Appendix B

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LAC8	Indirect & NEPA	We are concerned that the Final PEIS will also be incomplete. It appears to us that the NEPA process is piecemeal and that the cumulative affects are not being addressed	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC9	Indirect & NEPA	The piecemealing of the project evades the proper NEPA process by putting off the comprehensive evaluation of impacts of the entire project.	This document fulfill the legal requirements of NEPA and is not piecemealing. Per the programmatic NEPA document that this is, supplemental NEPA would be required once authorization and details are developed on the programmatic features, but not on the constructible features.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC10	Indirect & NEPA	The DRPEIS withholds important information to be used by the public and agencies in evaluation of the project	Do no concur	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC11	Indirect & NEPA	The documents also avoids the cumulative environmental impacts of MtG project.	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC12	Borrow	The borrow sites have not been selected for all the segments.	This is a programmatic NEPA Document and as such all details are not required. Borrow sites have been identified for the constructible features (levee reaches F-1, F-2, and G-1; the HNC lock complex; and the Bayou Grand Caillou floodgate). For the remaining programmatic features, additional NEPA documents will address borrow site impacts once borrow sites are identified. Additional information will be provided to better demonstrate selection of the least environmentally damaging borrow sources. Additional discussion of the avoidance of jurisdictional wetlands will also be included.	RPEIS Section 6.2; 6.18; 6.19; Appendix G; Appendix K
LAC13	Borrow	How do we know the direct and indirect impacts to wetlands if the borrow sites have only been identified for three out of 21 levee segments	Borrow sites have only been identified for the constructible features (levee reaches F-1, F-2, and G-1; the HNC lock complex; and the Bayou Grand Caillou floodgate). For the remaining programmatic features, additional EISs or EAs would address borrow site impacts once borrow sites are identified. Since the borrow sources for the programmatic features are unknown at this time, the exact quantity and habitat types of impacted wetlands are unknown as well. The location of borrow sources for the programmatic features and the quantity and habitat types of impacted wetlands would be documented in supplemental EISs or EAs. Additional information will be provided in supplemental EISs or EAs to better demonstrate selection of the least environmentally damaging borrow sources. Additional discussion of the avoidance of jurisdictional wetlands would also be included. Furthermore, all necessary information disclosing the actions to avoid, minimize and reduce potential adverse impacts of borrow sources are documented in the Final RPEIS.	RPEIS Section 6.2; 6.18; 6.19; Appendix G; Appendix K
LAC14	Buyout/expand	The use of non-structural measures to avoid loss to structures outside the levee system is a good approach and we are glad to see this added to the DRPEIS. We believe that more non-structural alternatives can be used for this project to reduce long-term costs.	Comment noted	NA
LAC15	Borrow	Constructible feature borrow sites have been identified; however, for future lifts, it is assumed that borrow material will come from yet to be identified government-furnished borrow areas. The current status of unknown supply locations may be a concern to project reviewers/approvers." (USACE, 2013d, p. 1-9)	Borrow sites have only been identified for the constructible features (levee reaches F-1, F-2, and G-1; the HNC lock complex; and the Bayou Grand Caillou floodgate). For the remaining programmatic features, additional EISs or EAs would address borrow site impacts once borrow sites are identified. Since the borrow sources for the programmatic features are unknown at this time, the exact quantity and habitat types of impacted wetlands are unknown as well. The location of borrow sources for the programmatic features and the quantity and habitat types of impacted wetlands would be documented in supplemental EISs or EAs. Additional information will be provided in supplemental EISs or EAs to better demonstrate selection of the least environmentally damaging borrow sources. Additional discussion of the avoidance of jurisdictional wetlands would also be included. Furthermore, all necessary information disclosing the actions to avoid, minimize and reduce potential adverse impacts of borrow sources are documented in the Final RPEIS.	RPEIS Section 6.2; 6.18; 6.19; Appendix G; Appendix K
LAC16	Borrow	The report states that borrow sites for only 3 out of 21 levee segments have been identified. Which habitat types will be directly impacted by the location of the unnamed borrow sites?	The borrow for the constructible features comes from adjacent areas to the levee. These have been identified in the Map book and on the plates in the engineering appendix. They are primarily open water with some intermediate marsh.	RPEIS Appendix G

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
LAC17	Indirect/Enclosed	We did not see an estimate of the enclosed wetlands acreage included in the DRPEIS. What is the current estimate of wetland acreage on the protected side of the levee system? The correct wetlands acreage should be added to the FRPEIS for each of the four Alternatives presented	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.	RPEIS, Summary; Section 3.5.1; 3.5.3; 6.18; 6.19; Appendix F and K
LAC18	Economics/BCR	The correct wetlands acreage of the four Alternatives presented must be used in any new B/C Ratio calculations	B/C ratios only include costs and benefits in dollars and includes the cost of mitigation	NA
LAC19	Direct	Reference Direct Impacts to wetlands for 1% AEP Alternative: The document states that there are 4,113 acres directly impacted by the construction of the TSP levee system. Does the levee footprint include: 1) the width of the borrow canal? 2) the offset between the LAC letter MtG, DRPEIS 3 berm and the borrow canal? 3) A 50 ft buffer zone from toe of slope? The entire impacted footprint of each levee section must be included as part of the direct impacts and wetland losses	The term "levee footprint" refers only the toe-to-toe width of the levee itself. The direct impacts and wetland losses are calculated based on the Right-of-Way limits (include the levee footprint, the borrow canal and the widths of the offsets required for both levee stability and borrow pit stability) plus the extents of the proposed mitigation areas. The Right-of-Way limits and proposed mitigation areas are depicted in Mapbook Appendix for the Draft Revised Programmatic EIS.	RPEIS Appendix G
LAC20	Indirect/Enclosed	Each Alternative alignment presented in the PAC report should include the total number of wetland acres enclosed by the levee system. The report does not include this information. This is another inadequacy of the DPAC.	The two alternatives that were carried through to the final evaluation have the same alignment and will enclose approximately the same number of acres of wetlands.	RPEIS, Summary; Section 3.5.1; 3.5.3; 6.18; 6.19; Appendix F and K
LAC21	Indirect	The cumulative impacts of the 1% AEP Alternative and other planned or ongoing measures will be stabilization and potential enhancement of wetlands and marsh habitat throughout the study area." (USACE 2013d, p. 6-49). This is not supported by other statements in the document. If the gates are closed because of RSLR and the wetlands are isolated from the GOM, how will this be an enhancement?	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below: (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC22	Indirect & Hydrology Impacts	The disruption of sheet flow is also an environmental impact.	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.	RPEIS, Summary; Section 3.5.1; 3.5.3; 6.18; 6.19; Appendix F and K
LAC23	Indirect/gate closures	Does the Corps know how to manage a "leaky" levee over the 50 life of the project?	Coment noted	NA
LAC24	Indirect	In some areas, the proposed levee would restrict fish access to navigable and environmental structures only." (USACE 2013d, p. 6-48). The document continues: "Planned and on-going measures along with 1% AEP Alternative measures will likely be beneficial to the ecosystem and to recreation resources in numerous ways as habitat for various stages in the life-cycles of fish and wildlife are stabilized, protected, improved, and expanded. Improved fish habitat will increase the numbers and variety of fish, which will be beneficial to recreational fishing." (USACE 2013d, p. 6-49). The statement is not supported by the document. It is speculative and is counter to other statements made in the DPAC and DRPEIS	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below: (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC25	Indirect	Eliminating sheetflow in some areas will negatively affect fisheries. Spawning fish and invertebrates would be funneled into the culverts which may have higher velocities than natural for organisms to move between the protected and unprotected sides of the levees. Has this been discussed with the resource agencies?	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.	RPEIS, Summary; Section 3.5.1; 3.5.3; 6.18; 6.19; Appendix F and K

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LAC26	Indirect/gate closures	Will the critical velocities be maintained for water flow through the culverts and other structures over the life of the project?	Culvert sizes, and numbers were looked at to maintain the required velocities and will be looked at in detail in supplemental NEPA documents.	NA
LAC27	HSDRRS/support	We strongly support the incorporation of the post-Katrina engineering design criteria-especially the new soil standards into the federal levees. The material incorporated into these local levees must meet the post-Katrina Federal standards for earthen levees.	Comment noted.	NA
LAC28	Geotech	Any local earthen levees, to be incorporated into the Morganza to the Gulf federal levee system, must meet these new post-Katrina soil standards. One weak link in the system and there could be a catastrophic failure. We hope that proper soil borings with adequate spacing were taken through all the local levees to be included in the federal system.	The number/location of soil borings is sufficient for a feasibility level study. If the project is re-authorized, additional borings would be taken during PreConstruction Engineering and Design (PED).	NA
LAC29	Geotech	The detailed soil borings have not yet been taken. The data from these borings may alter the design or placement of some levee sections. We are surprised that these geological/engineering data have not been collected yet.	The number/location of soil borings is sufficient for a feasibility level study. If the project is re-authorized, additional borings would be taken during PreConstruction Engineering and Design (PED).	NA
LAC30	Indirect/Enclosed & Indirect/Sediment	In reference to impacts to fisheries and marshes by a "leaky" levee system, the wetlands will be isolated from storm surges which carry suspended sediments. It has been shown that suspended sediments distributed inland by storms and cold fronts are part of the natural process of wetlands nourishment (Roberts et al, 2012). Marshes can be sustained by only millimeters of suspended mineral sediments deposited annually. Without this influx of suspended sediments, the marsh will continue to subside, drowning the marsh, thus turning the enclosed area into open water. We request that the Corps and other agencies look at this process before agreeing to enclose and isolate 80,000 acres of wetlands	Several NGOs noted that regular tidal fronts can deposit sediment into connected coastal marshes and stressed the importance of leaving estuarine systems open to maintain a sustainable ecosystem. They also noted that the Morganza to the Gulf levee could increase the speed of coastal erosion by blocking sediments from moving through the system. The Habitat Evaluation Team discussed these assumptions and concluded that although the project would prevent some sediment deposition (a potential negative indirect effect of the project), the levees could also prevent surge and waves from destroying interior wetlands (a potential positive indirect effect). USFWS noted that storm surge impacts are the primary cause of project area marsh loss. Healthy marshes are able to withstand storm surge impacts and recover from those impacts, whereas unhealthy deteriorating marshes may experience permanent substantial losses. Therefore, losses related to storm impacts are likely the consequence of other chronic stresses affecting these marshes, such as submergence associated with the combined effects of sediment deprivation, subsidence, and sea level rise. Since the net effect of sediment deposition impacts with the project compared to without the project (no action) is unknown and highly speculative, the Habitat Evaluation Team agreed that it should not be quantified for the indirect impacts analysis at this time, but rather, discussed qualitatively in the Final RPEIS.	RPEIS Section 3.5.3
LAC31	Indirect	What are the environmental costs if these marshes are lost to productivity	Indirect impacts are calculated in terms of loss of Average Annual Habitat Units (AAHUs). Potential loss of AAHUs for the constructible features will be reported in the Final RPEIS. If the project is re-authorized, potential loss of AAHUs for the programmatic features will be reported in future EISs or EAs.	RPEIS Section 3.5.3; 6.18; 6.19; Appendix K
LAC32	Indirect/gate closures	the isolation of the wetlands over time will reduce the fisheries productivity in Terrebonne Parish. Fisheries species need unimpeded access to the interior fresh and intermediate marshes for spawning and juvenile growth. Will the number of culverts and navigational openings be sufficient over the 50 year life of the project to assure ingress and egress of fisheries species?	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.  Culvert sizes, and numbers were looked at to maintain the required velocities for aquatic organisms with the coordination of the resource agencies. It will be reevaluated in PED and will be documented in supplemental NEPA documents.	RPEIS, Summary; Section 3.5.1; 3.5.3; 6.18; 6.19; Appendix F and K
LAC33	Indirect & Hydrology Impacts	Will the openings compensate for the elimination of sheet flow?	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.  Culvert sizes, and numbers were looked at to maintain the required velocities for aquatic organisms with the coordination of the resource agencies. It will be reevaluated in PED and will be documented in supplemental NEPA documents.	RPEIS Section 3.5.3
LAC34	RSLR & Hydrology Impacts	concerns about the sustainability of the 6x6 ft culverts which will cross under the levees. Because of high subsidence rates where the levees cross marshes (especially Reaches J, K, L), how will the Corps assure that water circulation will be maintained as these levee segments subside?	All the structures are pile founded. Maintenance of the cross sections area would be included in the O&M Manual for the project and would include clearing of debris and sedimentation inside the culverts and in the immediate vicinity to ensure the required cross section is available for flow.	NA
LAC35	RSLR & Hydrology Impacts	There are many examples of highway embankments in which culverts were installed to maintain water circulation. These failed to provide normal hydrology over the life of the project because subsidence of the embankment and filling in of the culverts.	All the structures are pile founded. Maintenance of the cross sections area would be included in the O&M Manual for the project and would include clearing of debris and sedimentation inside the culverts and in the immediate vicinity to ensure the required cross section is available for flow.	NA
LAC36	RSLR/Subside	Will the culverts be built on pilings?	All the structures are pile founded. Maintenance of the cross sections area would be included in the O&M Manual for the project and would include clearing of debris and sedimentation inside the culverts and in the immediate vicinity to ensure the required cross section is available for flow.	NA
LAC37	RSLR/Subside	How will the cross sectional areas be maintained over the life of the project?	All the structures are pile founded. Maintenance of the cross sections area would be included in the O&M Manual for the project and would include clearing of debris and sedimentation inside the culverts and in the immediate vicinity to ensure the required cross section is available for flow.	NA
LAC38	RSLR/Subside	As RSLR increases, how will this affect the movement of water through the culverts over the life of the project?	All the structures are pile founded. Maintenance of the cross sections area would be included in the O&M Manual for the project and would include clearing of debris and sedimentation inside the culverts and in the immediate vicinity to ensure the required cross section is available for flow.	NA

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LAC39	Indirect/gate closures	the PREIS states that because of Relative Sea Level Rise (RSLR), the openings in the levee system will have to close if the water levels reach +2.5 ft; If the system must remain closed for even 24 days per year, what affect will this have on fisheries?	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC40	Indirect/gate closures	the PREIS states that because of Relative Sea Level Rise (RSLR), the openings in the levee system will have to close if the water levels reach +2.5 ft; If the system must remain closed for even 24 days per year; If the closure comes at critical times for migrating fisheries how will this affect the productivity of the Terrebonne marshes?	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC41	Indirect/gate closures	The trigger elevation may vary at different structure locations and will be further refined in the final PAC report." This information should have been included in the DRPEIS	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
LAC42	Indirect/gate closures & enclosed	We are equally concerned (as USFWS added) by closure of the environmental structures and the impacts this will have on the fisheries resources. This would not be a such a problem if fewer wetlands were included within the levee system as recommended in MLOD (Alternative 3).	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC43	Mitigate	We do not accept the Corps' concept of mitigation (e.g. using some material dredged from a linear borrow pit to create marsh). The remaining canal will be a permanent disruption to the environment, its depth will exceed the normal depth of the open water in the marsh and could become anoxic. While the use of the organic material for marsh creation is acceptable, the mitigation should be more than 1 to 1. Will the linear canals be a benefit or detriment to the ecosystem? This must be discussed in the final report.	Per regulation mitigation will be 1 to 1 based on habitat value.	RPEIS Section 6.19; Appendix K
LAC44	Mitigate	Will mitigation projects be located on the Gulf side or the protected side of the levee system?	Mitigation features provided as compensation for wetland/habitat impacts associated with the constructible project elements would all be located on the flood side of the proposed levee system. Most mitigation projects provided for wetland/habitat impacts associated with the programmatic project elements would likely be located on the flood side of the levee system; however, the possibility of some mitigation being located on the protected side of the levee system cannot be excluded at this stage. Such mitigation would likely be restricted to habitat impacts on the protected side of the levee system. These issues will be addressed in future supplemental NEPA documents.	NA
LAC45	Mitigate	We are also concerned that the project could stimulate additional clearing of bottomland hardwoods for agriculture. These indirect impacts also need to be mitigated.	The future development of any jurisdictional wetland would continue to be managed by the 404 permit process. No additional lands would be put under pump by this project so the conversion of BLH to agricultural land is not expected.	RPEIS, Section 6.19; Appendix K
LAC46	Indirect	An estimated 88,700 additional acres [138 sq. miles] are considered marginally developable although wetlands." Does the Corps still consider the wetlands, included in the TSP, to be "marginally developable"? If so, these wetlands should be identified and added to the impacts of the project.	The future development of any jurisdictional wetland would continue to be managed by the 404 permit process. No additional lands would be put under pump by this project.	NA
LAC47	Question/Clarification	It is stated in the Report that the area will have protection when the first levee lift is completed. In what year will that happen?	Subject to re-authorization and sufficient project funding, the current construction schedule assumes a complete system (but not yet to 1% AEP risk reduction level) in place by 2024.	NA
LAC48	Question/Clarification	According to USACE (2013c, Appendix 404(b)(1) evaluation), building the levee system to base year elevations will take 20 years and be completed in 2035. Does this mean that the project area will not have 1% risk reduction until 2035?	Correct. Subject to re-authorization and sufficient project funding, the current construction schedule assumes a 1% AEP risk reduction level by 2035.	NA
LAC49	Outreach	do citizens living behind the proposed levees know that their protection will take 20 years?	The construction schedule assumptions were included in the Draft PAC report that has been available for public review since January 4, 2013 and have been briefed at many TLCD and Parish council meetings.	NA
LAC50	Indirect/Enclosed	While we support hurricane protection for developed areas along the coast, we question a hurricane protection project in which 63% of the area to be protected are wetlands and water bottoms	The wetland and open water areas behind the proposed Federal levee provide a large internal storage area in the case of heavy rainfall or levee overtopping, which reduces residual risk to people and property. Levee alignment alternatives located closer to development do not offer that benefit.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC51	Indirect/Enclosed	While we support hurricane protection for developed areas along the coast, we question a hurricane protection project in which only 10% of the project area is identified as urban land.	The wetland and open water areas behind the proposed Federal levee provide a large internal storage area in the case of heavy rainfall or levee overtopping, which reduces residual risk to people and property. Levee alignment alternatives located closer to development do not offer that benefit.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
LAC52	Economics/BCR	We also question an economic analysis which would choose such a preferred alternative (1% AEP Alternative as TSP).	The benefits analysis is consistent with USACE policy and has been technically reviewed. The TSP was chosen based on the plan that maximized net benefits (benefits minus costs).	NA
GULF1	Realign/MLODS	The basis of our concerns lies in the deviation of the preferred alignment from a "Lines of Defense" strategy taken elsewhere on the Louisiana coast.	The main PAC report has been updated to explain Residual Risk. Levees are only one of many steps to reduce risk. Even with the Morganza project in place, some risk of flooding remains, as well as other residual risks such as wind damage. An important step is for parish and state governments to develop evacuation plans and for individuals to heed them. USACE will continue their coordination/communication with the public and improve on the discussion disclosing potential flood risk reduction. The FRPEIS includes a description of residual flood risk and describes the specific efforts taken to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	PAC Section 10.2
GULF2	Realign/MLODS	A Lines of Defense strategy allows for and entails the restoration and re-integration of protective coastal processes and features such as land-building and land-sustaining river floods, forested ridges, large expanses of interior and exterior marsh wetlands, and barrier islands--while planning for elevation and floodproofing of homes behind protective features, as well as planning for regular evacuation events.	The main PAC report has been updated to explain Residual Risk. Levees are only one of many steps to reduce risk. Even with the Morganza project in place, some risk of flooding remains, as well as other residual risks such as wind damage. An important step is for parish and state governments to develop evacuation plans and for individuals to heed them. USACE will continue their coordination/communication with the public and improve on the discussion disclosing potential flood risk reduction. The FRPEIS includes a description of residual flood risk and describes the specific efforts taken to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	PAC Section 10.2
GULF3	Realign/MLODS & Culture	A lines-of-defense strategy also includes planning for relocation of distal coastal communities when and where it is necessary, so that coastal cultures can be maintained wherever possible.	The main PAC report has been updated to explain Residual Risk. Levees are only one of many steps to reduce risk. Even with the Morganza project in place, some risk of flooding remains, as well as other residual risks such as wind damage. An important step is for parish and state governments to develop evacuation plans and for individuals to heed them. USACE will continue their coordination/communication with the public and improve on the discussion disclosing potential flood risk reduction. The FRPEIS includes a description of residual flood risk and describes the specific efforts taken to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	PAC Section 10.2
GULF4	RSLR/Subside	The outward alignment selected as the preferred alternative has a long history, and was chosen before the latest science on the subsidence within the project area was as well understood. The preferred alignment is an alignment designed with "erosion," or loss of wetlands from the distal end of the basin inward, as the primary mechanism of coastal land loss; it is now understood that subsidence is the primary geological mechanism by which the interior marshes have been lost and the primary threat to the land within the project area in the future.	Comment noted	NA

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GULF5	Indirect/Enclosed	In addition to this new understanding, we have learned more about the negative effects of impounding wetlands behind levees and roads from this very project area.	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
GULF6	Indirect/Sediment	Regular tidal fronts can deposit a non-trivial amount of sediment into connected coastal marshes, giving even more credence to the MLOD strategy of leaving estuarine systems connected for flood risk reduction, and thus striking a balance between flood protection and a sustainable ecosystem.	Several NGOs noted that regular tidal fronts can deposit sediment into connected coastal marshes and stressed the importance of leaving estuarine systems open to maintain a sustainable ecosystem. They also noted that the Morganza to the Gulf levee could increase the speed of coastal erosion by blocking sediments from moving through the system. The Habitat Evaluation Team discussed these assumptions and concluded that although the project would prevent some sediment deposition (a potential negative indirect effect of the project), the levees could also prevent surge and waves from destroying interior wetlands (a potential positive indirect effect). USFWS noted that storm surge impacts are the primary cause of project area marsh loss. Healthy marshes are able to withstand storm surge impacts and recover from those impacts, whereas unhealthy deteriorating marshes may experience permanent substantial losses. Therefore, losses related to storm impacts are likely the consequence of other chronic stresses affecting these marshes, such as submergence associated with the combined effects of sediment deprivation, subsidence, and sea level rise. Since the net effect of sediment deposition impacts with the project compared to without the project (no action) is unknown and highly speculative, the Habitat Evaluation Team agreed that it should not be quantified for the indirect impacts analysis at this time, but rather, discussed qualitatively in the Final RPEIS.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
GULF7	Indirect/gate closures	It is very likely that the changes in sea level rise will ensure that the gates will be increasingly closed, until, as sea level rises above 2.5 feet + NAVD, the gates will remain permanently closed. The increasing, then permanent closure of these gates will not only weaken the remnant or restored wetlands in this area, but also inhibit and then restrict the water-dependent economic activity which sustains the coastal communities resident in the areas to be protected.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET). (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K
GULF8	Risk	the project as proposed would mislead the public into a presumption of flood protection for the intervening period before the base date of 2035 or the settlement of the final lifts in 2085.	The main PAC report has been updated to explain Residual Risk. Levees are only one of many steps to reduce risk. Even with the Morganza project in place, some risk of flooding remains, as well as other residual risks such as wind damage. An important step is for parish and state governments to develop evacuation plans and for individuals to heed them. USACE will continue their coordination/communication with the public and improve on the discussion disclosing potential flood risk reduction. The FRPEIS includes a description of residual flood risk and describes the specific efforts taken to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	PAC Section 10.2
GULF9	Buyout/Expand	1) There are insufficient funds authorized for non-structural measures and relocation. Some areas inside the alignment should be relocated. Current relocation is disorganized.	Several commenters recommended expansion of the nonstructural plans. The USACE supports the use of nonstructural solutions as an essential part of a comprehensive hurricane and storm damage reduction program. Nonstructural measures are the responsibility of not just the Federal government, but also state and local governments and private citizens. In the original feasibility study, nonstructural alternatives, in lieu of levees, were not found to be economically justified and were therefore not authorized or re-evaluated for the PAC report. Large-scale relocation is problematic both socially and economically because homes and businesses would have to be moved considerable distances north to the Houma or Thibodaux areas to remove them from the threat of coastal flooding from the 1% AEP (100-year) storm surge event.	NA
GULF10	Buyout/Expand & State Master Plan	The 2012 Master Plan, allocates a quarter of total protection and restoration funding to "non-structural" measures within and without the levee system.	Comment noted. Several commenters recommended expansion of the nonstructural plans. The USACE supports the use of nonstructural solutions as an essential part of a comprehensive hurricane and storm damage reduction program. Nonstructural measures are the responsibility of not just the Federal government, but also state and local governments and private citizens. In the original feasibility study, nonstructural alternatives, in lieu of levees, were not found to be economically justified and were therefore not authorized or re-evaluated for the PAC report. Large-scale relocation is problematic both socially and economically because homes and businesses would have to be moved considerable distances north to the Houma or Thibodaux areas to remove them from the threat of coastal flooding from the 1% AEP (100-year) storm surge event.	NA
GULF11	Buyout/Expand & Risk	Authorization of nonstructural funds would communicate the risk of flooding in the more distal areas of the basin; Without nonstructural measures, USACE risks misleading coastal communities that they will be protected from storms.	Comment noted. Several commenters recommended expansion of the nonstructural plans. The USACE supports the use of nonstructural solutions as an essential part of a comprehensive hurricane and storm damage reduction program. Nonstructural measures are the responsibility of not just the Federal government, but also state and local governments and private citizens. In the original feasibility study, nonstructural alternatives, in lieu of levees, were not found to be economically justified and were therefore not authorized or re-evaluated for the PAC report. Large-scale relocation is problematic both socially and economically because homes and businesses would have to be moved considerable distances north to the Houma or Thibodaux areas to remove them from the threat of coastal flooding from the 1% AEP (100-year) storm surge event. The main PAC report has been updated to explain Residual Risk. Levees are only one of many steps to reduce risk. Even with the Morganza project in place, some risk of flooding remains, as well as other residual risks such as wind damage. An important step is for parish and state governments to develop evacuation plans and for individuals to heed them. USACE will continue their coordination/communication with the public and improve on the discussion disclosing potential flood risk reduction. The FRPEIS includes a description of residual flood risk and describes the specific efforts taken to ensure that flood risk in the area does not increase as a result of further development in high risk areas.	PAC Section 10.2
GULF12	Buyout & EJ	The absence of Isle de Jean Charles in the Real Estate Appendix is an error and does not give us confidence that the Executive Order on Environmental Justice (E.O. 12898) is being taken seriously.	The buyout cost for the Isle of de Jean Charles community is included in total buyout cost under the Real Estate Appendix The buyout plan is too preliminary to be included in the Real Estate Plan as detailed components.  Several commenters recommended expansion of the nonstructural plans. The USACE supports the use of nonstructural solutions as an essential part of a comprehensive hurricane and storm damage reduction	NA
GULF13	Buyout/Expand	We request that funds for non-structural risk reduction be authorized within the project area, as well as relocation funds for more distal areas of the basin.	Several commenters recommended expansion of the nonstructural plans. The USACE supports the use of nonstructural solutions as an essential part of a comprehensive hurricane and storm damage reduction program. Nonstructural measures are the responsibility of not just the Federal government, but also state and local governments and private citizens. In the original feasibility study, nonstructural alternatives, in lieu of levees, were not found to be economically justified and were therefore not authorized or re-evaluated for the PAC report. Large-scale relocation is problematic both socially and economically because homes and businesses would have to be moved considerable distances north to the Houma or Thibodaux areas to remove them from the threat of coastal flooding from the 1% AEP (100-year) storm surge event.	NA

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GULF14	Economics	2) Lack of consideration of updates to the DFIRM and Biggert-Waters Reform Act of 2012. We question any population analysis that ignores the changes in federal insurance, as well as the existing intra-basin trend of population growth. We request an economic benefits analysis that includes these geographic details.	Do not concur: The statement that the PAC population and economic analysis ignores the federal insurance program and the existing intra-basin trend of population growth is false. The economic analysis of future conditions is geographically based and was adjusted to account for the behavior of property owners whose structures incur repetitive flood losses. Refer to Section 3.5 of the main PAC report and pages 23 to 29 of the Economic Appendix.	NA
GULF15	Indirect/Ring Levees	3) Lack of consideration of existing and future ring levees...this RPEIS does not consider the environmental impact of the other existing and proposed levees necessitated by flood risk reduction.	Do not concur: There will be no change with and without project due to enclosed ring levees. These impacts do not change. Existing and new ring levees inside the system could allow for the system to remain open longer in the future as there is a change in sea level.	NA
GULF16	Indirect/Ring Levees	We argue that these ring levees, which in places rise to the heights of the first lift of the Morganza project, are a de-facto Alternative 3 (MLODS) being built in addition to the preferred alternative, and so these damages to habitat are proposed in addition to the damages of the preferred alignment.	Comment noted	NA
GULF17	Realign/MLODS	Although many modifications of the preferred alternative have been made to adjust for impacts, the same rigor has not been applied to Alternative 3.	The MLODS alternative was a preliminary alternative that was not carried forward and evaluated to the same level of detail as the other two alternatives along the authorized alignment. As described in section 4 of the PAC report, the MLODS alternative was screened out because it would cause more induced flooding and have less internal storage in the case of overtopping (higher residual risk). There is also a greater impact on BLH that has a higher mitigation cost compared to impacts to marsh.	NA
GULF18	Indirect/Ring Levees & Realign/MLODS	We request that the full levee system, including ring levees, within the project area be evaluated for environmental impacts. We request a full analysis of Alternative 3 based upon the ring levees proposed for the area.	Do not concur: There will be no change with and without project due to enclosed ring levees. These impacts do not change. Existing and new ring levees inside the system could allow for the system to remain open longer in the future as there is a change in sea level. The MLODS alternative was a preliminary alternative that was not carried forward and evaluated to the same level of detail as the other two alternatives along the authorized alignment. As described in section 4 of the PAC report, the MLODS alternative was screened out because it would cause more induced flooding and have less internal storage in the case of overtopping (higher residual risk). There is also a greater impact on BLH that has a higher mitigation cost compared to impacts to marsh.	NA
GULF19	Mitigate	4) Mitigation of public lands should take place within the bounds of public lands....damages to what few public areas exist are damages to public recreation and aesthetic enjoyment.	Mitigation will be sited following all applicable laws, regulations, and policies to the greatest degree practicable.	RPEIS, Section 6.19; Appendix K
GULF20	Mitigate	We request that mitigation for Mandalay NWR and Point Aux Chenes WMA occur within the bounds and management of those areas...Both areas have been heavily impacted by legacy oil and gas activity. Mandalay has more potential for the backfilling of inactive oil and gas canals, and float marsh restoration; Point Aux Chenes WMA is heavily impacted by industry to the point that marsh creation with outside sediments must occur for restoration. Restoration of both of these areas would provide flood risk reduction to communities within the project area, as well as reduce the likelihood of damage from regular storm fronts to the project structures themselves, lowering maintenance costs.	Coordination with USFWS will continue to occur when determining the impact to and the mitigation requirements for impacts on the NWR per response to USFWS #13. Similar coordination will continue with LADWF regarding impacts on the WMA and mitigation of these impacts. Mitigation plans for unavoidable impacts to the NWR and the WMA will be addressed in future supplemental NEPA documents.	RPEIS, Section 6.19; Appendix K
GULF21	Mitigate	5) The levee system should be mitigated for with the most current mitigation standard...We request that the highest mitigation standard be applied to this public project, and that floodside mitigation be included at every possibility.	Mitigation will be conducted following all applicable laws, regulations, and policies to the greatest degree practicable.	RPEIS, Section 6.19; Appendix K
GULF22	Realign/MLODS	It is troubling that this misunderstanding of coastal processes is reflected in the fact that this preferred alignment for the Morganza to the Gulf levee follows the footprint of several failed "marsh management" structures.	Comment Noted	NA
BASIN1	Eco Proj	The Convey Atchafalaya River Water to Northern Terrebonne Marshes project is among three LCA projects that the state Coastal Restoration & Protection Authority (CPRA) notified the Corps "that it desires to suspend study and design" for, in letters of August and October, 2012. (RPEIS, p. 3-18) The RPEIS states that this decision "results in some degree of uncertainty regarding implementation of these projects as part of the authorized Federal LCA." Fuller explanation is warranted.	The project was designed to not interfere with existing and proposed ecosystem restoration projects. Use of the GIWW to divert freshwater is not a component of the Morganza project, but is a component of the LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project. The LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock project is authorized by Congress and therefore should be considered as part of the future without and future with project conditions. The reason that the State requested that the LCA projects be put on hold was not based on the Morganza to the Gulf project. There was no determination by the State that the project would interfere with the LCA projects. In addition, a project similar to the LCA project is included in the State 2012 Master Plan. Furthermore, funding from the recent Deepwater Horizon oil spill fines will be released to impacted states, including Louisiana, for ecosystem restoration efforts. Hence, the authorized LCA project is a reasonably foreseeable project and should be addressed in both the future without and future with project conditions.	NA
BASIN2	sediment management	The EIS failed to address the way that the Corps of Engineers currently manages sediments.	Comment Noted	NA
BASIN3	Eco Proj	Consistency of the proposed alignment with CWPRA is an important issue that is not addressed.	The plan formulation for the proposed alignment has considered potential impacts and interactions with CWPRA, LCA and other existing and authorized projects. The plan formulation included avoiding as well as working synergistically with other projects.	NA
BASIN4	RLSR	With a predicted sea level rise of 2.4 feet and possibly 4.8 feet by 2085, it is a poor investment and little more than a short-term solution to build a levee through what soon will be open water.	Comment noted	NA
BASIN5	Indirect/Sediment	The Morganza to the Gulf levee will most likely increase the speed of coastal erosion by blocking sediments from moving through the system and increasing storm surge levels south of the levee.	Several NGOs noted that regular tidal fronts can deposit sediment into connected coastal marshes and stressed the importance of leaving estuarine systems open to maintain a sustainable ecosystem. They also noted that the Morganza to the Gulf levee could increase the speed of coastal erosion by blocking sediments from moving through the system. The Habitat Evaluation Team discussed these assumptions and concluded that although the project would prevent some sediment deposition (a potential negative indirect effect of the project), the levees could also prevent surge and waves from destroying interior wetlands (a potential positive indirect effect). USFWS noted that storm surge impacts are the primary cause of project area marsh loss. Healthy marshes are able to withstand storm surge impacts and recover from those impacts, whereas unhealthy deteriorating marshes may experience permanent substantial losses. Therefore, losses related to storm impacts are likely the consequence of other chronic stresses affecting these marshes, such as submergence associated with the combined effects of sediment deprivation, subsidence, and sea level rise. Since the net effect of sediment deposition impacts with the project compared to without the project (no action) is unknown and highly speculative, the Habitat Evaluation Team agreed that it should not be quantified for the indirect impacts analysis at this time, but rather, discussed qualitatively in the Final RPEIS.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
BASIN6	Buyout/Expand	The study fails to address the comparison of the benefits of the project against the long term benefits of implementing a project that would have lasting effects to the aid or present and future generations. The \$12.9 billion may be better spent to fund an orderly retreat from the coast.	Comment noted	NA
BASIN7	Eco Proj	Open Bayou Lafourche; close HNC; divert some Atch River water to combat coastal erosion & RSLR.	Comment noted	NA
BASIN8	Buyout/Expand	The fact that the population for the project area is expected to increase overall reflects the negligent handling by the State of Louisiana of the crisis of rising water levels and increased frequency and intensity of flooding. The State of Louisiana should be working to depopulate the area and discourage further development along the coast.	Comment noted	NA
BASIN9	Indirect/Ring Levees	The EIS should include the cumulative impacts, including several ring levees that have been permitted through the 404 process in the area north of Lake Boudreaux. Habitat damages caused by ring levees should be considered in addition to the negative impacts caused by the preferred alignment.	Do not concur: There will be no change with and without project due to enclosed ring levees. These impacts do not change. Existing and new ring levees inside the system could allow for the system to remain open longer in the future as there is a change in sea level.	NA
SIERRA1	Borrow & Indirect & NEPA Piecemeal	The Delta Chapter agrees with the US Fish and Wildlife Service--indirect impact assessments are incomplete and direct construction impacts are only programmatic assessment level. Eg., borrow sites have not been selected for all segments. The Final PEIS will also be incomplete. The NEPA process is piecemeal and cumulative effects are not being addressed.	This is a programmatic NEPA Document and as such all details are not required. Borrow sites have been identified for the constructible features (levee reaches F-1, F-2, and G-1; the HNC lock complex; and the Bayou Grand Caillou floodgate). For the remaining programmatic features, additional NEPA documents will address borrow site impacts once borrow sites are identified. Additional information will be provided to better demonstrate selection of the least environmentally damaging borrow sources. Additional discussion of the avoidance of jurisdictional wetlands will also be included.	RPEIS Section 3.5.3; 6.2

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SIERRA2	Indirect	We do criticize the inclusion of over 80,000 acres (125 sq mi) of wetlands within the federal "leaky" levee system. First, the wetlands will be isolated from storm surges which carry suspended sediments. We request that the Corps and other agencies look at this process before agreeing to enclose and isolate 80,000 acres of wetlands. What are the environmental costs if these marshes are lost to productivity?	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
SIERRA3	Indirect/gate closures	Second, the isolation of the wetlands over time will reduce the fisheries productivity in Terrebonne Parish.	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
SIERRA4	Indirect/gate closures	Will the number of culverts and navigational openings be sufficient over the 50 year life of the project to assure ingress and egress of fisheries species?	Several commenters expressed concern about enclosing wetlands behind the proposed Federal levee and asked to see an estimate of the enclosed wetlands acreage included in the Final RPEIS. Approximately 68,000 acres of marsh are located behind the proposed Federal levees. Of those 68,000 acres, a little over 46,000 acres of marsh are within the indirect impacts area for the constructible features. The constructible features consist of the Houma Navigation Canal lock complex, the Bayou Grand Caillou floodgate, and levee reaches F and G-1. Approximately 84 of the 98 miles of proposed Federal levee, or 86% of the levee alignment, follow existing hydrologic barriers. Within the remaining 14 miles of levee, which cross areas currently open to tidal exchange, environmental control structures (box culverts with sluice gates) would be constructed to allow continued tidal exchange and ingress/egress of fisheries species. The Final PAC and RPEIS notes that there is a potential for significant adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future. The potential impacts that would be attributable to the proposed Federal levees are unknown at this time because they would be dependent on the amount of wetland loss due to relative sea level rise and hurricanes independent of the project, as well as any changes resulting from the project being constructed by the State of Louisiana and Terrebonne Levee and Conservation District which follows the alignment of the proposed Federal project.  Culvert sizes, and numbers were looked at to maintain the required velocities for aquatic organisms with the coordination of the resource agencies. It will be reevaluated in PED and will be documented in supplemental NEPA documents.	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
SIERRA5	Hydrology impacts	Will the openings compensate for the elimination of sheet flow?	A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:  (a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS. (b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future." (c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) . (d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS. (e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes). (f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes. (g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment. (h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system. (i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species. (j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR & more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR & more frequent closure in the future, i.e. full closure by 2085. (k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts. (l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.	RPEIS, Summary; Section 3.5.1; 3.5.3; 6.18; 6.19; Appendix F and K
SIERRA6	Hydrology impacts	Third, we also have concerns about sustainability of culverts which will cross under the levees. Because of high subsidence rates where the levees cross marshes (especially Reaches J, K, L), how will the Corps assure that water circulation will be maintained as these levee segments subside?	All the structures are pile founded. Maintenance of the cross sections area would be included in the O&M Manual for the project and would include clearing of debris and sedimentation inside the culverts and in the immediate vicinity to ensure the required cross section is available for flow.	NA
SIERRA7	RSLR	Will the culverts be built on pilings? How will the cross sectional areas be maintained over the life of the project? As RSL increases, how will this affect the movement of water through the culverts over the life of the project?	All the structures are pile founded. Maintenance of the cross sections area would be included in the O&M Manual for the project and would include clearing of debris and sedimentation inside the culverts and in the immediate vicinity to ensure the required cross section is available for flow.	NA

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SIERRA8	Indirect/gate closures	As a result of hi RSLR, if the system must remain closed for even 24 days per year, what affect will this have on fisheries? If the closure comes at critical times for migrating fisheries how will this affect the productivity of the Terrebonne marshes? We are equally concerned by closure of the environmental structures and the impacts this will have on the fisheries resources. This would not be a problem if less wetlands were included within the levee system as recommended in MLOD (Alt 3).	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.1; 3.5.3; 6.18; 6.19; Appendix F and K
SIERRA9	Direct	Does the levee footprint include: 1) the width of the borrow canal? 2) the offset between the berm and the borrow canal? 3) A 50 ft buffer zone from toe of slope? The entire impacted footprint of each levee section must be included as part of the direct impacts and wetland losses.	The term "levee footprint" refers only the toe-to-toe width of the levee itself. The direct impacts and wetland losses are calculated based on the Right-of-Way limits (include the levee footprint, the borrow canal and the widths of the offsets required for both levee stability and borrow pit stability) plus the extents of the proposed mitigation areas. The Right-of-Way limits and proposed mitigation areas are depicted in Mapbook Appendix for the Draft Revised Programmatic EIS.	RPEIS Appendix G
SIERRA10	Indirect/Enclosed	Each Alternative alignment presented in the PAC report should include the total number of wetland acres enclosed by each levee system. The report does not include this information.	Do not concur. Only two action alternatives are brought forward to the final array and they lay on the same alignment. The enclosed wetlands are provided for that alignment.	NA
SIERRA11	Mitigate	We do not accept the Corps' concept of mitigation. There is no net gain. The remaining canal will be a permanent disruption to the environment. Will the linear canals be a benefit or detriment to the ecosystem? This must be discussed in the final report.	comment noted	RPEIS, Section 6.19; Appendix K
SIERRA12	Mitigate	We are also concerned that the project could stimulate additional clearing of bottomland hardwoods for agriculture. These indirect impacts also need to be mitigated.	The future development of any jurisdictional wetland would continue to be managed by the 404 permit process. No additional lands would be put under pump by this project so the conversion of BLH to agricultural land is not expected.	RPEIS, Section 6.19; Appendix K
SIERRA13	Mitigate	The Sierra Club policy strongly recommends that the mitigation sites be implemented/completed to a point where reasonable assurance of success has been established before the levee project may commence.	Do not concur. Current guidance and law requires concurrent mitigation.	RPEIS, Section 6.19; Appendix K
SIERRA14	Mitigate	The objective of a mitigation plan should be the long-term and incremental gain in a comprehensive range of wetland values, through at least a 2:1 replacement of acreage of the disturbed wetland.	Do not concur. Current guidance and law requires the mitigation of 1:1 habitat value not acres.	RPEIS, Section 6.19; Appendix K
SIERRA15	Indirect/gate closures & Hydrology Impacts	If the gates are closed because of RSLR and the wetlands are isolated from the GOM, how will this be an enhancement? It should be included in cumulative impacts study. The disruption of sheet flow is also an environmental impact. Does the Corps know how to manage a "leaky" levee over the 50 life of the project?	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.2; 6.18; 6.19; Appendix F and K

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
SIERRA16	Indirect	Planned and on-going measures along with 1% AEP Alternative measures will likely be beneficial to the ecosystem and to recreation resources in numerous ways as habitat for various stages in the life-cycles of fish and wildlife are stabilized, protected, improved, and expanded. Improved fish habitat will increase the numbers and variety of fish, which will be beneficial to recreational fishing. (USACE 2013d, p. 6-49).	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
SIERRA17	Indirect	The above statement is not supported by the document. It is speculative and is counter to other statements made in the PAC and DRPEIS. Eliminating sheetflow will negatively affect fisheries. Fish may have higher velocities than natural to move between protected and unprotected sides of levees. Has this been discussed with resource agencies: Will critical velocities be maintained for water flow thru culverts and other structures over the project life?	<p>A more rigorous indirect and cumulative impacts assessment for wetland impacts was conducted and coordinated with the Habitat Evaluation Team (HET) for documentation in the FRPEIS and prior to signing the ROD. See major points below:</p> <p>(a) The statements in the Draft RPEIS that there are "no indirect impacts" were removed from the Final RPEIS.</p> <p>(b) The following statement were added to the summary report and Final PAC/RPEIS under Unresolved Issues: "There is a potential for adverse indirect and cumulative impacts to wetlands, fisheries, water quality, and navigation due to increased frequency and duration of water control structure closures in the future."</p> <p>(c) The refined impacts analysis was coordinated with the interagency Habitat Evaluation Team (HET) .</p> <p>(d) In coordination with the HET, USACE and non-Federal sponsors refined the structure operation plan closure criteria assumptions for storm surge and salinity criteria to the point where the HET agreed that indirect impacts could be assessed. This revised "Operation Plan" was added to the Final RPEIS.</p> <p>(e) The potential adverse environmental and socioeconomic impacts of increased structure closure was assessed in greater detail. The Final RPEIS clarifies that there are both positive and negative impacts of the levee and that the net effect is uncertain (there are both known and unknown outcomes).</p> <p>(f) The potential project-induced environmental consequences to significant resources was more thoroughly documented to include not only magnitude of potential changes, but also the extent (how vast is the potential changes), direction (how dynamic is the potential changes), duration of potential changes, and speed of potential changes.</p> <p>(g) The Final RPEIS includes a more detailed description of the analysis of potential project-induced net indirect impacts including consideration of the potential for negative effects in the future. These potential negative effects of the levee system was compared to the potential near-term environmental effects to more fully disclose all significant potential indirect effects to the human and natural environment.</p> <p>(h) During PED, additional environmental plan formulation would be conducted to develop specific design features, implementation procedures, and operational schemes which would focus on ways to better avoid, minimize, and reduce potential adverse indirect impacts to aquatic resources enclosed within the proposed levee system.</p> <p>(i) For the PROGRAMMATIC features, a qualitative analysis of indirect and cumulative impacts was added to the Final RPEIS. The Final RPEIS better explains the potential near-term and long-term indirect hydrologic impacts of the proposed levee on wetlands and other significant resources (wetlands, fisheries, water quality, navigation, etc) in the Risk and Uncertainty Section. EIS describes what the adverse impacts to each of these resources could be under different sea level rise scenarios. For example, the cumulative effects on the aquatic organisms section will be revised to clarify not only the short-term but also the long-term cumulative impacts of how the projections regarding future frequency of gate and structure closure would potentially impact the aquatic ecosystem. Re-analysis considers the types and number of floodgates and control structures present in levee design; how structures would be operated; how structures could affect fish access and how structures could affect recruitment of commercially and recreationally important aquatic species.</p> <p>(j) For the CONSTRUCTIBLE features, the HET ran full WVAs for 4 scenarios to provide a possible range of AAHU impacts: (1) Intermediate RSLR holding closure existing condition closure frequency constant into the future (2) High RSLR holding existing condition closure frequency constant into the future (3) Intermediate RSLR &amp; more frequent closures in the future, i.e. almost year round closure by 2085 (4) High RSLR &amp; more frequent closure in the future, i.e. full closure by 2085.</p> <p>(k) Currently, the systemwide model cannot address RSLR. If the project is re-authorized, additional systemwide modeling could be conducted to quantify RSLR impacts.</p> <p>(l) The operation plans were clarified, impact analyses, and associated conclusions in the RPEIS are preliminary and subject to change based on pending additional modeling results.</p>	RPEIS, Summary; Section 3.5.3; 6.18; 6.19; Appendix F and K
SIERRA18	HSDRRS/support	The Delta Chapter of the Sierra Club strongly supports using post-Katrina engineering design criteria-- especially the new soil standards-- into the federal levees.	The Draft PAC report reflects cost estimates based on a project designed using the Hurricane and Storm Damage Risk Reduction System (HSDRRS) guidelines. These peer-reviewed guidelines were developed in response to recommendations made by the Interagency Performance Evaluation Task force (IPET), a team composed of members from USACE, industry and academia that evaluated the Greater New Orleans levee system after Hurricane Katrina. The Assistant Secretary of the Army (Civil Works) has directed that USACE apply the HSDRRS guidelines to all hurricane and coastal storm system work in Louisiana, including the Morganza to the Gulf PAC project. Comments were received both supporting the use of the HSDRRS criteria, and suggesting adaptation of some of the HSDRRS criteria for the site specific characteristics of the Morganza to the Gulf project area. Parallel to the PAC analysis, the USACE Risk Management Center and New Orleans District jointly evaluated the proposed Morganza to the Gulf levee system and concluded that site adapting three specific HSDRRS criteria could significantly reduce project costs while producing only minimal changes in potential consequences. A section on site adapting the HSDRRS standards has been added to the main PAC report, including a recommendation to change Factor of Safety for end of construction global stability, change the Design Overtopping Rate for well-maintained grass covered levee slopes, and eliminate the structural superiority requirement. If these changes are approved, modifications would be made to designs and costs during the next phase of implementation, Pre-construction Engineering and Design (PED). The USACE is also conducting a national-level risk assessment to ensure risk is addressed consistently across the country.	NA
SIERRA19	Geotech & HSDRRS/support	Proper soil borings with adequate spacing must be taken through all the local levees to be included in the federal system. The material incorporated into these local levees must meet the post-Katrina Federal standards for earthen levees.	The number/location of soil borings is sufficient for a feasibility level study. If the project is re-authorized, additional borings would be taken during PreConstruction Engineering and Design (PED).	NA

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
			The Draft PAC report reflects cost estimates based on a project designed using the Hurricane and Storm Damage Risk Reduction System (HSDRRS) guidelines. These peer-reviewed guidelines were developed in response to recommendations made by the Interagency Performance Evaluation Task force (IPET), a team composed of members from USACE, industry and academia that evaluated the Greater New Orleans levee system after Hurricane Katrina. The Assistant Secretary of the Army (Civil Works) has directed that USACE apply the HSDRRS guidelines to all hurricane and coastal storm system work in Louisiana, including the Morganza to the Gulf project. Comments were received both supporting the use of the HSDRRS criteria, and suggesting adaptation of some of the HSDRRS criteria for the site specific characteristics of the Morganza to the Gulf project area. Parallel to the PAC analysis, the USACE Risk Management Center and New Orleans District jointly evaluated the proposed Morganza to the Gulf levee system and concluded that site adapting three specific HSDRRS criteria could significantly reduce project costs while producing only minimal changes in potential consequences. A section on site adapting the HSDRRS standards has been added to the main PAC report, including a recommendation to change Factor of Safety for end of construction global stability, change the Design Overtopping Rate for well-maintained grass covered levee slopes, and eliminate the structural superiority requirement. If these changes are approved, modifications would be made to designs and costs during the next phase of implementation, Pre-construction Engineering and Design (PED). The USACE is also conducting a national-level risk assessment to ensure risk is addressed consistently across the country.	NA
SUND1	Realign/Private Landowner	Alligator farm cut in half by proposed alignment.	Just as the PAC alignment was re-evaluated and changes were made to some levee reaches after the original authorization (as described in section 5 of the PAC report), if the Morganza to the Gulf project is reauthorized, each levee reach alignment would be re-evaluated in more detail during the Preconstruction Engineering and Design (PED) phase. If real estate rights are purchased for levee construction, the government would offer market value of the property to be acquired. All acquisitions would be performed in accordance with the terms of P.L. 91-646.	NA
WILL1	Contracts	Incorporate into contract documents: "The owner of this project encourages and supports minority and local worker and contractor participation at all levels therein."	The socioeconomic program requirements for Federal acquisitions are contained in Federal Acquisition Regulation (FAR) Part 19 which can be found at <a href="http://www.acquisition.gov/far/">www.acquisition.gov/far/</a> . The agency fully supports the goals of these programs and will implement them in any future acquisitions under this project; to the extent they are consistent with the needs of the agency.	NA
THIB1	Real estate	Extension to modified alignment close to LA182 in Gibson; landowners unlikely to agree to forfeit ownership for levee construction.	Just as the PAC alignment was re-evaluated and changes were made to some levee reaches after the original authorization (as described in section 5 of the PAC report), if the Morganza to the Gulf project is reauthorized, each levee reach alignment would be re-evaluated in more detail during the Preconstruction Engineering and Design (PED) phase. If real estate rights are purchased for levee construction, the government would offer market value of the property to be acquired. All acquisitions would be performed in accordance with the terms of P.L. 91-646.	NA
LAMB1	Support	Project is essential to survival of bayou communities	Comment noted.	NA
CHAU1	Support	Houma area has changed over the past 75 years; Houma needs protection; something is better than nothing; if nothing done all the land will be gone; congressional action needed.	Comment noted.	NA
SPEA1	Support, Cost/too high, time	Cost too high; takes too long to get authorized; What is the role of citizens in getting the project authorized?	Once the chief of engineer's signs the chief's report and it gets presented to Congress, if you so choose, just like any other issue that you like to advocate for ,you can call your congressman or senator, go visit them.	NA
TEMP1	Outreach	More public notice and outreach needed.	In addition to finding out about public documents and meetings in local newspapers, on the Corps website, and on social media sites, interested parties can be added to a mailing list and receive notices on anything the Corps does in the parish for those environmental documents.	NA
TEMP2	Support & outreach	Was there any public input into selection of the 1% AEP alternative?	The 1% AEP alternative was tentatively selected because it has higher net benefits than the 3% AEP alternative. The public had the opportunity to review this selection and comment on it during the Draft RPEIS public review period (January 4 - February 19, 2013). There have been several previous meetings also that were open to the public.	NA
DARD1	Support	Some protection better than none, but people are being left out of the protection.	Comment noted.	NA
DARD2	B/C of Cultural	Benefit-cost ratio doesn't consider cultural importance; less funding for LA than NY/NJ.	The benefit-to-cost ratio is used to measure the ability of the proposed project to reduce primarily physical damages and other economic losses that are otherwise attributable to storm surge. The benefit-to-cost ratio is not used to capture important social attributes such as community cohesion and cultural heritage which can be positively or negatively affected by the project.	NA
DARD3	Realign/Lower Dularge	Wants existing floodgate at Lower DuLarge incorporated into the project to protect more people	Lower Dularge area was not included in the project authorized in WRDA 2007 and is not part of the recommended plan in the 2013 Post Authorization Change (PAC) Report. Options for pursuing a Federal flood risk reduction system for this area include:  (a) For projects with construction costs of \$7M or less, a flood risk reduction system could be investigated under the Corps CAP (Continuing Authorities Program) project authority.  (b) Congress could direct the Corps to incorporate Lower Dularge into the Morganza to the Gulf project area.  (c) The Corps and the Non-Federal sponsor could agree to investigate a Locally Preferred Plan (LPP) in a future Morganza to the Gulf Post Authorization Change (PAC) report that would extend the levee alignment to include lower Dularge. In order for an LPP to be recommended, the LPP must be economically justified (BCR greater than 1.0) and any difference (increase) in construction cost must be funded 100% by the Non-Federal sponsor.	NA
DARD4	Outreach	Wants more follow up to stay informed throughout the process, not just during the public meeting; need more advanced notice of public meetings; some people don't have access to the internet.	In addition to finding out about public documents and meetings in local newspapers, on the Corps website, and on social media sites, interested parties can be added to a mailing list and receive notices on anything the Corps does in the parish for those environmental documents.	RPEIS Section 9
HALE2	Realign/Private Landowner	Levee alignment impacts future development; is the levee alignment set in stone?	Just as the PAC alignment was re-evaluated and changes were made to some levee reaches after the original authorization (as described in section 5 of the PAC report), if the Morganza to the Gulf project is reauthorized, each levee reach alignment would be re-evaluated in more detail during the Preconstruction Engineering and Design (PED) phase. If real estate rights are purchased for levee construction, the government would offer market value of the property to be acquired. All acquisitions would be performed in accordance with the terms of P.L. 91-646.	NA
PITR1	Question/Clarification	Had to move out of family home up the bayou; how far north does the project area go?	All of Terrebonne Parish and the portion of Lafourche Parish south of Bayou Lafourche is included in the project area.	NA
PITR2	Pipelines	Are pipeline relocations included in the project cost?	The cost to relocate pipelines and other utilities is included in the total project cost.	NA
PITR3	Pipelines	How will the pipeline owners participate in the relocation costs?	There is a process to determine whether pipeline relocations are compensable (paid for by the Federal government) or non-compensable (paid for by the pipeline or utility owner).	NA
LPC2	Realign/Gheens	Wants Gheens included (was misspelled as Gaines in the public meeting summary)	The MLODS alternative was a preliminary alternative that was not carried forward and evaluated to the same level of detail as the other two alternatives along the authorized alignment. As described in section 4 of the PAC report, the MLODS alternative was screened out because it would cause more induced flooding and have less internal storage in the case of overtopping (higher residual risk).There is also a greater impact on BLH that has a higher mitigation cost compared to impacts to marsh.	NA
OSTH2	Realign/Private Landowner	Some of his property is inside the alignment; some is outside. He also submitted a formal comment.	Just as the PAC alignment was re-evaluated and changes were made to some levee reaches after the original authorization (as described in section 5 of the PAC report), if the Morganza to the Gulf project is reauthorized, each levee reach alignment would be re-evaluated in more detail during the Preconstruction Engineering and Design (PED) phase. If real estate rights are purchased for levee construction, the government would offer market value of the property to be acquired. All acquisitions would be performed in accordance with the terms of P.L. 91-646.	NA
ARMO1	Support	Expresses support for the project	Comment noted.	NA

Unique Identifier**	Theme(s)	Comment (may be paraphrased or summarized)	Final Response	Comment Addressed in Section of PAC or EIS
ROSE1	Question/Clarification	Can Corps stop or delay the local parish levee district from building the Morganza project?	The Corps supports the local construction effort; since the local construction effort currently has no Federal funding, there is no reason why the Corps would intervene. TLCD would continue to get permits as needed.	NA
USCG1		The current plans to construct navigation openings in the flood control system, specifically structures across the GulfIntracoastal Waterway (GIWW) and Houma Navigation Canal (HNC), call for an opening of only 125 feet. Based on historical bridge and lock allision data along the GIWW, we believe that these gate openings are inevitably susceptible to damage from contact by vessel traffic. Further, we advocate consistency in gate openings crossing the GIWW system. For example, the nearby GIWW West Closure project maintains a 225 foot opening which we feel is appropriate to address navigational safety and accommodate the trend of larger towing vessels transiting the waterway.	If the project is reauthorized, a physical model or ship simulator model would be done in PED to ensure that the gate design would also for safe navigation. Additional modeling to determine second order economic impacts could also be conducted as suggested with more recent data and stakeholder involvement during the PED and would be documented in the Supplemental NEPA document for the Gates.	NA
USCG2		A second concern is the manner in which the flood protection walls are required to be shut during a flooding event. We request that a written plan be created to define specific criteria for closure to allow adequate planning for vessels entering or departing the area to seek refuge. Operation of the West Closure Complex gates will also need to be taken into consideration when closing the gates proposed by this project. The Coast Guard is not in a position to manage or enforce removal of vessels from the entire flood control project as is currently being done in the New Orleans hurricane and storm damage risk reduction system project.	The Morganza to Gulf PAC Report is a feasibility-level report, reflecting preliminary designs, preliminary costs and preliminary operating scenarios. Should the project be reauthorized and funded, more detailed information will be obtained during the Pre-Construction Engineering and Design (PED) phase and Construction phase and used to refine the information presented in the PAC Report. At that time, the Corps would work closely with other state and Federal agencies, including the Coast Guard, to develop detailed operations plans for each of the navigable structures. The PAC Report does not include plans, designs or costs to construct any floodwalls along any navigable waterways. The proposed project features are not expected to create any Regulated Navigation Areas that would require Coast Guard enforcement.	NA
USCG3		Finally, the Coast Guard understands that the USACE position is that ownership and operation of the flood gates should remain in control of a federal agency. The Coast Guard supports this position. The Coast Guard also believes this is necessary to facilitate commerce and vessel movement until it becomes absolutely necessary to close the gates for their intended purpose.	Comment appreciated	NA



# Agency Comments

United States Department of Agriculture



Natural Resources Conservation Service  
3737 Government Street  
Alexandria, LA 71302

(318) 473-7751  
Fax: (318) 473-7626

January 4, 2013

Joan Exnicious  
DOA  
P.O. Box 60267  
New Orleans, LA 70160-0267

RE: Mississippi River & Tributaries – Morganza to the Gulf of Mexico, Louisiana

Dear Ms. Exnicious:

I have reviewed the above referenced project for potential requirements of the Farmland Protection Policy Act (FPPA) and potential impact to Natural Resource Conservation Service projects in the immediate vicinity.

Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a federal agency or with assistance from a federal agency. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

NRCS-A1

The project map submitted with your request indicates that the proposed construction areas will not impact prime farmland and therefore is exempt from the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549. Furthermore, we do not predict impacts to NRCS work in the vicinity.

For specific information about the soils found in the project area, please visit our Web Soil Survey at the following location:

<http://websoilsurvey.nrcs.usda.gov/>

Please direct all future correspondence to me at the address shown above.

Respectfully,

Kevin D. Norton **ACTING FOR**  
State Conservationist

*Helping People Help the Land*  
An Equal Opportunity Provider and Employer

**From:** [Beth Altazan-Dixon](#)  
**To:** [Morganza Comments](#)  
**Subject:** DEQ SOV 130108/0085 USACE-Revised Programmatic Environmental Impact Statement  
**Date:** Tuesday, January 15, 2013 2:18:47 PM  
**Attachments:** [image001.png](#)

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January 15, 2013

Joan M. Exnicios, Chief

USACE Environmental Compliance Branch

P.O. Box 60267

New Orleans, LA 70160-0267

Morganza.Comments@usace.army.mil <<mailto:Morganza.Comments@usace.army.mil>>

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130108/0085

USACE-Revised Programmatic Environmental Impact Statement

On Disk

Mississippi River & Tributaries

Morganza to the Gulf of Mexico

Terrebonne and Lafourche Parishes

Dear Ms. Exnicios:

The Department of Environmental Quality (LDEQ), Business and Community Outreach Division has received your request for comments on the above referenced project.

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

DEQ1

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

\* If your project results in a discharge to waters of the state, submittal of a Louisiana Pollutant Discharge Elimination System (LPDES) application may be necessary.

\* If the project results in a discharge of wastewater to an existing wastewater treatment system,

DEQ2

that wastewater treatment system may need to modify its LPDES permit before accepting the additional wastewater.

\* All precautions should be observed to control nonpoint source pollution from construction activities. LDEQ has stormwater general permits for construction areas equal to or greater than one acre. It is recommended that you contact the LDEQ Water Permits Division at (225) 219-9371 to determine if your proposed project requires a permit.

\* If your project will include a sanitary wastewater treatment facility, a Sewage Sludge and Biosolids Use or Disposal Permit application or Notice of Intent must be submitted no later than January 1, 2013. Additional information may be obtained on the LDEQ website at <http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx> <<http://www.deq.louisiana.gov/portal/tabid/2296/Default.aspx>> or by contacting the LDEQ Water Permits Division at (225) 219- 9371.

\* If any of the proposed work is located in wetlands or other areas subject to the jurisdiction of the U.S. Army Corps of Engineers, you should contact the Corps directly regarding permitting issues. If a Corps permit is required, part of the application process may involve a water quality certification from LDEQ.

DEQ3

\* All precautions should be observed to protect the groundwater of the region.

\* Please be advised that water softeners generate wastewaters that may require special limitations depending on local water quality considerations. Therefore if your water system improvements include water softeners, you are advised to contact the LDEQ Water Permits to determine if special water quality-based limitations will be necessary.

\* Any renovation or remodeling must comply with LAC 33:III.Chapter 28, Lead-Based Paint Activities; LAC 33:III.Chapter 27, Asbestos-Containing Materials in Schools and State Buildings (includes all training and accreditation); and LAC 33:III.5151, Emission Standard for Asbestos for any renovations or demolitions.

\* If any solid or hazardous wastes, or soils and/or groundwater contaminated with hazardous constituents are encountered during the project, notification to LDEQ's Single-Point-of-Contact (SPOC) at (225) 219-3640 is required. Additionally, precautions should be taken to protect workers from these hazardous constituents.

Currently, Terrebonne and Lafourche Parishes are classified as attainment with the National Ambient Air Quality Standards and have no general conformity determination obligations.

DEQ4

Please send all future requests to my attention. If you have any questions, please feel free to contact me at (225) 219-3958 or by email at [beth.dixon@la.gov](mailto:beth.dixon@la.gov) <<mailto:beth.dixon@la.gov>> .

Sincerely,

Beth Altazan-Dixon, EPS III

Performance Management

LDEQ/Office of the Secretary

Business and Community Outreach and Incentives Division  
P.O. Box 4301 (602 N. 5th Street)  
Baton Rouge, LA 70821-4301  
Phone: 225-219-3958  
Fax: 225-325-8148  
Email: [beth.dixon@la.gov](mailto:beth.dixon@la.gov)

**From:** [Brian Marcks](#)  
**To:** [Dayan, Nathan S MVN](#)  
**Cc:** [Jeff Harris](#)  
**Subject:** C20130001 Mitigation for Morganza to Gulf RPEIS  
**Date:** Friday, January 18, 2013 2:20:20 PM

---

Nathan,

I have some comments on mitigation from OCM staff that need to be addressed with this project. They have indicated to me that OCM will expect mitigation for project in accordance with the Louisiana Coastal Resources Program, which may be different than the requirements of NEPA, WRDA and other statutes. We recommend that your mitigation staff get in touch with Kelley Templet, our Mitigation Program Manager at 225-342-3124 or email her at [Kelley.Templet@LA.GOV](mailto:Kelley.Templet@LA.GOV). at the earliest practical time in order to avoid the need for last-minute changes.

OCM1

OCM2

One of the requirements for mitigation will be that compensatory mitigation be carried out concurrently with project construction impacts. We would also like to see an estimated time schedule of mitigation planning and construction for the project. Also, please provide a justification for the use of WVA's for habitat analysis, rather than the use of the Modified Charleston Method that the Regulatory Branch of the Corps currently uses.

OCM3

Finally, I will have some other comments/questions later on the Guideline responses that I hope to get to you early next week.

Brian Marcks  
Consistency Analyst

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**From:** [Brian Marcks](#)  
**To:** [Dayan, Nathan S. MVN](#)  
**Cc:** [Jeff Harris](#)  
**Subject:** C20130001 RPEIS Morganza to the Gulf  
**Date:** Thursday, January 24, 2013 8:39:58 AM

---

Nathan,

Below are some problems we have with the Corps responses to some of our Coastal Use Guidelines in the RPEIS:

Guideline 2.6. In the third sentence the word designed should probably be designs. Also note two periods at the end of that sentence. In the fifth sentence there seems to be a couple of words missing after the word minimize. Perhaps the missing words should be impacts to.

OCM4

Guidelines for linear facilities

Guideline 3.1 to 3.16. The second sentence is not how we interpret construction of linear facilities. We consider the entire levee, floodgates, parallel borrow pits, etc., to be a linear facility and all of the Guidelines under this section from 3.1 to 3.16 must be treated and evaluated as a linear facility that will have certain hydrological or boundary effects on the ecosystem or land uses.

OCM5

Please let us know if you have any problems with these comments and/or make changes as necessary. We will likely have addition comments for you as we get responses back from the various commenting agencies.

Brian Marcks

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United States Department of Agriculture



Natural Resources Conservation Service  
646 Cajundome Blvd., Suite 180  
Lafayette, Louisiana 70506

January 28, 2013

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

Dear Mrs. Exnicios:

Please reference your letter of Public Notice entitled Mississippi River & Tributaries – Morganza to the Gulf of Mexico, Louisiana and the accompanying Draft Environmental Impact Statement (DEIS), entitled Revised Programmatic Environmental Impact Statement, Morganza to the Gulf of Mexico, Louisiana (Draft). The Natural Resources Conservation Service (NRCS) has reviewed the information and offers the following comments as requested.

The DEIS is providing a comprehensive description of the proposed project, the affected environmental resources, the anticipated project impacts to those resources, and the alternatives considered. As you probably are aware NRCS has been actively involved in restoration and protection efforts within the Terrebonne Basin for quite some time and has provided assistance to the parishes and land owners in the area through several federally authorized programs. NRCS continues to play an active role in the restoration and protection of the Terrebonne Basin and is aware of the increasing vulnerability of coastal communities to the devastating effects of hurricanes and tropical storms as coastal wetlands in the project area continue to deteriorate. We are aware of the challenges involved in planning such a large and complex project and compliment the planners on a thorough job of identifying the essential project features and addressing the primary concerns. We also realize there is a great deal of work yet to be done to complete the project and continued action and resources will be needed well beyond the completion of initial construction.

As stated in the document, the project will be constructed in multiple phases and further supplemental NEPA documentation will be required as each phase is developed. Of particular concern are the reaches that impact wetlands (i.e., Reaches A, G1, G2, G3, H1 and J2). Reach A traverses the Mandalay NWR and consists of mostly floating marsh. This area will without doubt be most challenging to construct because of poor soil conditions. This is also the location of a major Sector Gate traversing the GIWW. There are multiple concerns including direct impact to wetlands, constructability, and a less intuitive concern with respect to hydrology. NRCS encourages every effort to avoid and minimize impact to sensitive floating marsh in the footprint of the reach. We also encourage thorough consideration to the feasibility of sound construction at this location because of the inherent soil conditions.

NRCS-L1

Reaches G1, G2, G3, and H1 are of concern as they traverse a considerable stretch of brackish/salt marsh. As with Reach A, there are feasibility concerns with respect to constructability and maintenance. NRCS encourages thorough evaluation of the construction alignment to minimize potential for failure as well as minimize and avoid destruction of sensitive marsh areas. Reach J2 also appears to traverse a significant area of marsh located within the Pointe aux Chenes WMA. NRCS anticipates that direct involvement in this construction from the Louisiana Department of Wildlife and Fisheries personnel will facilitate minimal impacts to this area although significant impacts appear to be unavoidable in this area with the present alignment. As such, the EIS includes facilitation of mitigation efforts to offset losses

NRCS-L2

NRCS-L3

which multiple agencies, including those involved with the HET, we trust will continue to some level of involvement and oversight.

As you are aware, the LCA project entitled Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of Houma Navigation Lock has investigated the opportunistic use of Atchafalaya River water flowing east for the purposes of facilitating long-term ecological restoration of marshes in the Terrebonne Basin. NRCS has long been involved in actively restoring hydrology to the Terrebonne Basin and recognizes the significance of the limited riverine influence and its limited availability to these areas. We therefore encourage every consideration to the environmental consequences to operating a flood control structure in the GIWW, which is the major source of surface-flow freshwater to the region. We request that this structure and as well as the opposite sister structure in the GIWW at Larose be evaluated for not only its ability to prevent flooding during brief periods of threat but also the construction dimensions so as to not impede beneficial conveyance to areas of need during normal periods of flow.

NRCS-L4

With respect to the HNC locks, NRCS is supportive of the concept in its purpose to prevent flooding surges during storm and abate saltwater intrusion during low flow periods. We are aware of the adverse environmental impacts the channel has had on the coastal wetlands in the region and we are supportive of the idea of dual purpose use of the lock as an environmental structure to optimize distribution of freshwater flow in the area. As it stands, the HNC has eroded to well exceed its original design dimensions and acts as a short-circuit conduit for what little Atchafalaya River flow makes it to this region. It therefore, minimizes the distribution of freshwater and nutrients to marshes because of its current efficient exit flow to the Gulf. As we understand it, the State and USACE has not fully resolved the operations as an environmental structure but NRCS will continue to support, encourage, and offer assistance in on-going efforts to develop an operations plan that will make full use of the structure for optimal environmental benefit without compromising other purposes.

NRCS-L5

At the forefront of concern from the inception of this project and throughout the planning process has been the impedance of hydrology and the detrimental effects to wetlands both inside the protection system and on the outside throughout its entire length. As indicated, the project employs 98 miles of levee of which 85 miles (87%) will overlay existing natural ridges, road beds and existing levees. Although there is considerable concern with the remaining 13% which consists mostly of sensitive marshes and swamp, it is commendable that such an ambitious project through a challenging environment is able to find as much existing structure to build upon. NRCS remains concerned with the areas that will be impacted and looks forward to thorough justification as the details of these plans emerge.

NRCS-L6

NRCS supports the inclusion of 23 environmental water control structures to minimize historic hydrologic flows and patterns. As stated in the EIS, these structures were planned to allow for tidal exchange through the levee system but these structures should also allow for localized drainage to minimize excessive inundation to marshes on the interior of the levee system. NRCS encourages thorough analysis (i.e. hydrodynamic modeling) of areas that potentially could be impounded so as to minimize adverse hydrologic alteration isolated areas. As with all construction plans involving coastal wetlands, some flexibility should be incorporated into the design to allow for some adaptive management. Although we are not familiar with the inherent hydrologic conditions in the location of each the environmental structures, we expect consideration will be given that with the combined 23 environmental structures and 22 flood gates locations, some flexible management could be employed to minimize unanticipated hydrologic conditions that adversely affect marshes.

NRCS-L7

As discussed in the EIS, the inclusion of the Falgout Canal environmental water control structures to the south marshes (estimated at 5000 acres) is going to be constructed as part of a local effort. NRCS supports this action and has proposed projects through other programs in the past to build these structures. These efforts were complicated by the anticipation of construction of the levees for this project. Our understanding was that these structures would be a part of the Morganza to the Gulf project so we have some concern that the commitment to build what we believe to be very important environmental

features may be subject to some uncertainty. Our concern is should funding for this local action not be realized the features would fail to be in place for levee construction. We therefore suggest that the USACE make provisions to insure that these structures are in place at these locations in the levee regardless of what program or funding source involved. Our experience is that once a levee of this size is installed, there is little desire to retroactively install environmental structures for fear of undermining the overall structure. It is therefore imperative that these structures be included in the original design because of the recognized environmental benefits and the long awaited desire by local, state, and federal resource agencies to eventually have this hydrologic feature in place.

NRCS appreciates the opportunity to provide comments on the proposed action and DEIS and compliments the development team on a comprehensive and thorough effort. We will continue to stay informed and look forward to the opportunity to review and comment on supplemental NEPA documentation as the project moves forward. If you have any questions or need further information, please contact Ron Boustany (337/291-3067).

Respectfully,



W. Britt Paul  
Assistant State Conservationist/WR

cc: Randolph Joseph, AC, AO, NRCS, Lafayette, LA  
Ron Boustany, NRS, FOPSS, NRCS, Lafayette, LA  
Cindy Steyer, SC, FOPSS, NRCS, Baton Rouge, LA  
Loland Broussard, CE, FOPSS, NRCS, Lafayette, LA  
Mandy York, DC, FO, NRCS, Thibodaux, LA



402 Green Street • P.O. Drawer 5548  
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Telephone 985.446.8427 • 800.834.8832 • Fax 985.449.4012

Lindel Toups, Council Chairman

Carleen B. Babin, Council Clerk

February 6, 2013

U.S. Army Corps of Engineers  
Attn: Nathan Dayan, Environmental Manager  
P.O. Box 60267  
New Orleans, Louisiana 70160-0267

**RE: RESOLUTION NO. 13-046 (MORGANZA-TO-THE-GULF LEVEE PROJECT)**

Dear Mr. Dayan:

The Lafourche Parish Council, convened in regular session on February 5, 2013, adopted Resolution No. 13-046 (see attached), requesting the U.S. Army Corps of Engineers to include the Gheens Community to Highway 90 in the Morganza-to-the-Gulf Levee Project.

LPC1

If I may assist you with any further Legislative matters, please contact me by phone at (985) 446-8427, by fax at (985) 449-4012 or by e-mail at [councilclerk@lafourchegov.org](mailto:councilclerk@lafourchegov.org).

Sincerely,

LAFOURCHE PARISH COUNCIL

Tira L. Harden  
Assistant to the Council Clerk

TLH/emd  
attachment

cc: Ms. Elaine Stark, Project Manager, U.S. Army Corps of Engineers  
P.O. Box 60267, New Orleans, Louisiana 70160-0267

Mr. Dwayne Bourgeois, Executive Director, North Lafourche Levee District  
627 Jackson Street, Suite A, Thibodaux, Louisiana 70301

Office of the Parish Administrator

Charlotte A. Randolph	Parish President	John Arnold	District 5
Jerry Jones	District 1	Lindel Toups	District 6
Michael Delatte	District 2	Phillip Gouaux	District 7
Aaron Caillouet	District 3	Jerry LaFont	District 8
Joseph "Joe" Fertitta	District 4	Daniel Lorraine	District 9

On motion by Phillip Gouaux, seconded by John Arnold, the following resolution was introduced and adopted:

**RESOLUTION NO. 13-046**

**RESOLUTION REQUESTING THE U.S. ARMY CORPS OF ENGINEERS TO INCLUDE THE GHEENS COMMUNITY TO HIGHWAY 90 IN THE MORGANZA-TO-THE-GULF LEVEE PROJECT.**

**WHEREAS**, it is the duty upon oath that the Governing Authority and State Officials address concerns dealing with the general health, safety and welfare of the citizens and said resolution satisfies this criteria; and

**BE IT RESOLVED**, by the Lafourche Parish Council convened in regular session on February 5, 2013, that it does hereby request the U.S. Army Corps of Engineers to include the Gheens Community to Highway 90 in the Morganza-to-the-Gulf Levee Project.

**BE IT FURTHER RESOLVED**, that a certified copy of this resolution shall be forwarded to Ms. Elaine Stark, Corps Project Manager for Morganza-to-the-Gulf; Mr. Dwayne Bourgeois, North Lafourche Levee District Executive Director, and the Office of the Parish Administrator.

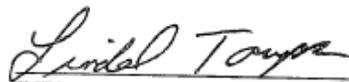
This resolution having been submitted to a vote, the vote thereon was as follows:

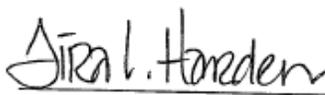
<b>YEAS:</b>	Mr. Jerry Jones	Mr. Joseph "Joe" Fertitta	Mr. Phillip Gouaux
	Mr. Michael Delatte	Mr. John Arnold	Mr. Jerry LaFont
	Mr. Aaron Caillouet	Mr. Lindel Toups	Mr. Daniel Lorraine

**NAYS:** None

**ABSENT:** None

And the resolution was declared adopted this 5th day of February, 2013.

  
\_\_\_\_\_  
**LINDEL TOUPS, CHAIRMAN  
LAFOURCHE PARISH COUNCIL**

  
\_\_\_\_\_  
**TIRA L. HARDEN, ASSISTANT  
TO THE COUNCIL CLERK  
LAFOURCHE PARISH COUNCIL**

# United States Department of the Interior



OFFICE OF THE SECRETARY  
Office of Environmental Policy and Compliance  
1001 Indian School Road NW, Suite 348  
Albuquerque, New Mexico 87104



ER 13/0005  
File 9043.1

February 14, 2013

VIA ELECTRONIC MAIL ONLY

Nathan Dayan  
U.S. Army Corps of Engineers  
New Orleans District  
PO Box 60267  
New Orleans, Louisiana 70160-0267

Dear Mr. Dayan:

The U.S. Department of the Interior has reviewed the Draft Post Authorization Change (PAC) Report and the Draft Revised Programmatic Environmental Impact Statement (RPEIS) for the Morganza to the Gulf of Mexico, Louisiana, Project and offers the following comments from the U.S. Fish and Wildlife Service (FWS) and the U.S. Geological Survey (USGS). These comments are provided under the authority of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 3501 et seq.), as amended.

The Morganza Project is designed to provide hurricane and storm risk reduction benefits to portions of Terrebonne and Lafourche Parishes. The following U.S. Fish & Wildlife Service comments reflect their role on the Habitat Evaluation Team (HET) which was involved in conducting the impact assessments for the proposed Morganza project features.

## General Comments – FWS

The PAC Report and the RPEIS contain some inaccurate and inconsistent statements. As we understand, changes in the design and operation of some project features (constructable and programmatic features) were made late in the planning and evaluation process without the knowledge of the HET. Because the HET was not informed of those changes, the HET has not assessed environmental effects of those changes. Consequently, the project impacts disclosed in the RPEIS are incomplete.

USFWS1

The salinity closure criterion for the Houma Navigation Canal (HNC) Lock was very recently revised but is still not yet fully developed. As a result, indirect impacts of this constructable feature cannot be determined until the closure criterion is determined. Additionally, there is

USFWS2

USFWS3

little data available to assess the effects of the proposed salinity criterion for reopening the HNC Lock. Consequently, one cannot determine the duration of HNC Lock closures. It appears that project planning for this feature has not yet progressed such that it may be considered ready for a feasibility level analysis.

It is not clear whether the operation plan for programmatic floodgates will be closed for non-storm stages of +2.5 feet North American Vertical Datum (NAVD) 88 or higher. We recommend both the PAC Report and RPEIS be edited to clarify the operation plan and make all references to structure operation and impacts consistent with the clarified operation plan. If those floodgates will be closed for non-storm high stage events as the RPEIS indicates, then there will be substantial indirect impacts. Consequently, the RPEIS conclusion that there would be minimal indirect impacts is inaccurate.

USFWS4

USFWS5

According to the PAC Report and RPEIS, the design of the west Gulf Intracoastal Waterway (GIWW) floodgate has been changed. Because hydrologic modeling was previously conducted using a larger structure design, that modeling to determine system-wide indirect impacts has potentially been invalidated due to this recent design change. To properly satisfy the disclosure requirements of NEPA, the indirect impact assessments need to be redone for some constructable and programmatic project features in the final RPEIS.

USFWS6

Because substantial indirect impacts may result from the operation plan for the constructable features, mitigation costs for those features could increase considerably. Costs for programmatic features are also subject to substantial increases due to uncertainties such as availability of suitable borrow and mitigation for indirect impacts. These uncertainties and potential cost increases should be reflected in project cost estimates.

USFWS7

#### Specific Comments – U.S. Fish & Wildlife Service

Summary of the Draft Post Authorization Change Report (Summary-PAC Report), page vi. The Summary-PAC Report states that the design of the west GIWW floodgate has been changed to eliminate one of the two 125-foot-wide sector gates (the six 16-foot-wide sluice gates remain unchanged). This change is also reflected in Figure 4-10. This change was apparently made after hydrologic modeling was conducted in which this floodgate was modeled as one 175-foot-wide floodgate with six 16-foot-wide sluice gates. Because the west GIWW floodgate is the upstream-most structure affecting Atchafalaya River freshwater flow entering the protection system via the GIWW, the now smaller cross-section of this structure potentially invalidates the model-determined hydrologic and salinity impacts of the HNC Lock, the Bayou Grand Caillou floodgate, and the entire Morganza system. Because of this change, it is recommended that the Corps must now assess whether the previous hydrologic modeling is still valid. Additionally, this design change raises the potential that Atchafalaya River freshwater inputs may be reduced in areas currently receiving those seasonal freshwater flows, and this smaller floodgate is more likely to cause elevated stages immediately west of the floodgate – both conditions that could result in marsh loss. It is recommended that these potential impacts will need to be assessed for a feasibility level analysis.

USFWS8

Summary-PAC Report, page x, paragraph 4. The sentence identifying the structures on federally-maintained waterways is not written clearly and can be interpreted such that both the

USFWS9

west and east GIWW floodgates will include two 125-ft sector gates. The sentence should be re-written to clarify that each of those floodgates will include only one sector gate.

Summary-PAC Report, page x, paragraph 5. The statement that the project will result in “improved distribution of freshwater inflows using environmental water control structures for tidal exchange” is potentially misleading. This potential environmental benefit is largely unrealized as modeling demonstrates that future-with project salinities would change little compared to future-without project salinities. However, the two Falgout Canal environmental water control structures are the exception. Those structures will introduce freshwater to areas not currently receiving direct freshwater inputs. Because those structures would be operated to provide one-way flow, they technically would not provide two-way “tidal exchange.” Furthermore, efforts to incorporate freshwater distribution improvements (Congressionally authorized environmental benefits) have not been included within the Morganza project goals but instead are part of the Louisiana Coastal Area (LCA) Convey Atchafalaya River Water to Northern Terrebonne project, and the LCA HNC Lock Multi-purpose Operation project. We, therefore, recommend that this sentence be deleted.

USFWS10

Summary-PAC Report, page x, last paragraph. The explanation of mitigation requirements should be amended to explain that the listed requirements cover only the compensation for direct construction impacts and that mitigation for indirect impacts has yet to be determined. This comment also applies to the description of direct impacts in the PAC Report, Section 7.1. The calculated direct construction impacts are based upon 2008 National Wetland Inventory (NWI) habitat acreages. However, historic loss rates were applied to the NWI marsh acreages to estimate impacted marsh acreage at the construction year for each levee reach. If mitigation for construction of some levee reaches has already been completed, then the listed mitigation requirements provided must be reduced by the value of completed mitigation to obtain an estimate of remaining compensation needed.

USFWS11

USFWS12

PAC Report, Section 5.1.1, page 41, paragraph 1. With the exception of alignment A1, all of the remaining Reach A levee alignment alternatives would impact Mandalay National Wildlife Refuge (NWR). Well in advance of surveying or construction work on the Refuge, a Special Use Permit must be obtained from the Refuge Manager (985-853-1078). All efforts should be made to avoid impacting NWR lands. All impacts to NWR lands must be mitigated on the Refuge. If levees are constructed on the Refuge, the FWS will determine if the impacted acreage will need to be replaced with an equal acreage of habitat.

USFWS13

PAC Report, Section 5.1.1, page 41, last paragraph. The first sentence states that each Reach A levee alignment alternative will include two 125-foot floodgates. This appears to be a reference to the design of the west GIWW floodgate. Elsewhere in the PAC Report and RPEIS the west GIWW floodgate is to include only one 125-foot floodgate. All descriptions of this floodgate should be made consistent.

USFWS14

PAC Report, Section 6.4.2, page 61, paragraph 3. This paragraph mentions the salinity effects associated with the reduction in west GIWW floodgate cross-section. The paragraph also suggests that the eastern GIWW floodgate cross-section has also been reduced, yet this change was not listed as one of the project changes in the Summary-PAC Report. If the east GIWW

USFWS15

floodgate design has been changed, this change should be described in the Executive Summary and this paragraph should be clarified.

PAC Report, Section 7.4.1, page 79, paragraph 1. The described operation of the HNC lock and the HNC floodgate for salinity control does not give a specific salinity value or other criteria for closing those structures. Hence, closure frequency and duration cannot be determined, nor can indirect impacts of HNC closure. Specific closure criteria will need to be developed before impacts can be determined for this feature.

USFWS16

PAC Report, Section 7.4.1, page 79. The third criteria for re-opening the HNC Complex is a salinity below 13 parts per thousand (ppt) at the Bayou Grand Caillou at Cocodrie gage site. This gage is actually located on Bayou Petit Caillou, and not on Bayou Grand Caillou. Salinity data has not been recently collected at this site, so it is impossible to determine if this criterion is appropriate following tropical storm passage. Salinity data from Coastal Reference Monitoring System (CRMS) Station 434, located near the HNC lock, reveals that for certain storms, salinities may remain high for several days after the storm has passed, depending on rainfall, storm path, and other factors. For example, after Tropical Storm Debby in June 2012, salinity remained above 12 ppt for 5 days after storm passage. Because recent salinity data is not available from the proposed gage site, this gage cannot provide a basis for re-opening the Lock and closure duration therefore cannot be determined.

USFWS17

The fourth criterion listed for re-opening the HNC Complex is a specific chloride threshold. This criterion should state where those chloride values are to be measured.

USFWS18

In the concluding paragraph, it is stated that the operation plan is "preliminary and will be refined in the future once the detailed structure design is completed." The lack of near final structure designs and operation plans indicates that this feature is not yet at a feasibility-design stage and it is not yet possible to conduct a feasibility-level impact assessment. We recommend that the operation plan for this feature be fully developed and associated impacts assessed and disclosed.

USFWS19

PAC Report, Section 7.4.5, page 81, paragraph 1. The last sentence of this paragraph suggests that the +2.5 ft NAVD88 stage criterion may be adjusted in the future. Because no specific adjustments were proposed, and because the text indicates that adjustments "may need to be" made, the impacts of these unknown adjustments cannot be assessed. Consequently, feasibility level assessment of closure impacts will have to be based on the fixed criterion of +2.5 ft. If the Corps intends to vary the criterion, then a specific method for varying the criterion should be proposed so that the closure frequency and duration can be predicted and impacts assessed.

USFWS20

PAC Report, Section 7.7.2, page 83, paragraph 1. The first sentence should be revised to indicate that the stated mitigation requirements cover only direct construction impacts and indirect impacts would require additional mitigation.

USFWS21

The last sentence of the paragraph states the HET determined that no indirect impact would occur. Actually, the HET chose not to quantify indirect impacts because of uncertainties associated with the lack of needed data to assess indirect impacts. However, changes in the proposed structure operation plans will result in fairly substantial indirect impacts to fisheries

USFWS22

access. When needed information is available, the HET will be able to quantify those impacts. Hence, this statement should be revised to state that the HET has determined that indirect impacts will occur and estimates of those impacts will be provided in the final PEIS or other NEPA document.

PAC Report, Section 7.8, page 84, last sentence. Under nearly ideal conditions, the organic surface material could achieve 1175 acres of marsh mitigation. However, oxidation of organics and the loss of fluid soil components, and/or compaction of underlying soils may impact the effective use of this material. Therefore, it would be appropriate to factor in some loss of this material when estimating mitigation costs. Additionally, it should be footnoted that mitigation costs will likely increase when indirect impacts are quantified.

USFWS23

PAC Report, Section 10.1.6, page 98. This section should be amended to address the fact that existing road dumps and canal spoil banks, in combination with construction of the proposed levees may create small unintentional impoundments that could result in adverse impacts to enclosed wetlands. Such problems exist within the proposed Barrier Reach levees, Reach A levees, the Larose reaches, and other areas. The text should state that such problems will be addressed during the feasibility phase planning of those levee reaches.

USFWS24

Draft RPEIS, Section 3.7.2, page 3-12, last paragraph. The first sentence states that storm surge impacts are the primary cause of project area marsh loss. Healthy marshes are able to withstand storm surge impacts and recover from those impacts, whereas unhealthy deteriorating marshes may experience permanent substantial losses. Therefore, losses related to storm impacts are likely the consequence of other chronic stresses affecting these marshes, such as submergence. Consequently, we recommend that the listed causes of marsh loss should also include submergence associated with the combined effects of sediment deprivation, subsidence, and sea level rise.

USFWS25

Draft RPEIS, Section 3.8.2, page 3-13, second paragraph. The first sentence states that the 2002 HNC Complex operation plan has not changed. However, the incomplete operation plan presented in the PAC Report, page 79, and the RPEIS on page 4-22 does differ from the 2002 plan in that the 7.5 ppt salinity closure criteria at the Dulac pontoon bridge is no longer in the current plan. Because the current plan has not yet been fully developed, it is likely that there may be additional differences in the future. This sentence should be revised to state that the goals for operating the HNC Complex have remained unchanged, but that some criteria for operation have changed. Also, the details of the operation plan described in this paragraph differ from those listed in the PAC Report, page 79.

USFWS26

Draft RPEIS, Section 4.4, page 4-25, Table 4-4. The text describing wetland impacts associated with the project alternatives could be more accurately described as follows, "More than 3,000 acres of vegetated wetlands would be lost by construction of project features. These losses would be mitigated through the creation of vegetated wetlands in the project area." The text describing fisheries impacts due to project alternatives indicates that the project would have indirect impacts of "continued loss of coastal habitats supporting fisheries." The use of the word "continued" incorrectly suggests that the pre-existing wetland loss problem is a project effect. Reduced fish access due to increasingly frequent structure closure would be an adverse fisheries impact that is not mentioned, but should be included.

USFWS27

The text describing impacts to threatened and endangered species states that the project would “benefit T&E species dependent on these habitats.” Because there are no T&E species using project area habitats, the mitigation of construction impacts within the project area would not directly benefit T&E species. The statement regarding T&E effects should be limited to the following, “No direct impacts on T&E species or their critical habitat.”

USFWS28

The description of hydrology under no-action consists of two sentences. As written, the second sentence regarding wetland loss might be attributed to the subject of the first sentence (Atchafalaya River freshwater inputs). To avoid that possible misunderstanding, the second sentence should be revised as follows, “Continued wetland loss would result in higher storm surges . . .”

USFWS29

Because the No Action description mentioned Atchafalaya River freshwater inputs, the with-project alternatives should also address this issue. However, the effects of reducing the size of the west GIWW structure has not yet been modeled, so therefore, there may not be any model outputs available yet to address this issue.

USFWS30

Draft RPEIS, Section 6.1, page 6-1, last paragraph. The first sentence states that the impact analysis begins when construction is completed. The text should be revised to indicate that the impact analysis began in 2015, when the construction impacts would begin, and that impacts were evaluated over a 70-year period, from 2015 through the end of the project life in 2085.

USFWS31

Draft RPEIS, Section 6.2.1, page 6-3, last paragraph. The text states that benefits to wetlands will occur under without-project conditions due to implementation of the two LCA projects. Similar statements are frequently made in later sections as well. This assertion is problematic given that the HNC Multi-purpose Operation Project will be dependent on construction of the Morganza project. Therefore, it cannot occur under the without-project condition. The PAC Report also states in several locations that implementation of these two LCA projects has recently been suspended. Because there is no certainty that these two projects will be constructed, the anticipated effects of these LCA projects should no longer be considered as part of the without-project condition.

USFWS32

Draft RPEIS, Section 6.2.2, page 6-3, first paragraph. This paragraph states that the WVA was used to determine project impacts. Impacts for the constructable features and associated mitigation were determined using the WVA. However, for the remaining features, impacts were assessed in terms of wetland acres impacted. Estimates of indirect impacts of programmatic features are being prepared using the WVA method.

USFWS33

Draft RPEIS, Section 6.2.2, page 6-4, Indirect Impacts paragraph. The first sentence is confusing. The HET did determine that loss of wetlands enclosed within the levee system would remain unchanged. However, the HET was unable to conduct a WVA analysis of wetland enclosure impacts which would include fisheries access impact, because of insufficient data and schedule constraints. The HET, therefore, made a qualitative assessment that fisheries access impacts were likely small. However, that initial assessment was based upon an earlier and less restrictive structure operation plan, and the inability to quantify impacts due to insufficient data. However, it appears that the new more restrictive structure operation plan will result in rather

USFWS34

substantial fisheries access impacts and those impacts are currently being determined now that more data is available.

Draft RPEIS, Section 6.2.3, page 6-5, Indirect Impacts paragraph. The statement is incorrect. The HET was unable to conduct WVA assessments of indirect impacts. However, such assessments are being conducted now and it appears that there will be substantial fisheries access impacts.

USFWS35

Draft RPEIS, Section 6.5.2, page 6-11, first paragraph. Where levees are constructed using adjacent borrow, fisheries impacts will also include the conversion of shallow open water habitats to less valuable deep water borrow canals.

USFWS36

Draft RPEIS, Section 6.5.2, page 6-12, Second paragraph. The text references salinity increases illustrated by Figure 6-3. The text should also mention that modeling of this area (the Grand Bayou Unit on the Point au Chene Wildlife Management Area) did not factor in local water management capabilities that would remain unchanged under the with-project condition. Therefore, it is likely that the predicted salinity increase would not occur as management of the Grand Bayou Unit will continue.

USFWS37

Draft RPEIS, Section 6.5.2, page 6-15, Table 6-3. With-project fish access for the Reach E Falgout Canal structures is stated as being improved. Because those structures are to be operated to create a one-way southward flow of freshwater when freshwater is available, they will provide little improvement in fish access. We recommend that this statement be deleted.

USFWS38

Draft RPEIS, Section 6.5.2, page 6-17, Indirect Impacts Section. The text incorrectly states that the indirect impacts for constructable features (the HNC lock and floodgate and the Bayou Grand Caillou floodgate) would be the same as for programmatic features. According to the PAC Report pages 79-80, closure of those constructable feature gates are triggered by the approach of named storms, and HNC closures are also triggered by salinity. Programmatic feature closures are triggered by the more frequent +2.5 ft stage criterion, regardless of cause. In the future, sea level rise will result in very frequent non-storm closures of the programmatic feature gates, whereas the constructable features are not closed due to exceedence of the stage criterion during non-storm conditions.

USFWS39

Draft RPEIS, Section 6.6.1, page 6-18, First sentence. This sentence references "increased storm intensity" as contributing to Essential Fish Habitat (EFH) loss. Methods used in this study to estimate future land loss rates did not incorporate changes in storm intensity. Instead it was assumed that historic marsh loss rates would remain constant into the future, except for increased inundation associated with sea level rise. Given that increased storm intensity was not factored into marsh loss estimates, it would be appropriate to delete it as one of the causes of future marsh (EFH) loss.

USFWS40

Draft RPEIS, Section 6.6.2, page 6-19, Indirect Impact of Programmatic Features. The text states that fish access impacts "are expected to be minor." Given the revised structure operation plans, the frequency and duration of gate closures will increase due to sea level rise and will result in very substantial fish access reductions.

USFWS41

Draft RPEIS, Section 6.6.2, page 6-19, Indirect Impacts of Constructable Features. The text states that these indirect impacts would be similar to that of the programmatic features. Relative to fish access impacts, this statement is not true. See above comments for page 6-17.

USFWS42

Draft RPEIS, Section 6.7.2, page 6-22, Indirect Impacts of Programmatic Features. The text references “an overall increase in wetland acreage.” Because the HET did not predict any with-project wetland acreage increases, this statement conflicts with the HET analysis. Furthermore, mitigation to offset construction impacts might result in a period of temporal habitat quality losses. Therefore, it is unlikely that an increase in wildlife habitat quantity and quality would occur with-project.

USFWS43

Draft RPEIS, Section 6.7.2, page 6-22, Cumulative Impacts Section. The text indicates that there will be a cumulative restoration, protection, and enhancement of critical habitat for migratory neotropical songbirds. At best, the Morganza project would result in a no-net loss of such habitat. However, given the historic declines in such habitat due to sea level rise and development pressures, the quality and quantity of this habitat is likely to continue to decrease even within the Morganza system. Other marsh restoration projects are not likely to have a significant positive effect on this habitat type. Therefore, the overall quality and quantity of such habitat is unlikely to be restored, protected, or enhanced. Instead, it will likely continue to decrease as it has in the past.

USFWS44

Draft RPEIS, Section 6.11.1, page 6-26. This section seems to be about local levees and not about hydrology. Hydrology discussions should include information about seasonal Atchafalaya River inputs via the GIWW.

USFWS45

Draft RPEIS, Section 6.11.2, page 6-28, Plan 3 Direct and Indirect Impacts. McAlpin 2012 (Reference in RPEIS) modeled the west GIWW structure as consisting of one 175-ft-wide sector gate with six 16-ft-wide sluice gates. The design of this structure described in the PAC Report has a total cross-section approximately 18% less than the one modeled. The results of the applicable sensitivity runs to simulate the effects of this reduction in structure cross-section should be presented. Information on structure-induced elevated water levels (magnitude and spatial extent) to the west of this structure should also be provided.

USFWS46

Draft RPEIS, Section 6.11.2, page 6-28, Cumulative Impacts. The subject of this section appears to be on protection levees rather than hydrology.

USFWS47

Draft RPEIS, Section 6.18.5, page 6-57, Table 6-4. The row describing hydrology effects deals with hydrology only in the “Past Actions” column. The other cells in this row describe levee conditions and not hydrology.

USFWS48

Draft RPEIS, Section 6.18.5, page 6-58, Table 6-4. In the row for Fishery Resources, it is incorrectly stated that the Tentatively Selected Plan (TSP) would result in minimal fisheries resource impacts. The current more restrictive structure operation plan would result in substantial fisheries impacts. These adverse TSP effects would require reassessment of cumulative effects, especially when one considers the effects of continuing high rates of wetland loss.

USFWS49

Draft RPEIS, Section 6.19.4, page 6-62, second paragraph. The last sentence is confusing and needs to be revised. Although the enclosed wetlands themselves would not experience an indirect impact, fish access impacts would result in with-project impacts as assessed by the WVA. Those impacts will likely require additional mitigation.

USFWS50

Draft RPEIS, Section 6.19.4, page 6-70, first paragraph. The last sentence states “The HET determined through WVA modeling that the project would result in no indirect impacts to wetlands.” This statement is inaccurate because it refers to an earlier version of the structure operation plan in which the HET chose to not assess indirect impacts using the WVA. The revised structure operation plan provided in the PAC Report (page 79-80) will have more frequent and longer-duration gate closures, and will likely result in substantial indirect impacts. The HET is currently in the process of assessing indirect impacts for the constructable features and for the entire Morganza system, using the WVA.

USFWS51

Draft RPEIS, Section 8.3, page 8-2, Table 8-1. The Corps response to FWS comment #1 is that the Corps has verified that the west GIWW floodgates “have no impact on water flowing to the east.” Because this structure is described as “two adjacent floodgates” it appears that the Corp’s evaluation was conducted for the earlier and larger version of this structure. The FWS and the HET were unaware that the design of this structure had been changed to one floodgate, and we have not seen any analysis of the effects of the revised structure. That analysis, comparing changes in without-project discharge and stage, should be included in the PAC Report and RPEIS. Because the design of the west GIWW floodgate could potentially alter the hydrologic effects of the constructable features, the evaluation of the re-designed west GIWW floodgate should be conducted as soon as possible so that impacts of the constructable features can be accurately determined. These comments are also applicable to the Corp’s response to FWS comment #8d.

USFWS52

Draft RPEIS, Section 8.3, page 8-6, Table 8-1. Via comment # 8e, the FWS requested that the Corps determine the effects of the HNC Lock on the CWPPRA North Lake Boudreaux Basin Freshwater Introduction Project. That analysis has apparently not been conducted and is necessary to truly evaluate effects of these constructable features so that those features would be ready for construction. The results of that analysis should be presented in the RPEIS.

USFWS53

Draft RPEIS, Appendix F. The subsection titled “Methodology for Quantifying Environmental Benefits/Impacts” is presented twice. Following that section is a number of unidentified tables that should be sized to fit on one page rather than multiple pages. The memos following those tables should be deleted because they are provided at the beginning of the appendix.

USFWS54

PAC Report, Plate 6 of 14. A continuous mitigation area is shown paralleling Falgout Canal. To allow the two environmental water control structures to function properly, breaks in this continuous mitigation area should be provided at each of those water control structures.

USFWS55

PAC Report, Plate 7 of 14. The mitigation area paralleling the levee across Sweetwater Pond would potentially impound Sweetwater Pond and might render the Bayou Sale environment water control structure useless. One or more gaps should be provided in that mitigation area to maintain tidal exchange. Similarly, a gap in the mitigation area should be provided at the reach H-1 environmental water control structure.

USFWS56

PAC Report Plate 9 of 14. Gaps in the continuous mitigation areas should be provided to maintain the function of planned water control structures and to provide water exchange with the borrow canal.

USFWS57

PAC Report Plate 10 of 14. Comment same as for Plate 9. Rather than attempt to locate the mitigation features in large deep canals, alternative locations should be sought where the material could be used more effectively.

USFWS58

#### Specific Comment – USGS

Draft RPEIS, Section 6.2. The document describes the expected changes in salinity under each alternative, and discusses wetland losses from construction, but it does not describe the changes in wetland plant communities that would result from the changes in salinity. We suggest that the Final EIS describe these changes, and any other biotic changes that would result from changes in wetland plant communities. The model in Snedden and Steyer (2013) (reference below) provides information relating salinity and plant community zonation.

USFWS59

Snedden, G.A., Steyer, G.D. 2013. Predictive occurrence models for coastal wetland plant communities: Delineating hydrologic response surfaces with multinomial logistic regression. Estuarine, Coastal and Shelf Science, <http://dx.doi.org/10.1016/j.ecss.2012.12.002> (available online)

Thank you for the opportunity to review the PAC Report and RPEIS. If you or other staff members have any questions regarding the FWS comments, please contact Ronny Paille, U.S. Fish & Wildlife Service (ES), Lafayette, LA, at (337) 291-3117, or for USGS comments contact Gary LeCain, USGS Coordinator for Environmental Document Reviews, at (303) 236-1475 or at [gdlcain@usgs.gov](mailto:gdlcain@usgs.gov).

Sincerely,



Stephen R. Spencer, Ph.D.  
Regional Environmental Officer



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

Southeast Regional Office  
263 13th Avenue, South  
St. Petersburg, Florida 33701

February 14, 2013

Ms. Joan M Exnicios, Chief  
Regional Planning and Environmental Division South  
New Orleans District Environmental Branch  
U.S. Army Corps of Engineers  
CEMVN-PDN-CEP  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Ms. Exnicios:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Post Authorization Change Report and draft revised programmatic environmental impact statement (RPEIS) for the Mississippi River and Tributaries-Morganza to the Gulf of Mexico, Louisiana Project. The RPEIS assesses potential impacts to the environment associated with hurricane and storm damage risk reduction for portions of Terrebonne and Lafourche Parishes. The transmittal letter indicates the draft RPEIS represents the U.S. Army Corps of Engineers' (USACE) initiation of essential fish habitat (EFH) consultation under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

The tentatively selected plan (TSP) consists of storm risk reduction for water levels having a one percent chance of occurring annually. Features for the TSP include 98 miles of levees, 22 floodgates, and 23 environmental water control structures. Approximately 85 miles of the proposed levees in part overlay existing hydrologic barriers such as natural ridges, roadbeds, and existing local levees. Earthen levees would be constructed with adjacent and/or hauled in borrow. Marsh creation mitigation is proposed to be constructed adjacent to the levees utilizing organic overburden soils which are unacceptable for levee foundation. The USACE's intent is for the RPEIS to have sufficient detail and impact analyses to designate some features as "constructible" and requiring no subsequent National Environmental Policy Act disclosure. The constructible features identified include: (1) levee reaches F1, F2, and G1, (2) the Houma Navigation Canal (HNC) Lock Complex; and (3) the Bayou Grand Caillou (BGC) floodgate.

Contrary to statements and details in the RPEIS, indirect impacts for both the programmatic and constructible features are unknown. NMFS does not concur with the RPEIS statements that: (1) a levee project would benefit estuarine-dependent marine fisheries or EFH, (2) there would be no indirect impacts to enclosed wetlands, or, (3) impacts, whether direct or indirect, are self-mitigating. Direct impacts resulting from construction are presently estimated to be 645 acres of tidal wetlands from constructible features and 3,413 acres of tidal wetlands from programmatic

NMFS1



features. For constructible direct impacts, the USACE proposes 916 acres of marsh creation. Neither the indirect impacts nor their offsetting mitigation have yet to be quantified for either the constructible or programmatic features of this project.

NMFS2

To be clear, NMFS does not object to hurricane protection to reduce risks to life or property; however, we do have environmental concerns with the process proposed and described in the RPEIS. The RPEIS provides insufficient information, incomplete impact assessments, and inadequate descriptions of mitigation. Consequently, NMFS requests additional information be included in the Final RPEIS and/or Record of Decision (ROD). The enclosed comments identify areas of concern and where additional information is necessary.

NMFS3

In addition, section 305(b)(4)(A) of the Magnuson-Stevens Act requires NMFS provide EFH conservation recommendations for any federal action which may result in adverse impacts to EFH. Therefore, NMFS recommends the following to ensure the conservation of EFH and associated marine fishery resources:

#### **EFH Conservation Recommendations**

1. Impacts, including frequency and duration of closure for all water control structures, should be assessed for reasonably foreseeable future actions. Such an analysis should include operation for non-storm closures at +2.5 ft. NAVD88 at low, intermediate, and high sea level rise scenarios.
2. Indirect impacts should be determined for constructible and programmatic features through coordination with NMFS and other interested natural resource agencies. System-wide modeling should be conducted on features and structure sizes included in the TSP to complete impact assessments. Modeling results of the low sea level rise scenario at the end of the project life should be included in the final RPEIS.
3. A clarified operation plan for the HNC lock, floodgates, and environmental water control structures should be developed through coordination with NMFS and other natural resource agencies. Those operation plans should be clarified to show:
  - a. The environmental water control structures along Falgout Canal in Reach E1 would be operated to discharge fresh water southward only.
  - b. The BG C floodgate would remain open during the HNC lock saltwater closure periods.
  - c. Operation plans for floodgates and water control structures, excluding the Falgout Canal environmental water control structures and the HNC lock, would maximize the open cross sectional area as often and long as possible.

NMFS4

NMFS5

NMFS6

4. An adequate mitigation plan for constructible and programmatic features should be developed to offset updated direct and indirect impacts through coordination with NMFS and other interested natural resource agencies. The mitigation should consist of marsh creation in open water on the flood side of the proposed levee. The mitigation should be planned, fully funded, and implemented in a concurrent timely manner such that functional and temporal losses of EFH are offset. Revised mitigation details should be made available for public and agency review and comment prior to issuing the Final RPEIS or signing the ROD. Specific mitigation details we recommend be included in the Final REIS include:

NMFS7

- a. Final sizing of mitigation
- b. The specific limits of constructible mitigation features
- c. Spill boxes should be directed into adjacent deteriorating marsh to the greatest extent practicable.
- d. Construction staging areas should be located to avoid impacts to wetlands.
- e. Target fill elevations should be based upon a determination of average healthy marsh in the vicinity of the mitigation project in accordance to bio-benchmark surveying methods used for restoration programs. The version of geoid height model used when selecting target elevations should be documented. Target elevations and monitoring elevation data should be presented with the same geoid height model correction.

5. An acceptable gapping/degrading plan for containment dikes constructed for marsh creation mitigation should be included through developmental coordination with NMFS. General design for dike gapping should include:

NMFS8

- a. If total dike degradation is not feasible, one 25-ft gap (bottom width) every 500 ft. is recommended. Depth of gap is dependent on if it is into open water or adjacent marsh. If into open water, gaps should be to the pre-project water depth. If gaps lead into marsh, gap should be to average marsh elevation.
- b. If scour aprons are included, the bottom should be grubbed out so the gap depth is the pre-project elevation as measured to the top of the armoring.
- c. Degraded material should be placed on adjacent remaining dikes and not marsh.
- d. Field adjustments in spacing and dimension based on developing site conditions should be accomplished through coordination with NMFS.

6. Performance standards, monitoring requirements, long-term management, and the adaptive management plan should be revised to be consistent with those currently under development for the Greater New Orleans Hurricane Surge Damage Risk Reduction System.

NMFS9

7. The USACE should remain responsible for mitigation until the mitigation is demonstrated to be compliant with success and performance criteria. At a minimum, this should include compliance with the requisite vegetation, elevation, acreage, and gapping criteria. An acceptable adaptive management plan should be developed through coordination with NMFS and other interested natural resource agencies to cover operation and maintenance of the levees and structures, and mitigation. Sufficient appropriated funds should be set aside to fulfill the plan especially as it relates to mitigation compliance.

NMFS10

Consistent with Section 305(b)(4)(B) of the Magnuson-Stevens Act and NMFS' implementing regulation at 50 CFR 600.920(k), the USACE is required to provide a written response to our EFH conservation recommendations within 30 days of receipt. If the USACE's response is inconsistent with our EFH conservation recommendations, the USACE must provide a substantive discussion justifying the reasons for not implementing the recommendations. If it is not possible to provide a substantive response within 30 days, the USACE should provide an interim response to NMFS, to be followed by the detailed response. The detailed response should be provided in a manner to ensure that it is received by NMFS at least 10 days prior to the final approval of the action (i.e., signing of the ROD).

NMFS11

NMFS appreciates the opportunity to review the RPEIS and remains committed to working with the USACE to resolve issues. If you have questions regarding the above or attached comments, please contact Patrick Williams at 225-389-0508, (extension 208) for assistance.

Sincerely,



Virginia M. Fay  
Assistant Regional Administrator  
Habitat Conservation Division

Enclosures

cc:

COE, New Orleans District, Dayan  
FWS, Lafayette, Paille, Walther  
EPA, Ettinger  
LDWF, Bourgeois, Hebert  
LA DNR, Consistency, Lovell  
F/SER46, Swafford  
F/SER4, Dale, Rolfes  
NOAA PPI, Nunenkamp  
Files

## ENCLOSURE 1

### NOAA's National Marine Fisheries Service (NMFS) Comments on the Draft Revised Programmatic Environmental Impact Statement (RPEIS) entitled "Mississippi River and Tributaries-Morganza to the Gulf of Mexico, Louisiana"

NMFS understands submittal of the RPEIS for our review represents the U.S. Army Corps of Engineers' (USACE) intent to initiate essential fish habitat (EFH) consultation as required by provisions of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Our response is submitted in accordance with section 600.920(i)(4) of the EFH rules and regulations and includes whether sections of the RPEIS adequately fulfill the requirements of an EFH assessment.

#### General Comments

As conceived, analyzed and disclosed, this storm damage risk reduction project was intended to keep structures open the majority of the time with the exception for storm events that risk life or property. As a result, open or "leaky" levee descriptors for the project were developed. However in response to future sea level rise predications, it is probable structures would have to be closed more frequently and for a longer duration over the project life. As closures increase in frequency and duration, substantial socio-economic and environmental risks would likely result. Such impacts should be disclosed in the Final RPEIS.

NMFS12

Operation plans, direct and indirect impact assessments, and mitigation are primary natural resource topics of concern with the RPEIS. NMFS believes resolution of issues associated with these matters is necessary to complete an acceptable environmental impact statement and to develop an appropriate mitigation plan.

NMFS13

#### *Operation/Impacts*

Clarity of the operation plan for the Tentatively Selected Plan (TSP) is lacking and impact assessments are incomplete. Information necessary to complete impact analyses have not been provided. Enclosure 2 is a list of information needs to help complete an impact assessment. Items listed in Enclosure 2 have been identified by the draft Fish and Wildlife Coordination Act Report (CAR) and through electronic mail correspondence from the Habitat Evaluation Team (HET) with staff of the USACE.

NMFS14

The operation plan for the project is unclear. The Post-Authorization Change (PAC) Report and RPEIS both are internally inconsistent to determine if the structures would be operated under storm conditions to protect from storm flooding only, or also under non-storm conditions to protect from tidal flooding. The frequency and duration of structure closures in the future and the associated impacts to the environment would change drastically, if the system was operated to reduce non-storm related flooding. No discussion of likely impacts related to non-storm closures is included in the RPEIS. However given predictions of sea level rise, NMFS believes it is reasonably foreseeable that the structures would be operated in the future under non-storm conditions to protect from tidal flooding.

NMFS15

As an example, permits have been issued to the non-Federal sponsor and construction is underway on a number of levee reaches authorized to close structures whenever water levels reach +2.5 ft. NAVD88. The non-Federal sponsor has acknowledged publically the frequency of closing existing structures has increased over time. Further, the USACE predicts in the RPEIS that based on the +2.5 ft. NAVD88 closure at the end of the project life, the HNC floodgate to be closed 168, 354, and 365 days per year under the low, intermediate, and high sea level rise scenarios, respectively. The expectation of future operation for non-storm closures at +2.5 ft. NAVD88 has been established with ongoing operations, funds, and permit authority. Therefore, NMFS recommends the Final RPEIS include an assessment of likely impacts of sea level rise on the frequency and duration of water control structure closures under storm and non-storm operations and include environmental impacts from these reasonably foreseeable actions. Assessments based on increasing amount and length of structure closures should also include socio-economic impacts to communities within the proposed levee system which have cultural and economic dependency on water-dependent commerce.

NMFS16

The TSP is the one percent Annual Exceedence Probability Alternative, which includes 125-ft wide sector gates in the Gulf Intracoastal Waterway (GIWW) both west of Houma and at Larose. Prior to release of the PAC Report and draft RPEIS, the sector gates at both of those locations were to be 175-ft wide. Accordingly, the system-wide hydrology and hydraulic modeling conducted to assess environmental impacts and assist in project design was run with the 175-ft wide sector gates. Therefore, the accuracy and usefulness of presently available modeling to assess impacts from the TSP is questionable. A smaller GIWW sector gate west of Houma may influence flows and associated freshwater distribution west of, and within, the levee system and may elevate salinities inside and south of the levee system. In order to assess the environmental impacts of the TSP, the model should be rerun with the 125-ft wide sector gates in both GIWW locations as included in the TSP. The updated impact analysis should be coordinated with the HET and included in the Final RPEIS. Figures throughout the RPEIS depicting salinity projections for the TSP should be updated in the Final RPEIS accordingly. Alternatively, the number of sluice gates in both GIWW structures could be increased in the TSP to ensure flows are not impacted and presently available modeling results are applicable.

NMFS17

NMFS18

NMFS19

NMFS20

NMFS does not concur enclosing wetlands behind levees would benefit marsh or estuarine-dependent marine fishery resources. Prior to the 2002 PEIS, system-wide modeling was determined to be a necessity to assess impacts of this project. Once system-wide model results were made available in December 2012, the HET concluded indirect impacts for both constructible and programmatic features must be evaluated. Impact analyses and associated conclusions in the RPEIS are represented as if they are final, while the analyses are actually preliminary and subject to change based on pending modeling results. Furthermore, the sizes of the GIWW sector gates in the TSP were reduced after the modeling. Therefore, the presently available modeling is not of the actual TSP. System-wide modeling should be conducted with the TSP-sized GIWW sector gates and consider non-storm closures in the future with sea level rise. Indirect and cumulative impacts to wetlands, fisheries, and EFH likely would result from potential degradation of water quality, ponding stress on wetland vegetation, and reduction or elimination of estuarine dependent fishery species' access to nursery and foraging habitat.

NMFS21

NMFS22

NMFS23

NMFS24

Indirect and cumulative impacts to wetlands, fisheries, and EFH, as well as the mitigation necessary to offset such impacts should be discussed in the Final RPEIS prior to signature of the ROD. Conclusions of: (1) benefits to marsh and estuarine dependent fisheries, (2) the project being self-mitigating, or, (3) lack of impacts to hydrology from enclosure within a levee system should be removed where stated throughout the document (e.g., PAC Report Table 4-1, RPEIS Sections 6.5.2 Indirect, 6.16.12 Indirect Impacts, and Appendix C). Those sections of the RPEIS should be revised based upon pending indirect impact assessments once necessary data are made available by the USACE.

NMFS25

NMFS26

*Mitigation*

The mitigation plan proposed for constructible and programmatic features is unacceptable as drafted in the RPEIS. NMFS believes the amount of mitigation is indeterminable at this time because impact assessments are incomplete. Sidecast disposal of overburden material on existing marsh should not be considered as mitigation. In addition, the mitigation plan is incompletely developed for the identified constructible features.

NMFS27

Section 6.19 and maps in Appendix G of the RPEIS indicate mitigation construction for constructible features would consist of filling existing wetlands and open water from near continuous sidecast disposal of organic overburden unsuitable for the levee foundation. Fill placement impacting existing marsh is unacceptable as mitigation. The locations and amount of fill placement in open water to create marsh as mitigation exclusively for the constructible features is not specified or substantiated with a functional based analysis. The only mitigation analyses conducted by the HET to determine the amount of mitigation necessary, evaluated marsh creation in open water constructed by hydraulic dredging. Because this included no fill on existing marsh, development of wetland functions were projected accordingly. Therefore, the only results available thus far did not evaluate the USACE's currently proposed mitigation and no analyses have been undertaken to quantify performance over the life of the project. NMFS recommends marsh creation be conducted in open water areas only and the siting and sizing of the mitigation areas be coordinated with the HET and substantiated with a functional based analysis.

NMFS28

NMFS29

The quantification of mitigation necessary to offset indirect impacts is contingent upon the reasonably foreseeable non-storm operation plan and modeling of the frequency and duration of closures. Signature of the ROD should be held in abeyance until issues related to mitigation for both direct and indirect impacts are resolved, in particular for the constructible features, through coordination with NMFS.

NMFS30

NMFS31

NMFS finds the "12 items" required by the 2008 mitigation regulations are insufficient as included in the RPEIS. The mitigation plan in Section 6.19 and cost details related to financial assurances in Appendix G need updating based on revised mitigation design, sizing, siting, and performance and monitoring provisions.

NMFS32

NMFS33

*EFH Assessment*

Based on our review of the RPEIS, we have determined that although the document contains the four items required of an EFH assessment, the details in those items are insufficient. An EFH assessment includes an analysis of effects, including mitigation, to determine the net and cumulative impact to EFH. NMFS finds TSP impacts have not been quantified at this time. Therefore, the amount of compensatory mitigation is unknown and the net effects on EFH are undeterminable. However, we acknowledge project effects on EFH could be offset, if impacts are adequately quantified and a sufficient acreage of tidally influenced marsh is created in open water. Such cannot be accomplished until indirect impacts are determined for reasonably foreseeable operation including non-storm closures.

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*Fish and Wildlife CAR*

NMFS provided comments on the draft CAR on January 8, 2013. Those comments should be addressed and resolved through coordination with NMFS prior to proceeding to the final RPEIS. When corrected impact analyses are available, a final CAR should be prepared. Recommendations in the final CAR should be resolved in the Final RPEIS.

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**Specific Comments**

*Unresolved Issues Section.*

Triggers for closing structures are unclear. Although the USACE's intent may be to close structures only under storm conditions (whether named or un-named storms), departure from the present level of protection and operation would be a significant change for the non-Federal sponsor. This section should be revised to disclose that water control structure operation over the project life is an unresolved issue.

NMFS37

*Table 1-1.*

The Magnuson-Stevens Act should be added under the Federal Statutes section.

NMFS38

*Section 3.11.3 Coastal Wetlands Planning, Protection and Restoration Act*

The North Lake Boudreaux Project (TE-32a) should be added to the list of CWPPRA projects in the study area. The project is sponsored by the U.S. Fish and Wildlife Service.

NMFS39

*Section 4.3.8 Operation of Structures*

The draft RPEIS and PAC Report are inconsistent regarding operation plans for the floodgates and environmental water control structures. "Section 1.0 Summary, Purpose" stipulates hurricanes and storms exclusively, and "Section 4.3.8 Operation of Structures" stipulates closures at +2.5 ft. NAVD88 is restricted to named tropical storms for the HNC lock, floodgates,

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and environmental water control structures. However, Sections 7.4.4 of the PAC Report and 4.3.8.4 of the RPEIS indicate structures would be closed as outlined in recent permits including closures when water levels approach +2.5 ft. NAVD88 for “other extreme tidal events”, which would be non-storm events. Section 4.3.8.5 of the RPEIS and 7.4.5 of the PAC Report discuss adapting operations for sea level rise and predict closures for the HNC floodgate at 168 days, 354 days, and 365 days per year by the year 2085 based upon low, intermediate, and high sea level rise scenarios for the +2.5-ft closure exclusively. Therefore, NMFS recommends the documents be revised throughout to include the potential for non-storm operation and to evaluate likely impacts of such actions on resources of concern.

*Section 4.3.8.1 Operation of the HNC Lock Complex*

Data are needed to complete impact assessments. The closure trigger is identified as, “If a gage on the outside of the HNC Lock exceeds a salinity value that has been correlated with preventing exceedance of the maximum allowable chloride level...”; however, it does not identify the specific salinity trigger, thereby leaving impacts indeterminable until specified. Opening is identified as occurring once salinity falls below 13 parts per thousand at Cocodrie. There are limited to no salinity data presently available from the Cocodrie gage to determine the likely frequency of closure of the lock based on salinity triggers. The USACE should provide the exact closure and opening triggers, the locations where they are measured, and sufficient salinity data on which to base impact projections. For post construction operations and monitoring purposes, a salinity gage should be established on the flood side of the HNC.

NMFS41

*Section 4.3.9 Mitigation*

To compensate for impacts to marsh, NMFS prefers marsh creation (i.e., fill placement in open water) on the flood side of the proposed levee. The map details in Appendix G are generic concepts. The design, location, and amount of mitigation have not been coordinated with the interagency HET and are in need of substantial revision both for programmatic and constructible features, as well as to offset direct and indirect impacts. Marsh creation in open water should be the primary focus and filling existing marsh should be avoided. Also, the layout of the mitigation should be revised to avoid altering hydrology and impeding flow from environmental water control structures under Falgout Canal Road in Reach E-1. A thorough analysis of direct and indirect impacts of the constructible features should be completed and this section of the Final RPEIS should be revised by including corrected plats identifying the specific limits for the mitigation work. Construction access corridors, staging areas, and borrow areas to supplement any shortfalls from sidecast disposal of organic overburden should be identified and discussed. Any dedicated dredging borrow sites to create marsh should be sited and designed to avoid inducing erosion (e.g., wave or slope-failure) of existing marsh bank lines. If borrow is expected from bayous, the borrow sites should be segmented with undredged reaches to serve as under water plugs to minimize saltwater intrusion. The borrow areas should be designed to minimize adverse impacts to water quality to the extent practicable. The implications of borrow sites on water quality should be discussed. The USACE is encouraged to include dissolved oxygen

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monitoring to assess if impacts occur and to identify the potential need to alter borrow designs in the future. These matters should be resolved and discussed in the Final RPEIS and ROD.

*Section 4.4 Comparison of Environmental Consequences of Alternatives*  
*Table 4-4.*

For the one percent and three percent alternatives, wetland impacts in the table should be revised from “displaced” to “destroyed”. Impacts to aquatic habitat, fisheries, and EFH should be revised to include indirect impacts from increasing closures of floodgates and water control structures. The Hydrology section should be augmented to indicate localized increases in flooding and salinity are expected on the protected and flood side of the levees and to provide a description of where that is projected to occur.

NMFS47

*Section 5.2.4 Fisheries*

This section should be expanded to include a description of the existing marsh management projects, their operation, and limitations structural marsh management have on estuarine-dependent fishery species. This information previously was provided to staff of the USACE for consideration in the system-wide modeling and is available again, upon request.

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*Section 5.2.5 Essential Fish Habitat*

Gulf stone crab and gray snapper should be removed from the discussion and Table 5-7.

NMFS49

*Section 6.1 Environmental Consequences Introduction and Appendix F.*

These sections should be expanded to make clear the period of analysis captures temporal losses of wetland function from the time impacts occur from levee construction until functional mitigation is achieved. The starting and ending points of the period of analysis by levee reach and mitigation would illustrate how temporal losses are considered. In addition, the USACE should clarify if the end year to calculate the amount of sea level rise included in the system-wide modeling was 2085 and included years 2004 to 2015. This section acknowledges constructed CWPPRA projects are within the project area, but does not describe how they are handled in the impact assessment or Appendix F on the Wetland Value Assessment analysis. This section should be revised to discuss potential impacts to CWPPRA constructed restoration projects.

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*Section 6.2.2 1% AEP Alternative Direct Impacts*

A table and discussion should be added disclosing a breakdown of wetland impacts by habitat type.

NMFS51

*Section 6.5.1.2 1% AEP Alternative*

This section indicates direct impacts would be minimized with the use of Best Management Practices (BMP); however, no description or reference to the BMPs are provided. The document should be revised to include BMPs or to indicate supplemental National Environmental Policy Act documents will disclose BMPs.

NMFS52

*Section 6.5 Fisheries*

The direct, indirect, and cumulative impact sections need revision. These sections should include impacts based on the projected frequency and duration of structure closures in the future under the three sea level rise scenarios and under storm and non-storm operations. These sections should specifically describe the likely impacts of frequent and extended water control structure closures on estuarine-dependent fishery resources.

NMFS53

*Table 6.3*

The information pertaining to Reach F should be revised. Specifically, the HNC Lock is projected to be closed frequently due to salinity and storm provisions, which would limit fisheries access north of the lock to Bayou Grand Caillou. Further, the levee alignment eliminates access from the HNC into the Bayou Platte drainage area from its drainage point south near Deep Bayou. Fisheries access with Reach K in place would not be improved over existing conditions because water control structures already allow fisheries access into the marsh management units on the Point aux Chenes Wildlife Management Area.

NMFS54

*Section 6.6 EFH*

NMFS does not concur with the impact assessments to EFH. Indirect and cumulative impacts are incomplete at this time. Impacts presented were based on preliminary and in progress assessments. Indirect and cumulative impacts to EFH should be assessed and described in the Final RPEIS based on revised system-wide modeling for the TSP and include foreseeable non-storm structure closures. The amounts of flooding and salinity changes have not been substantiated at this time and cannot be concluded as minimal. BMPs are not defined. The EFH section should include acres of open water impacted. Revised analysis should assess potential impacts to water quality, ponding stress on wetland vegetation, and reduction or elimination of estuarine fisheries access with increases in structure closures in the future.

NMFS55

*Section 6.14 Socioeconomics*

The direct, indirect, and cumulative impact sections need revision. These sections should include impacts based on the projected frequency and duration of structure closures in the future under the three sea level rise scenarios and under storm and non-storm operations. These sections should specifically describe the likely impacts of frequent and extended water control

NMFS56

structure closures on navigation to ports and marinas enclosed within the project area. In addition, this section should evaluate how storm water drainage will be accomplished in the future with various sea level rise projections.

*Section 6.19 Mitigation*

NMFS finds the mitigation plan is unacceptable for constructible features and for programmatic considerations for reasons discussed both above and below.

NMFS57

*Section 6.19.4 Wetland Mitigation Plan for Constructible Features*

The method to convert from impact Average Annual Habitat Units (AAHUs) to mitigation acres is not disclosed and has not been coordinated with the HET. The acreage of necessary mitigation can be determined based upon the mitigation potential (AAHUs/acre) by type of mitigation project. The mitigation potential provides an initial scaling that must be refined based upon a final WVA conducted on Preliminary Engineering and Design (PED) level information for the mitigation. PED level information for the constructible feature mitigation has not been disclosed and therefore final scaling to ensure a one to one functional replacement is not possible at this time.

NMFS58

*Table 6-5*

This table presents the 12 components of the compensatory mitigation plan. Some of those items are incomplete and/or unacceptable. Site selection for marsh creation in many reaches overlaps existing marsh, which itself could require separate mitigation actions. NMFS is concerned the layout of the mitigation sites may be presently determined based on the need for sidecast disposal of overburden and not the best layout to compensate for lost ecological services. In addition, the USACE has not conducted an analysis of how such a use of overburden will perform over the life of the project. For the final RPEIS, the site plan should be revised substantially by relocating all overburden disposal and marsh creation to open water areas only, and to include an analysis of likely performance over the life of the project.

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The mitigation work plan should be resolved through coordination with the natural resource agencies to resize the mitigation sites after they have been relocated to open water to ensure adequate compensation is provided. Draft marsh creation work plans developed for the Greater New Orleans Hurricane Surge Damage Risk Reduction System (HSDRRS) should be used for the Morganza to the Gulf Project. Greater specificity and clarity commensurate with constructible features are provided in the HSDRRS performance, success, and monitoring/reporting criteria. Because it was only developed for fresh, intermediate, and brackish marsh, the HSDRRS mitigation work plan should be expanded to address needs for salt marsh mitigation associated with the Morganza to the Gulf Project. In addition, performance standards, monitoring requirements, long-term management plan, and adaptive management provisions should be revised to be consistent with the most current standards developed for HSDRRS.

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Section 6 of this table discusses access corridors, construction staging areas, and target elevations. Regarding target elevations, this section recommends use of geotechnical analyses and elevations surveys to determine appropriate target elevation ranges. No specific plans have been disclosed for the constructible features mitigation. Settlement curves and survey data have not been provided to substantiate the mitigation plan for the constructible features. Detailed plans identifying the limits of the constructible feature mitigation including access corridors and staging areas have not been disclosed. The vegetation section is unclear as to whether marsh vegetation would be planted. If plantings are proposed, then clarification is needed on what species would be planted and when planting would occur under the proposed plan.

NMFS63

Section 8 of this table discusses performance standards. Inclusion of a gapping plan is noted and appreciated. However, we request the spacing and gap dimensions in the plan be revised to increase potential tidal function. Also, a provision should be included for field adjustments in spacing for site conditions. The final RPEIS should be revised throughout to indicate gapping/degrading would occur manually rather than dependent on sufficient erosion and settlement of dikes over time. The basis for the proposed target (initial and settled) fill elevation for the marsh creation site is not provided. Target elevations should be based upon a determination of average healthy marsh in the vicinity of proposed mitigation sites. It is recommended those elevations be determined by surveys in accordance to bio-benchmark survey protocols used for marsh creation designs under restoration programs. That methodology includes:

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Average marsh elevation (NAVD88) should be determined from no less than three locations in the vicinity of a mitigation project. The marsh surface is reached when the survey rod is resting among living stems or is supported by soil containing living roots. In order to get a consistent reading, it may be necessary to cut vegetation stems where stem density is extremely high. A minimum of 20 elevations (each separated by 20 to 40 ft.) at each of the sites should be required for this determination.

The vertical datum, monuments and version of geoid height model can introduce differences in the reported target and monitoring elevations. Elevations measured during the design surveys and all monitoring should indicate the geoid height model used and be corrected to the same geoid if it differs during the monitoring period to ensure like comparisons.

NMFS67

The proposed duration of the construction phase is unclear. The USACE should remain responsible for marsh mitigation until such mitigation is demonstrated to be compliant with success and performance criteria. At a minimum, this should include compliance with the requisite vegetation, elevation, acreage, and gapping criteria.

NMFS68

Section 11 of this table discusses an Adaptive Management Plan. This section specifies corrective actions if openings do not develop in a "continuous breakwater." A "continuous breakwater" is not a component of the project and that statement should be deleted from the text. In addition, this section should be revised to include gapping of marsh creation containment dikes.

NMFS69

Section 12 of this table discusses financial assurances and describes responsible parties, but not the amount of financial assurances. The amount should be developed based on the acreage of mitigation, operations, and monitoring to ensure sufficient funds are programmed to accomplish the mitigation. Furthermore, funds (contingency or otherwise) should be included to ensure completion of the Adaptive Management Plan.

NMFS70

*Appendix F*

The dollar amounts listed relate to the amount of funds necessary for financial assurance to complete mitigation. It is unclear if the dollar amounts for monitoring are estimated based upon the scope of details in Table 6-5. Dollar amounts included for mitigation construction and monitoring should be revised based on necessary revisions to the mitigation plan consistent with HSDRRS.

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## ENCLOSURE 2

### NOAA's National Marine Fisheries Service (NMFS) Comments on the Draft Revised Programmatic Environmental Impact Statement (RPEIS) entitled "Mississippi River and Tributaries-Morganza to the Gulf of Mexico, Louisiana" - Preliminary List of Pending Information Needed to Complete Impact Analyses

#### 1. Operation Plan

- a. Operation for non-storms
- b. Verification of the elevation trigger for closures
- c. Determine the frequency and duration of structures closures both under storm and non-storms conditions at +2.5 ft. NAVD88 in the future under the low, intermediate, and high sea level rise scenario; reconcile differences projected by the USACE and the U.S. Fish and Wildlife Service
- d. HNC Lock salinity closure criteria should be established
- e. HNC Lock opening criteria needs to be defined for a location outside of the lock
- f. Determine when structures on the southeast side of the project area would be closed more frequently
- g. Operation for water control structures in the constructible features should be provided

NMFS72

#### 2. Data Needs

- a. Determination by the USACE if the system-wide model results based on 175-ft wide sector gates in the GIWW remain valid for the TSP that has 125-ft wide gates
- b. System-wide model runs for the TSP (i.e., 125-ft sector gates in the GIWW structures)
- c. Stage data needed for locations other than HNC at Dulac
- d. Need salinity data under low sea level rise at the end of the project life (e.g., system-wide modeling of Future Without Project, Plan1, and Plan3, under low SLR scenario at the end of the project life)
- e. Tidal exchange flux or equivalent from system-wide model (re: WVA Variable 6, Average Tidal Flux method)
- f. Salinity data for HNC opening criteria to assess if data are available to base 1) a 13 ppt opening criteria and 2) measured at Bayou Petite Caillou at Cocodrie is feasible

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#### 3. Impact Analyses

- a. Updated indirect impacts based upon non-storm operation in the future under the three sea level rise scenarios
- b. Updated indirect impacts based upon 125-ft sector gates in the GIWW structures and revise all indirect and cumulative impacts.
- c. Assess the frequency of the +2.5 ft. NAVD88 threshold on the SE side of the project area

NMFS74

- d. Updated impacts based on the HNC lock operation for the closure and opening criteria
- e. AdH without-project baseline salinities are low consider TABS baseline salinities
- f. Complete revisions for fish access, Variable 6
  - i. Resolve Method(s) selection
  - ii. Assigning values under selected method(s)
  - iii. FWOP values for existing marsh management structures

**DRAFT PAC REPORT and PEIS COMMENTS**

**Comments of Importance:**

**PAC Report**

1. Page vii: Further discussions are warranted in the future on the scope of the "preliminary buyout plan", including proposed concepts/alternatives, and how future sea level rise/landloss factors are utilized in determining impacts, if any.
2. Interim protection measure in advance of the PPA should be factored as a creditable features that will serve until such time as these are incorporated into the Federal System.
3. Page 64, Section 6.5.1 Impacts on Structures Outside of the Risk Reduction System: Further discussions are warranted in the future on the scope of the "preliminary buyout plan", including proposed concepts/alternatives, and how future sea level rise/landloss factors are utilized in determining impacts, if any.
4. PAC Report and PEIS should remove references to closures to +2.5 Feet NAVD88 and instead closure criteria should be defined based upon prevention of flooding and protection of life and property.
5. Report does not indicate alternative measures to reduce cost that may or may not deviate from the current HSDRRS standards based upon the unique characteristics of the project area while still maintaining the appropriate measures of risk reduction and levee certification.
6. Unlike the levee system in the Greater New Orleans Area with its current allowable overtopping rate, the Morganza project contains a large retention basin that could allow for additional storage capacity. As such, the project should ensure optimization of overtopping rates which would allow decreased heights for levees and structures and thereby reducing project costs.
7. As currently understood, benefits have not been calculated for eastern side of Bayou Lafourche. The exclusion of these benefits results in a reduced benefits to cost ratio.
8. It is understood that this is an authorization document that utilized the best available assumptions. As the project moves forward in the design/construction phase, it is understood that additional cost-savings can be realized in the future based on real-world data and thus provide a lower overall project cost.
9. Report may not clearly identify that impacts identified are based on existing marsh which will change over time and possibly reducing the impacts that are currently projected.

**RPEIS**

1. Section 6-69, Mitigation Plan: State should assume OMRR&R after successful completion of a mitigation project. If project fails to meet criteria, then re-construction to ensure these criteria are met should be considered a project expense.
2. Page 1-8, Environmental Justice: Further discussions are warranted in the future on the scope of the "preliminary buyout plan", including proposed concepts/alternatives, and how future sea level rise/landloss factors are utilized in determining impacts, if any.
3. Page 6-37, Section 6.14.4: Has impacts from the construction of levees to hurricane evacuation been identified for those communities located outside of the levee system?

**Economic Appendix:**

1. Please clarify if the USACE factored as a benefit any potential reduction in cost of flood insurance policies or the number of policies required.

**General Comments:**

**PAC Report**

CPRA1

CPRA2

CPRA3

CPRA4

CPRA5

CPRA6

CPRA7

CPRA8

CPRA9

CPRA10

CPRA11

CPRA12

CPRA13

1. Page iii, Funding Since Authorization: Please verify start date of PED and required contributions (PED for the Lock started in January 2000 and first contributions to the M2G project started in September 2002. Reference to WRDA should include appropriate references, including sections.
2. Page vi, Levee and structure elevations: Page VI: Clarification is requested regarding increase by 6 feet to 18 feet (levee increases range between those values?). Clarification is also requested regarding the statement "authorized levee elevations varied from 9 to 15 feet (levee increases range between those values?).
3. Page vii, Environmental mitigation features: Clarification is requested regarding the statement of "creation of 1,352 acres of wetlands". This differs from the direct impacts of approximately 4,113 acres.
4. Page ix, Environmental Considerations: Note should be included clarifying that future wetlands loss would occur without the project.
5. Page xi, Summary of the Post-Authorization Project: Please clarify between FY14 Program Year Cost and Fully Funded Year Cost
6. Page 14, Funding and Cost-Share: Please verify start date of PED and required contributions (PED for the Lock started in January 2000 and first contributions to the Morganza to the Gulf project started in September 2002.
7. Page 19, Figure 2-2: Please reference the statement in this figure "Damages when Federal levees fail due to erosion from wave overtopping. Damages from overtopping and rainfall not calculated." If these two statements are separate conditions then they should be listed separately to limit possible confusion.
8. Page 21, Table 6.1: Please clarify whether the note referencing sea level rise was applied to the still water level or if it is contained in the wave heights.
9. Page 35, Section 4.2: The last sentence on this page references Section 5.5.1; however, there does not appear to be any relevant section.
10. Page 54, Table 6-1: Please clarify the relationship between the C-North levee section and the Larose to Golden Meadow levee system regarding what assumptions were made on still water and wave heights.
11. Page 63, Section 6.5.1: Paragraph states that 1,000 structures would remain outside the system. However, page 35 states that 6,000 residential structures in lower Bayou du Large and Bayou Grand Caillou an additional 70 structures in Isles de Jean Charles are in the 100-year floodplain. Clarification is requested regarding the differences between these figures.
12. Page 65, Table 6-8: Does the 2% AEP elevations for Larose to Golden Meadow utilize the same sea level rise calculations and/or the same methodologies for determining wave elevations?
13. Page 68, Section 6.81.1: Please clarify reference to "worker years of labor annually"? Is this the correct reference to utilize or should it be based on hours?
14. Page 80, section 7.4.3: Paragraph states "The environmental control structures would be used for drainage of isolated areas within a certain timeframe and maximum inundation of the marsh areas." If this information is contained in the Engineering Appendix, then please include a reference. If information is not contained that defines time durations then estimated values, definition or methodology should be included.
15. Page 80, table 7-2: It would be more informative to also list the total number of days per year each structure was closed, if available.
16. Page 84, Section 7.7.2: Paragraph states "If, instead, structural changes are deemed necessary to achieve ecological success, the USACE would implement appropriate adaptive management measures in accordance with the contingency plan and subject to cost sharing requirements, availability of funding, and current budgetary and other guidance. Please clarify as to what the contingency plan entails or include references to the appropriate section of the report.
17. Page 84, Section 7.8: For clarity, it would be beneficial to include figures for the total marsh acres needed and the "additional" mitigation costs to construct the remaining acres.
18. Attachment 3, Inundation Maps: MTOG Inundation Maps (50 Year and 100 Year Inundation for Years 2010, 2035, 2085): Were the depth damage analysis model runs entered for the Thibodaux area and no impacts were identified?
19. Figures 12 and 14, C-north and Lockport to Larose Levee Alignment: Figures appear to incorrectly show the location of the GIWW floodgates instead of further east where the alignment crosses this waterway.

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RPEIS

1. **Page 1-8, Environmental Justice:** In reference to the statement “This study complies with the requirements of Executive Order 12989.” The correct Executive Order is 12898.
2. **Appendix A, Environmental Supporting Information:** Information does not appear to include current information pertaining to recent changes to Endangered and Threatened Species Act. Please clarify if there are any new study data in the project area that would warrant inclusion.
3. **Appendix A, Environmental Supporting Information:** Please clarify why this document lists species that are not found in the project area (i.e. Finback Whales) and listing of locations that would appear to be outside of the project area (i.e. Raccoon Island).
4. **Appendix C: Clean Water Act 404b, page 37, Section G - Determination of Cumulative Effects on the Aquatic Ecosystem:** Please clarify the whether the statement that the project would cause a decrease in water temperature and an increase in dissolved oxygen levels is correct. Please note that on page 16, it states that the project could cause a decrease in dissolved oxygen, which is the opposite of what is contained in Section G.

CPRA33

CPRA34

CPRA35

CPRA36

Economic Appendix:

1. **Table 8, FEMA Flood Claims by Parish 1978-2011:** The table references number of claims paid; however, a claim amount was not included for each respective parish. Additionally, is it clearly noted that there are two separate sources for damage claims during flood events, those that would be claimed under the FEMA policy and those that fall outside of the FEMA flood policies.

CPRA37



BOBBY JINDAL  
GOVERNOR

State of Louisiana

DEPARTMENT OF WILDLIFE AND FISHERIES  
OFFICE OF WILDLIFE

ROBERT J. BARHAM  
SECRETARY

JIMMY L. ANTHONY  
ASSISTANT SECRETARY

February 15, 2013

Attn: Nathan Dayan  
United States Army Corps of Engineers  
Regional Planning and Environment Division South  
New Orleans Environmental Branch, CEMVN-PEN-CEP  
P. O. Box 60267  
New Orleans, LA 70160-0267

RE: *Application Number: RPEIS Mississippi River and Tributaries-Morganza to the Gulf of Mexico*  
*Applicant: U.S. Army Corps of Engineers-New Orleans District*  
*Notice Date: January 3, 2013*

Dear Mr. Dayan:

We have reviewed the Revised Programmatic Environmental Impact Statement (RPEIS) for the U.S. Army Corps of Engineers (USACE) and the Terrebonne Levee District (TLD) Morganza to the Gulf Levee Project. The Department of Wildlife and Fisheries (LDWF), as a member of the Habitat Evaluation Team (HET), has worked closely with other regulatory and resource agencies to provide comments and recommendations throughout the process. We fully understand the need for hurricane protection measures to provide protection to coastal communities. The livelihoods of many Louisiana residents depend on productive estuaries, and our main concern is that while these resident's homes and infrastructure may be protected, their livelihoods may suffer if the proposed levee negatively impacts fisheries and wetland habitat.

Our concerns with the RPEIS fall into 3 categories: 1) Design and Operation Issues, 2) Inadequate Fisheries Impact Analysis, and 3) Inadequate Mitigation and Cumulative Impacts Analysis. In general, given the scale of this project and the changes in hydrology that would result, LDWF feels that the RPEIS does not adequately address potentially substantial long-term, indirect impacts to fisheries and wetland habitat.

1) Design and Operation Issues:

Recently, information being presented to the HET has been both insufficient and inconsistent, particularly flood gate and environmental structure design and operation plans. Information has been provided to the HET in a confusing piecemeal fashion with unrealistic review and comment deadlines. The cumulative impacts of structural protection to the productivity and sustainability of Louisiana's estuarine areas are difficult to determine. Exacerbating this difficulty is the fact that predictive modeling efforts have been hindered by changing structure design and uncertain operation criteria. Of particular concern is the high probability that flood gates and environmental structures

LDWF1

will be closed more frequently and for longer periods in the future for salinity control purposes, which strongly suggests increasing fisheries and wetland impacts with time. We suggest that these important design and operation uncertainties be resolved immediately so that reliable predictions of impacts can be determined.

2) Inadequate Fisheries Impact Analysis:

We feel that potential impacts to fisheries production are not adequately quantified using Wetland Value Assessment (WVA) methodology given the size of the project area. Any attempt to assess potential impacts to fisheries production needs to incorporate the types and number of flood gates and environmental control structures that will be present IN the levee design, how these structures will be operated, how these structures could affect fish access to and from critical habitats at all life stages, and how these structures could affect the recruitment of commercially and recreationally important aquatic species. While several environmental control structures have been implemented into the project to improve hydrologic and fisheries connectivity, it is unclear how aquatic organisms respond to/use these structures or if natural organism movement through these structures occurs. It should not be assumed that the mere presence of these structures is comparable to natural conditions and removes the possibility of negative impacts to fisheries.

LDWF2

Structure operation fisheries effects should include structure closure effects (timing and duration of closure and how this could change with time), open structure effects (changes in flow, concentrating/limiting migration corridors, and reduction in access), and how this could alter local population dynamics of aquatic species at all life stages. Species of concern include white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), blue crab (*Callinectes sapidus*), eastern oyster (*Crassostrea virginica*), gulf menhaden (*Brevoortia patronus*), redfish (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), black drum (*Pogonias chromis*), striped mullet (*Mugil cephalus*), bay anchovy (*Anchoa mitchilli*), and Atlantic croaker (*Micropogonias undulatus*). The RPEIS needs to address if and how these species will be affected, if possible using other substantial levee projects as examples (i.e. eastern Calcasieu Lake).

The RPEIS should also include a long-term fisheries monitoring plan to determine if substantial fisheries impacts are occurring from levee construction and once completed, floodgate and environmental structure operation.

3) Inadequate Mitigation and Cumulative Impacts Analysis:

A detailed wetland and fisheries mitigation plan outlying specific projects should be included in the document. In order to be considered adequate, this plan must consider short and long-term direct and indirect impacts to wetland and fisheries production, which at this time is not present in the RPEIS. Any mitigation plan should include long-term monitoring and be adaptive in nature to account for unforeseen future impacts.

LDWF3

Throughout the document, it is suggested that other local, state, and federal wetland restoration projects in the area will mitigate the impacts of levee construction and operation, and that the levee itself is a form of wetland and fisheries restoration. It would be more appropriate to discuss potential restoration projects, their interaction with the levee, and ecosystem response in a separate section; and to clarify that these projects are not part of the levee mitigation plan. We feel that the environmental benefits of levee construction are exaggerated throughout the document. The only clear benefit that a levee would have on wetland habitat would be preventing wetland loss through erosion and scour during storm surge events. However, these sporadic storm event benefits might be contradicted by

long-term wetland degradation resulting from levee hydrologic interference. Similarly, the sporadic protection of fish habitats could be outweighed by long-term alteration and degradation of fish habitat and access to and from critical habitats. Additional fisheries production impact analysis (with and without separate restoration projects) for each species of concern listed above should also be conducted. Provided that restoration projects include freshwater introductions, how these projects would influence structure operation (closure time and during) should be considered along with the predicted impacts on the species listed above.

Given that other state/federal coastal restoration projects are suggested as mitigation for levee construction in the RPEIS, we believe these restoration projects deserve more discussion in the “No Action Alternative” scenarios. These separate local, state, and federal restoration projects are better suited to address the described coastal land loss issues than levee construction, where the primary goal is infrastructure protection. It should also be discussed in the 1% and 3% AEP Alternative sections if and how the presence of a levy could negatively impact the effectiveness of other restoration projects inside and outside of the levee (un-natural hydrologic/marsh flooding regimes, formation of stagnant/low circulation areas, high flow areas around structures increasing erosion rates, etc).

LDWF4

Finally, cumulative impact benefits resulting from levee construction need supporting evidence, especially when most benefit appears to be provided by other restoration programs and negative impacts from the presence of a levee are more likely. It is stated in the RPEIS that hydrologic/fisheries impacts will be minimal because salinity modeling shows little change. Salinity models do not take into account major hydrologic and ecological characteristics such as marsh flooding frequency, increasing flow velocities, and aquatic organism access reductions that can have substantial impacts on wetland and fisheries productivity and would differ inside and outside of the proposed levee. We find it very troubling that cumulative impact sections in the main RPEIS document list only benefits and minimal impacts, where in Appendix C it is indicated that more frequent and longer duration structure closures in the future would lead to more substantial impacts.

LDWF5

Comments on specific portions of the RPEIS are as follows:

**Fisheries Habitat:**

*Section 6.5.2*

This part of the document needs clarification on reductions in salinities and it's affects on both inside and outside the system. One might expect accelerated salinities in some oyster areas and outside the system and/or depending on operations of structures and environmental conditions.

LDWF6

This section discusses inclusion of environmental structures, it should be mentioned that the structures provide hydrological benefits; however, there is a lack of research on fish passage through various structures. Furthermore, increased feeding opportunities at structures on bait fish could augment the natural process.

There are no detailed descriptions of closure impacts due to timing and duration especially with regards to increased sea level rise.

It is difficult to link the statement “improvement in marsh habitats and increased SAV would benefit fisheries resources”, when access may be reduced.

*Section 6.14.5*

Discussion, in this section or another, may be warranted regarding non-structural alternatives including but not limited, elevating structures and roads.

LDWF7

*Section 6.16.2*

There are concerns that the boating access issue is not adequately addressed with respect to frequency of closures. Also, the document did not seem to address recreational and commercial boats being trapped outside the system during storm events, subsequent closures and associated economic impacts.

LDWF8

**Louisiana Natural Heritage Program:**

Our Natural Heritage Program (LNHP) records indicate that the proposed project may potentially impact a Bald Eagle (*Haliaeetus leucocephalus*) nesting site. This species is protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act (16 U.S.C. 703-712) and is protected by the state of Louisiana. This proposed project is less than 1,000 ft. away from the bald eagle nest of concern. All bald eagle nests (active, inactive or seemingly abandoned) should be protected, and no large trees should be removed. Please refer to the Bald Eagle Management Guidelines for more information on avoiding impacts to bald eagles: <http://www.fws.gov/southeast/es/baldeagle/>. If additional information is needed contact the LNHP zoologist at 337-491-2576 Ext 3019.

LDWF9

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

Nesting colonies can move from year to year and no current information is available on the status of these colonies. If work for the proposed project will commence during the nesting season, conduct a field visit to the worksite to look for evidence of nesting colonies. This field visit should take place no more than two weeks before the project begins. If no nesting colonies are found within 400 meters (700 meters for brown pelicans) of the proposed project, no further consultation with LDWF will be necessary. If active nesting colonies are found within the previously stated distances of the proposed project, further consultation with LDWF will be required. In addition, colonies should be surveyed by a qualified biologist to document species present and the extent of colonies. Provide LDWF with a survey report which is to include the following information:

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

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

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

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

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

The Louisiana Department of Wildlife and Fisheries submits these recommendations to the U.S. Army Corps of Engineers in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 or Barry Hebert at 225-765-0233 should you need further assistance.

Sincerely,



Jimmy Anthony  
Assistant Secretary

cd/cm/bh/sb

c: EPA Marine & Wetlands Section  
USFWS Ecological Services  
Patrick Williams, NOAA-NMFS



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**  
**Region 6**  
**1445 Ross Avenue, Suite 1200**  
**Dallas, TX 75202-2733**

February 19, 2013

U.S. Army USACE of Engineers  
New Orleans District  
Attention: Nathan Dayan  
P.O. Box 60267  
New Orleans, LA 70160-0267

Dear Mr. Dayan,

In accordance with our responsibilities under Section 309 of the Clean Air Act (CAA), the National Environmental Policy Act (NEPA), and the Council on Environmental Quality (CEQ) regulations for implementing NEPA, the U.S. Environmental Protection Agency (EPA) Region 6 office in Dallas, Texas, has completed its review of the Draft Revised Programmatic Environmental Impact Statement (DRPEIS) prepared by the U.S. Army USACE of Engineers (USACE). The USACE proposes to make changes and improvements in the planning, design, construction, operation, and maintenance of the Morganza to the Gulf hurricane and storm damage risk reduction system project to prevent future disasters to the greatest extent possible.

EPA rates the DRPEIS as “EO-2” i.e., EPA has “identified significant environmental impacts and we request additional information in the Final RPEIS (FRPEIS)”. The EPA’s Rating System Criteria can be found here: <http://www.epa.gov/oecaerth/nepa/comments/ratings.html>. The “EO” rating is based on the potential for significant adverse impacts to environmental justice communities, tribal communities, and coastal wetlands. These significant adverse impacts include the direct, indirect, and cumulative effects of the proposed project. The “2” indicates the DRPEIS does not contain sufficient information to fully assess direct, indirect, and cumulative impacts to environmental justice communities, identified Tribes, and coastal wetlands. Detailed comments are enclosed with this letter which identifies our concerns and informational needs requested for incorporation into the FRPEIS.

EPA appreciates the opportunity to review the DRPEIS. Please send our office one copy of the FRPEIS and an internet link or CD when it is sent to the Office of Federal Activities, EPA (Mail Code 2252A), Ariel Rios Federal Building, 1200 Pennsylvania Ave, N.W., Washington, D.C. 20004. Our classification will be published on the EPA website, <http://www.epa.gov/compliance/nepa/comments/ratings.html>, according to our responsibility under Section 309 of the CAA to inform the public of our views on the proposed Federal action.

If you have any questions or concerns, please contact me at 214-665-8126 or John MacFarlane of my staff at [macfarlane.john@epa.gov](mailto:macfarlane.john@epa.gov) or 214-665-7491 for assistance.

Sincerely,

A handwritten signature in blue ink that reads "Debra A. Griffin". The signature is written in a cursive style with a large initial 'D'.

Debra A. Griffin  
Associate Director  
Compliance Assurance and  
Enforcement Division

Enclosure

**DETAILED COMMENTS ON THE  
U.S. ARMY USACE OF ENGINEERS'  
DRAFT REVISED PROGRAMMATIC  
ENVIRONMENTAL IMPACT STATEMENT  
FOR THE  
MORGANZA TO THE GULF OF MEXICO PROJECT  
TERREBONNE AND LAFOURCHE PARISH, LOUISIANA**

**BACKGROUND:** The U.S. Army Corps of Engineers (USACE) proposes to make changes and improvements in the planning, design, construction, operation, and maintenance of the Morganza to the Gulf hurricane and storm damage risk reduction system project to prevent future disasters to the greatest extent possible. The purpose of this project is to reduce the risk of damage caused by hurricane storm surges.

**GENERAL COMMENTS:**

The Environmental Protection Agency (EPA) has identified known environmental justice (EJ) communities and areas within the study area. The communities of Isle de Jean Charles and Point au Chien are associated with state-recognized tribes, where a large percentage of the population is minority and financially disadvantaged. Additionally, there are several communities of special concern outside of the proposed levee system. These communities include, but may not be limited to, Gibson, Bayou Dularge, Dulac, and Cocodrie.

The Isle de Jean Charles community has been previously identified as an EJ community with significant EJ concerns. Because of their special vulnerability, the proposed action, directly or indirectly, is likely to have disproportionate impacts on the Isle de Jean Charles community. Additional tribal communities could be similarly impacted due to effects on subsistence activities or cultural integrity, but are not mentioned in the Draft Revised Programmatic Environmental Impact Statement (DRPEIS), such as the Point au Chien Indian Tribe and United Houma Nation. The residents of these communities, and possibly other communities, are likely dependent, directly or indirectly, through their family or income sources, upon harvests of aquatic life for subsistence and livelihood.

In view of these special circumstances, EPA recommends that the USACE perform an appropriately detailed EJ analysis, immediately begin additional outreach and public involvement, consider alternatives to a buyout, and provide a detailed analysis of how buyout alternatives would avoid additional or cumulative, disproportionate impacts on EJ areas and communities.

EPA1

In accordance with Executive Order (E.O.) 13175 and applicable federal laws and policies, all federally recognized tribes that may be affected by the proposed project through potential impacts upon their citizens, resources, lands, culture, or traditional lifeways, should be identified and offered formal government to government consultation. Compliance with E.O. 13175 was not documented in the DRPEIS. If this consultation has not been done, the USACE should immediately contact the Chitimacha Tribe of Louisiana and other federally

EPA2

recognized tribes for both government-to-government (E.O. 13175) and National Historic Preservation Act (NHPA) consultation. Although the USACE is not required to contact state-recognized tribes for consultation under E.O. 13175, the EPA encourages the USACE to engage these and other stakeholders, especially since these communities are already overburdened and may have additional cultural sites of interest.

Utilizing information obtained through coordination with residents, stakeholders, and consultation with federally recognized tribes, the USACE should develop and refine its preliminary buyout plan. Buyout options should include relocation of intact communities where the potential for irreparable harm exists for unique cultures, languages, and traditions that may be lost if the community is broken up, such as in the case of the Isle de Jean Charles. The USACE should provide a schedule and detailed information for the proposed sequence of construction and buyout alternatives.

EPA3

Approximately 85 miles of this proposed 98-mile levee system would be built on or adjacent to existing hydrologic barriers, including natural ridges, roads, and existing levees. This helps minimize the potential for indirect adverse impacts to wetlands and other aquatic resources. Nevertheless, tens of thousands of acres of wetlands and open waters would be enclosed within the levee system, and thus could be indirectly affected. In addition to avoiding and minimizing direct wetland impacts, the design and implementation of this levee system must focus on the larger and more complex challenge of minimizing indirect impacts to these valuable aquatic resources.

EPA4

The USACE is planning to minimize adverse indirect impacts from this project by designing gates and water control structures to allow sufficient ingress and egress of aquatic organisms and to reduce wetland degradation due to prolonged impoundment and/or other hydrologic changes. To that end, the gates and water control structures in the levee system are intended to remain open except when the project area is threatened by a storm surge. In the long term, however, subsidence combined with sea level rise will likely lead to a significant increase in the frequency of closure of these gates and water control structures. For example, the Draft Post Authorization Change (PAC) Report and DRPEIS state that by the year 2085, the Houma Navigation Canal floodgate could be closed between 168 and 365 days per year, depending on the assumed rate of relative sea level rise. Such increased closure could significantly impact wetlands, water quality, fisheries, and navigation – and would in effect be a profound deviation from the design intent of this levee system. What is proposed as an open levee system would increasingly become a closed one, with potentially significant socioeconomic and environmental consequences.

The potential for increased frequency of gate and water control structure closure appears to be a major long-term environmental and socioeconomic risk of this proposed levee system. The Final Revised PEIS (FRPEIS) should ensure that the public and decision-makers are adequately apprised of this risk. The potential adverse environmental and socioeconomic impacts of increased structure closure should be assessed in the section on environmental consequences. Given the long-term and potentially significant ramifications of this issue, we would also recommend that it be highlighted in the summary sections of both documents. The FRPEIS should also provide more detail on ways this challenge might be addressed in the future.

EPA5

For example, the Draft PAC Report discusses the possibility of converting the proposed gates to locks and installing “additional pumps behind the levee system”. Does this suggest that portions of the proposed project could be converted to forced drainage? Finally, the USACE should consider discussing this issue in the FRPEIS section regarding “unresolved issues”, as there does not appear to be a clear path forward identified for addressing this concern and ensuring adequate hydrology and navigation in the long term.

EPA6

Reducing flood risk in the study area is certainly in the public interest. For such benefits to be realized, the public must fully understand the level of risk reduction afforded by the proposed project. It would be counterproductive if construction of the proposed project were to provide residents of the area with a false sense of security, thereby possibly affecting evacuation rates and/or decisions regarding how and where to build homes and businesses. As part of its ongoing work on this project, the USACE should endeavor to ensure that residents in the area understand the residual flood risk that would remain while the project is being constructed and when it is complete, and work to ensure that flood risk in the area does not increase as a result of further development in high risk areas.

EPA7

Following are detailed comments and recommendations pertaining to specific portions of the DRPEIS and Draft PAC Report. We thank the USACE for its ongoing coordination with EPA on this important matter and for its consideration of these recommendations. We remain committed to working with the USACE and other stakeholders to address these matters as expeditiously as possible.

#### **DETAILED COMMENTS:**

##### 3.7.2 Wetland Loss, page 3-12

This section states “Principal impacts to the marshes in the study area are due to storm surge and associated erosion and saltwater intrusion.” No mention is made to the many miles of oil and gas canals and navigation channels which allow for increased saltwater intrusion, while also disrupting natural surface hydrology throughout the study area. As currently worded, this section could suggest to the reader that the severe wetland loss in the study area is solely a natural phenomenon.

#### **Recommendation:**

This section should be revised to include all actions, past and present, that have led to coastal wetland loss. These actions include oil and gas extraction, pipeline canals, navigational projects, commercial and residential development, and global sea level rise.

EPA8

##### 3.8.2 Coastal Restoration Opportunities, page 3-13

The Draft PAC Report and DRPEIS state that the proposed levee system “would complement state and Federal coastal restoration projects” by providing protection against coastal erosion and the adverse effects of storm surge (Draft PAC Report, pages ix and 60; DRPEIS, Abstract-i). We recognize that aspects of this system may have the potential to provide

environmental benefits, particularly the proposed lock on the Houma Navigation Canal. As discussed above, however, the proposed levee system could also result in long-term negative environmental effects which could be counter to coastal restoration goals. In particular, relative sea level rise would likely result in an increase in the frequency of closure of the system's floodgates and water control structures, potentially reducing ingress and egress of aquatic organisms, increasing impoundment of enclosed wetlands, harming water quality, and interfering with navigation and commerce.

**Recommendation:**

Although the full extent of such negative impacts has not been adequately assessed, statements regarding the net indirect environmental effects of this levee system should at a minimum indicate that there is the potential for negative effects in the future – effects which might outweigh any potential near-term environmental benefits.

EPA9

**4. ALTERNATIVES**

4.3.7 Induced Flooding Impacts, page 4-20 and 6.14.1 Population and Housing, page 6-33

Section 4.3.7 discusses “constructible features” and “programmatic project features” of the overall levee system. The document is intended to provide sufficient detail such that no further NEPA documentation is needed for the constructible features, whereas the programmatic project features would require further NEPA analysis at some later date. Hydrologic modeling indicates that the proposed levee system could potentially increase storm surge flooding in areas outside of the levee. For this reason, the DRPEIS, Draft PAC Report, and the Real Estate Plan discuss a preliminary nonstructural buyout plan for approximately 1,000 structures and 2,500 people potentially affected by induced surge.

This preliminary buyout plan does not appear to be a constructible feature – meaning that further analysis would be needed before it could be implemented. In addition, the Real Estate Plan states on page 20 “Relocations will be accomplished in phases along with project construction...” and calculates 15 year time frame for property acquisition. This raises the question as to whether implementation of the constructible levee features could increase flood risks outside the levee system prior to implementation of a buyout program or some other non-structural response. If portions of the levee are built prior to addressing the risks associated with induced surge, then people and properties, including EJ communities, outside of the levee system are potentially exposed to increased flood risk, with no certainty as to whether or when a non-structural risk reduction program would actually be implemented. This has the potential to create a direct disproportionate impact on EJ communities.

**Recommendation:**

EPA recommends the USACE assess whether implementation of the constructible features would result in increased surge risk to properties and people outside the proposed levee system. If so, we recommend that the FRPEIS include as constructible features those non-

EPA10

structural measures needed to address such increased risk and assess this disproportionate impact in the EJ analysis.

## 5. AFFECTED ENVIROMENT

### 5.2.9 Air Quality, page 5-38

This section discusses the nonattainment/maintenance history of Lafourche Parish for both the 1-hour ozone and 8-hour ozone National Ambient Air Quality Standards (NAAQS). It is correctly noted that Lafourche Parish has an EPA-approved 110(a)(1) maintenance plan for ozone.

#### **Recommendation:**

Please include a discussion to clarify that 110(a)(1) maintenance areas are not subject to the air quality conformity requirements of Clean Air Act Section 176(c). Also include the distinction that EPA's March 24, 2008 approval of the Lafourche Parish 110(a)(1) maintenance plan pertains to the 1997 8-hour ozone NAAQS. EPA completed the designations process under the 2008 8-hour ozone NAAQS on April 30, 2012 (77 FR 30088), and Lafourche Parish was designated as unclassifiable/attainment for this standard.

EPA11

### 5.2.13 Socioeconomics

The location of the proposed project occurs in EPA-identified EJ areas, including Isle de Jean Charles. The EJ assessment for the DRPEIS is inadequate, provides little detail, and has no in-depth analysis. The DRPEIS fails to identify with any specificity, the communities that are likely to be impacted or their characteristics, and it fails to identify particular minorities or ethnic groups impacted.

#### **Recommendation:**

The FRPEIS should include a detailed socioeconomic analysis for potential EJ impacts comparing the demographics and potential environmental impact of those inside the levees with those who are outside the system. In addition, the USACE should consider the potential impacts of increased storm surge and flooding due to the timing of levee construction in the EJ analysis.

EPA12

#### *Community Cohesion, page 5-47*

The discussion of "community cohesion" is inadequate in that it fails to identify, discuss, or address unique community attributes associated with tribes, such as language, culture, religion, tradition, governance, and other necessary attributes for continuing survival of a tribe or band of Indians, some of which are known to reside in this area (for example the Isle de Jean Charles band of Biloxi-Chitimacha, Point au Chien Indian Tribe, and United Houma Nation). If these attributes are not identified, then it is not possible to consider direct, indirect, or cumulative impacts of the alternatives on these communities. It is well known that intrusion by non-natives into traditional communities can lead to erosion of tradition and loss of language. If a traditional

community is physically relocated, impacts will be even more severe. If a traditional community is split up, the culture, language, and traditions are most likely going to be irretrievably lost.

**Recommendation:**

The USACE should develop additional alternatives for residents that are outside the proposed levee system (e.g., Isle de Jean Charles). This should include the buyouts as stated in the DRPEIS, but should also include non buyout alternatives like ring levees, house elevation, etc. Alternatives should recognize and protect the uniqueness of the Isle de Jean Charles community and maximize community cohesion by developing alternatives that have a concerted effort to protect, buyout, or move Isle de Jean Charles residents as an intact community. USACE should also determine whether the Point au Chien Indian Tribe and United Houma Nation would experience similar potential impacts.

EPA13

*Environmental Justice, page 5-48*

Page 5-48 states “For purposes of this analysis, all census tracts within the project footprint are defined as the EJ study area. Lafourche Parish and Terrebonne Parish are considered as reference communities of comparison.” It is unclear why U.S. Census Bureau Census Tracts were used as base assessment units instead of smaller geographic units such as Census Block Groups. There are fourteen Census Tracts that were the basis of the EJ assessment. Of these fourteen, five were considered low income by the USACE, approximately 35.7% of the tracts. The USACE states that the tracts considered low income are not within the path of levee construction, are sparsely populated, or are similarly affected and therefore, there are no potential EJ impacts. EPA is concerned that the geographic unit selected for analysis does not accurately reflect the demographics of the area, and in particular the poverty level. There are 142 Block Groups within the two parishes identified for this project. Of those 142 Block Groups, 119 Block Groups, or 83.8%, meet the definition of low income/poverty as stated in the DRPEIS. Additionally, 39.4% of the Block Groups in the project area fall within the census definition of “extremely low income,” that is, Block Groups that are greater than 40% low income.

**Recommendation:**

The USACE should use Census Block Groups or a geographic unit smaller than Tracts, to perform socioeconomic and EJ assessments in order to obtain a more accurate estimate of the demographics of the area and thus a more accurate depiction of the potential impacts of the proposed project. The USACE should discuss its rationale for the criteria used (e.g., 50% minority, etc.). A more in-depth analysis is needed in order to describe the minority make-up of the communities (e.g. Asian, Native American, etc.) and analyze the potential impacts of the proposed project that may affect each ethnic group differently.

EPA14

*Environmental Justice, page 5-48*

Page 5-48 also states “All residents, irrespective of minority status or income level, are expected to be similarly impacted by construction activities.” EPA strongly disagrees with this

statement since the USACE did not compare residents inside the proposed levee system with residents outside the levee system and how they may be potentially impacted by the timing of construction and the lack of details concerning the buyout.

**Recommendation:**

The USACE should perform an EJ analysis characterizing and comparing these two populations. The DRPEIS should provide a similar level of detail on the buyout activities as it does for the engineering and economic aspects of levee construction.

EPA15

*Tribal Issues, page 5-49*

It is stated on page 5-49 “Additionally, approximately 230 members of the state recognized Biloxi-Chitimacha tribe are located on Isle de Jean Charles, which is outside of the southern boundary of the project alignment in Terrebonne Parish. While this raises a potential EJ issue, with respect to alternative protection alignments, neither of the alternatives to the No Action Alternative authorized for study under the PAC represents a separate alignment that includes this community. Providing hurricane risk reduction for these residents has been determined in previous Corps of Engineers analyses to be cost prohibitive.” The DRPEIS does not reflect any attempt by the USACE to contact the Biloxi-Chitimacha tribe as an interested stakeholder. This Tribe has lived in this area for over 130 years and they have lost most of their land through a history of war, disease, displacement and poverty, erosion, and past governmental decisions. They are very much in danger of losing their “community cohesion,” including their language, culture, and traditions. EPA is concerned that this “potential EJ issue” has not been analyzed in detail as several of our comments suggest. In addition, it is unclear whether the USACE contacted the federally-recognized Chitimacha Tribe of Louisiana regarding cultural resources in southern Louisiana or whether the USACE contacted them under E.O. 13175 for government-to-government consultation.

The USACE does not describe when it determined that hurricane risk reduction for the residents of Isle de Jean Charles was cost prohibitive and whether options other than buyouts were developed or considered.

**Recommendation:**

The USACE should directly contact the Chief of the Isle de Jean Charles Band of the Biloxi-Chitimacha-Choctaw Indians, the Point au Chien Indian Tribe, and United Houma Nation, and appropriate residents of these communities, so they can have meaningful participation in the NEPA and buyout processes. Given the remote and rural nature of these locations, solely advertising a public meeting in the Houma newspaper is inadequate. A more concerted effort to contact individuals in these communities is necessary because people may not speak English, receive local newspapers, and/or may have a fear of governmental authorities.

EPA16

## 6. ENVIRONMENTAL CONSEQUENCES

### General Comments

EPA believes that a majority of the resources were not properly evaluated for their environmental consequences. In most cases, impacts are stated in generalities and only the magnitude (the amount of change) is specified. However, the extent (how vast is the change), direction (how dynamic is the change), duration (how lasting is the change), and speed (how rapid is the change) of the impact should be disclosed as well. Otherwise stated, the Environmental Consequences chapter should discuss and analyze how and why the proposed project affects the overall health of the resources within the study area.

EPA17

### Indirect Impacts

EPA believes that the indirect impacts analysis has not fully disclosed the entirety of indirect impacts. The following are examples of how the indirect impacts analysis should be strengthened.

EPA18

The Draft PAC Report asserts that the proposed environmental control structures in the levee system “mitigate for indirect impacts of the levee system by matching and/or enhancing existing drainage patterns during non-storm conditions” (Draft PAC Report, page ii). This statement should be amended to account for the potential long-term indirect impacts associated with the projected increase in the closure frequency of the system’s gates and water control structures.

EPA19

The Draft PAC Report states on page 83 that “The Habitat Evaluation Team determined that no indirect impacts to wetlands would result from the project.” A similar statement is made on page 6-62 of the DRPEIS. EPA takes issue with this assertion. While potential near-term hydrologic effects of the levee system could theoretically be negligible, the USACE’s own analysis regarding the frequency of gate and water control structure closure in the future strongly suggests that the project could result in significant long-term adverse impacts to wetlands, water quality, and fisheries (along with navigation).

EPA20

The last sentence on page 19 of Appendix C states that “...the project would not induce significant changes on the hydrology of the estuary.” It is not clear how this could be consistent with the USACE’s projections regarding increased closure frequency of gates and water control structures in the long-term. While this section does discuss the possibility that the sponsor might wish to modify the closure criteria to address non-storm water stages, there is no discussion of the potentially significant changes in circulation that could occur with the increased closure frequency projected using the current closure criteria. As with other portions of the DRPEIS, EPA recommends the USACE describe the potential indirect impacts that could occur due to increased closure frequency of gates and water control structures due to relative sea level rise, with the focus in this section being on estuarine flow and current patterns.

EPA21

The discussion of cumulative effects on the aquatic ecosystem on page 37 of Appendix C states that “No long-term, negative cumulative impacts are anticipated.” Here again, it is unclear

EPA22

how the projections regarding future frequency of gate and structure closure could support such a conclusion.

**Recommendation:**

The FRPEIS should include a comprehensive indirect impacts analysis and fully disclose all effects caused by the action that occur later in time or are farther removed in distance.

EPA23

Cumulative Impacts

Due to the expansive nature of this project and the environmental sensitivity of the study area, EPA believes a more comprehensive and wide-ranging cumulative impacts analysis should be completed. The purpose of a cumulative impacts analysis is to ensure federal decisions consider the full range of consequences of actions. Without a thorough cumulative impacts analysis, the full range of environmental consequences is impossible to quantify. The study area is an ecologically sensitive area that is rapidly degrading. Past actions such as oil and gas extraction, including pipeline canals, navigational projects, federal and local levee construction, and industrial, commercial, and residential development, along with storm surge, have led to the degradation of coastal wetlands. These same actions would continue the alteration of the natural hydrology, leading to additional coastal wetland loss. Future projects, such as the Houma Navigation Canal project, Coastal Impact Assistance Program projects, Louisiana Coastal Area Plan projects, and Coastal Wetlands Planning, Protection, and Restoration Act projects, along with the actions listed above, should be analyzed for their potential impacts to coastal Louisiana. In addition, the global issue of sea level rise should be incorporated into this discussion.

**Recommendation:**

The FRPEIS should include a comprehensive cumulative impacts analysis by establishing spatial and temporal boundaries for significant resources and including a list and description of past, present, and reasonably foreseeable future projects. An attempt was made to establish boundaries and list projects; however, much more detail is required. The analysis should include the overall impacts to the environment that can be expected if the individual projects and their impacts, including the proposed project, are allowed to accumulate.

EPA24

We refer you to the Council on Environmental Quality's "Considering Cumulative Effects Under the National Environmental Policy Act" and EPA's "Consideration Of Cumulative Impacts In EPA Review of NEPA Documents" for assistance with writing a more comprehensive cumulative impacts analysis.

6.2 Coastal Vegetation and Wetlands

Table 6-1 of the DRPEIS indicates that, assuming intermediate sea level rise, a total of 670 and 3,443 acres of wetlands would be directly impacted by the constructible and programmatic features, respectively. In the same table, there appears to be an error in the calculation of total wetland impacts, which is currently listed at 2,993 acres, again assuming intermediate sea level rise. These direct wetland impact numbers are inconsistent with those

provided in Appendix C, which on pages 4 and 5 indicates that the constructible features would result in direct impacts to 721 acres of marsh. Page 35 of the same appendix contains a table showing 4,104 acres of wetland impacts from the programmatic features. These numbers should be reconciled in the FRPEIS.

#### *Borrow Sources*

According to Appendix C of the DRPEIS, borrow material for the proposed project would come from a combination of adjacent and offsite borrow locations. The appendix states that offsite borrow sources would not come from wetland areas, but provides no such commitment with respect to adjacent borrow sources. Indeed, it appears from the figures in Appendix G that some portion of the borrow material for the constructible and programmatic levee features would come from adjacent wetlands.

In order to comply with the Clean Water Act Section 404(b)(1) Guidelines, the USACE would need to demonstrate that there is no less environmentally damaging practicable alternative to using wetlands as a source of borrow material. Page 38 of Appendix C indicates that no less environmentally damaging practicable alternatives to the proposed discharges could be identified. However, there does not appear to be any information to adequately substantiate this claim with respect to the analysis of potentially less environmentally damaging borrow sites. The FRPEIS should include information demonstrating that there are no less environmentally damaging borrow sources for the constructible levee reaches. This same analysis of borrow site alternatives would also be needed for subsequent environmental reviews of the programmatic features. On this point, we would note that the avoidance of jurisdictional wetlands for borrow material is one of the significant environmental accomplishments of the expedited NEPA process for the Greater New Orleans Hurricane and Storm Damage Risk Reduction System. We would encourage the USACE to work to repeat this important precedent.

EPA26

#### 6.10.2 Air Quality - Action Alternatives, page 6-26

This section states that direct project impacts to ambient air quality will be temporary and localized, primarily due to construction equipment emissions and airborne particulate matter/fugitive dust.

#### **Recommendation:**

In addition to all applicable local, state, or federal requirements, the following mitigation measures should be included in a construction emissions mitigation plan or similar document in order to reduce air quality impacts associated with emissions of NO<sub>x</sub>, CO, PM, SO<sub>2</sub>, and other pollutants from construction-related activities:

EPA27

#### **Fugitive Dust Source Controls:**

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate at active and inactive sites during workdays, weekends, holidays, and windy conditions;

- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
- Prevent spillage when hauling material and operating non-earthmoving equipment and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

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

EPA28

Administrative Controls:

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

EPA29

6.14.8 Environmental Justice, page 6-41

Page 6-41 states "we have determined that there is no disproportionate impact to a minority or low income community."

EPA30

EPA strongly disagrees with this statement. There is not adequate information in the DRPEIS to determine how the USACE came to the conclusion that there are no potentially disproportionate impacts to minority and/or low income communities. When one segment of the population benefits from the proposed action, but another absorbs the negative impacts of the action (i.e., increased storm surge and flooding as levee segments are constructed) in addition to historical actions/events (i.e. an already overburdened community), it can create a potentially disproportionate EJ impact. The USACE did not perform an adequate EJ assessment 1) comparing the potential impacts of those inside and outside the levees and 2) comparing the

timing of construction with potential increased storm surge and flooding impacts to minority and/or low income communities. The DRPEIS does not fully describe the indirect and cumulative impacts on EJ issues. These communities have experienced negative impacts due to the BP oil spill, floods, hurricanes, and loss of subsistence fishing (including crabs, oysters, shrimp, etc), gathering, and hunting opportunities.

**Recommendation:**

In addition to our comments regarding obtaining a more accurate estimate of the demographics of the area, the USACE should consider the potential EJ impacts of the timing of levee construction on minority and/or low income populations that may be directly, indirectly, or cumulatively impacted by the proposed action. In order to avoid disproportionate impacts to the Isle de Jean Charles tribal community, any buyout would need to relocate the community intact in an appropriate location with access to subsistence resources and with other attributes agreeable to the tribe. The tribal leader should be contacted immediately to begin appropriate discussions. Although not mentioned in the DRPEIS, USACE should also determine whether the Point au Chien Indian Tribe and United Houma Nation would experience similar potential impacts. As discussed in our Cumulative Impacts comments on page 9, the FRPEIS should include a more thorough cumulative impacts analysis and include those impacts on minority and/low income populations.

6.15 Cultural Resources

The DRPEIS does not provide enough information to determine whether the USACE is in full compliance with National Historic Preservation Act (NHPA), E.O. 12898, and others.

EPA31

**Recommendation:**

The USACE should initiate consultation with Tribes regarding NHPA and initiate formal consultation with any federally-recognized Tribes under E.O. 13175 before finalizing the EIS.

6.19 Mitigation

Table 4-1 of the Draft PAC Report includes a reference to marsh impacts from the levee which are "self mitigated". It is not clear what this means, but it appears to be a reference to the idea that indirect hydrologic effects of the proposed levee project could provide wetland benefits that compensate for wetland impacts due to levee construction. EPA does not support such an assertion, given the uncertainties and challenges of accurately assessing hydrologic impacts from the levee, as well as the potential for long-term adverse impacts due to changes in the operation of the levee system in response to relative sea level rise.

EPA32

Table 4-4 states that more than 3,000 acres of wetlands would be "displaced" by the preferred alternative. This wording suggests that fully compensating for wetland impacts is a simple endeavor with guaranteed success. We would suggest using more accurate wording such as "permanently eliminated" or "destroyed" instead of "displaced", followed by the caveat that the USACE will seek to provide full compensatory mitigation to offset such impacts.

EPA33

Page 6-71 of the DRPEIS states that “In most cases, the establishment of mitigation sites would be done at the same time as construction of the levees and other project features.” This statement is somewhat vague and may fall short of an explicit commitment to provide mitigation in advance of or concurrent with project implementation. For example, what is meant by “establishment of mitigation sites”? And what is meant by “In most cases...”? This statement should be re-written to include a commitment to provide mitigation in advance of or concurrent with project implementation, to the maximum extent practicable. This would ensure consistency with the standard for mitigation timing set forth in the April 10, 2008, Department of Defense and EPA regulations regarding compensatory mitigation for losses of aquatic resources. (According to Section 2036 of the Water Resources Act of 2007, the Secretary shall ensure that the mitigation plan for each water resource project complies with the mitigation standards and policies established pursuant to the regulatory programs administered by the Secretary.)

EPA34

Mitigation efforts should be developed and described that avoid potential disproportionate impacts of the proposed action that could result in the loss of community cohesion in all of the potentially affected communities south of the proposed levee system, in particular, the tribal community of Biloxi-Chitimacha on Isle de Jean Charles.

EPA35

## 8.0 PUBLIC INVOLVEMENT

### 8.1 Scoping and Interagency Coordination

It appears that the latest project scoping meetings took place in and around May of 1993 in Houma, Louisiana. There is not enough information to determine whether the USACE completed any more recent scoping and other public meetings besides the meeting held in January 2013, and whether communities, tribes, and other stakeholders directly regarding the project were contacted. EPA is concerned that the USACE did not obtain the views and ideas of affected residents and general public when the last record of communication and public involvement occurred almost 20 years ago.

#### **Recommendation:**

The FRPEIS should provide documentation of recent scoping and public involvement events and actions. If scoping and public involvement did not take place for this revised action, the USACE should directly and immediately engage all interested, concerned, and affected stakeholders, including low income, minority, and tribal populations, including the Biloxi-Chitimacha tribal community of Isle de Jean Charles, Point au Chien Indian Tribe, and United Houma Nation, before finalizing the EIS.

EPA36

EPA emphasizes that there is a need for continued interagency coordination on the constructible and programmatic features of the proposed project to ensure that wetland impacts are avoided and minimized in the subsequent NEPA processes. This is particularly the case for those levee reaches that would enclose wetland areas that are currently un-impounded and new portions of the overall levee alignment (e.g., the proposed Lockport to Larose Ridge levee extension).

**Dayan, Nathan S MVN**

---

**From:** Brian Marcks [Brian.Marcks@LA.GOV]  
**Sent:** Tuesday, February 19, 2013 11:05 AM  
**To:** Dayan, Nathan S MVN  
**Cc:** Jeff Harris  
**Subject:** FW: Emailing: C20130001  
**Attachments:** C20130001.pdf; C20130001.doc

Nathan,

Attached are the LDWF comments on the RPEIS for the Morganza to the Gulf project that will need to be resolved before we can issue a Consistency decision and concurrence letter on the project. Since our 60 day review period for this project ends March 1, I anticipate we will shortly send you a 15-day time extension letter to March 15, which we are allowed to do by law. If there are issues that cannot be resolved within that period, we will need to mutually agree to say a further 30 time extension or whatever, to finish the resolution of environmental issues in order for us to render a consistency decision. If that is not possible, you may have to withdraw the project and resubmit it at a later time when these issues are resolved. Thanks for your consideration in this matter.

LDNR1?

Brian Marcks

-----Original Message-----

**From:** Butler, Dave [<mailto:dbutler@wlf.la.gov>]  
**Sent:** Tuesday, February 19, 2013 10:37 AM  
**To:** Brian Marcks  
**Cc:** [gutierrez.raul@epa.gov](mailto:gutierrez.raul@epa.gov); 'patrick.williams@noaa.gov'; 'Patti Holland'  
**Subject:** Emailing: C20130001

Brian,

Here are LDWF comments regarding C20130001.

Thanks,

Dave Butler  
Permits Coordinator  
Louisiana Department of Wildlife and Fisheries P.O. Box 98000 Baton Rouge, LA 70898-9000  
Office: 225-763-3595  
Fax: 225-765-2625

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**R. Dupre**

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**Subject:** Draft MTG PAC Report

Elaine,

I spent much of this weekend reviewing the Draft MTG PAC Report. You and your team have done a great job in putting together a comprehensive flood control plan that now would protect over 98% of the population of Terrebonne and the majority of Lafourche. I know that you have spent 4 years of your life concentrating on this project and I thank you on behalf of the citizens of Terrebonne and Lafourche Parishes. Considering the massive cost and size of such a project (\$12.9 Billion, 98 miles of levees, the HNC Lock Complex, 22 navigable floodgates, 23 environmental water control structures, and 9 road gates), I am convinced more than ever that TLCD and the State of LA have made the correct decision in moving forward along a parallel path to the Corps in building the components of this system that we can afford now with limited non Federal funds. Nevertheless, I fully understand that we will eventually need some kind of Federal system for Terrebonne and Lafourche Parishes for our long term survival. I just hope and pray that we will not have to suffer a major strike from a hurricane to get Congress' attention to authorize and fund such a project.

I have a few comments, suggestions, and questions on the draft report:

- **Overall Costs (pg. xi of summary)**—the estimated costs in 2014 dollars is \$10.544 Billion. But, the “fully funded” total is approx. \$12.978 Billion. What makes the \$2.443 Billion difference? Is it the inflation expected between 2014 and 2035 (the first year we get a closed Federal System)? Does it also included the local sponsor's 50 year O&M cost? TLCD1
- **Funding and Cost Share (Sec 1.7—pg. 14)**—states that expenditures for the completed feasibility study (1995—2002) were \$9.32 Million, which was cost shared on a 50-50 Federal—Non Federal Basis. About \$61.650 Million has been spent on PED on a 75-25 Federal—Non Federal basis. Most of this \$61 million was spent of E&D and geotechnical investigations since 2003. The Non-Federal partners will have to pay the Corps 10% of this \$61 Million (\$6.165 Million) because “WRDA stipulates that the non-Federal costs of design is the same percentage as the non-Federal share for construction costs, which in this case is 35%” The draft report states that the remaining 10% has to be paid to the Corps in the first year after the PPA is executed. When will the PPA be executed, before or after re-authorization from Congress? If the non-Federal partners take on the E&D costs of any project feature, I think the non-Federal partners should get credit for these efforts. In other words, rather than paying the Corps the \$6.165 million we would spend our non-Federal funds on E&D of a MTG project, like the Lock Complex. TLCD2
- **Non-Federal Sponsor Work Independent of the Federal Authority (Sec 1.8--pg. 15)**--In the original 2003 Chief's report, the non-Federal sponsor (State DOTD and TLCD) had TLCD3

agreed to build 21.5 of the original 72 miles of levee and 2 floodgates (Bayou Pointe-aux-Chenes and Bush Canal) with the 3 mile Reach J-1 being separately authorized by Congress in 2004 at a \$4 million cost. The original 21.5 miles in the Chief's report included Reaches H-2, H-3, I, J-2, J-1, and J-3 covering from the location of the MTG Little Caillou Floodgate eastward to the parish line in Pointe-aux-Chenes. The first levee lift of all of this 21.5 miles of the alignment has either been constructed or will be under construction by 2015. The 3 mile first lift of Reach J-1 was built by TLCD (and CPRA) in 2006-2008 for a total cost of \$18 million. Will the re-authorization of MTG under the PAC report account for the difference in costs of Reach J-1 or will we need special language to account for this? With the continued support from the State and the fact that TLCD has recently passed a second local sales tax to help build the MTG project, it is the Non-Federal sponsor's intent to build much of the first lift of this system from the Upper part of Reach B on the west side of Bayou Dularge to the east side of Reach L in Cut Off, LA in Lafourche Parish. We also intend on building flood protection improvements along the MTG Western Tie-in along Bayou Black in western Terrebonne. We understand that Congress would have to enact express authority for the non-Federal sponsors to get "look back credit" for the advance work undertaken by the non-Federal sponsors. We have and will continue asking our Federal Congressional Delegation to include such language in any future WRDA bill.

- **Analysis Years (Sec 2.1--pg. 17)**--The 50 year "life" of the Federal MTG system would be between 2035-2085. The soonest time we could expect a completed 1% AEP is 2035, however we should be able to have some benefits of a closed system by 2024. Does the "closed system" mean that the entire 98 miles of levee has to have a first lift? Has the Corps included benefits of a partially closed system such as connecting some of the existing ridges. For example, it seems that having a partially closed system between Bayou Dularge to Bayou Lafourche (Reaches E-L) would provide some benefit to the project area.
- **Location of Structures Outside of Risk Reduction System (Figure 4-1--pg. 35)**--The area of lower Chauvin/Cocodrie is mislabeled as Bayou Grand Caillou/Dulac. I suggest a brief summary of the 4 areas outside of the MTG alignment in Terrebonne would be beneficial. They are as follows (from east to west):
  1. **Isle de Jean Charles**--An isolated Native American community that has lost a significant percentage of its population in the past 10 years. There are currently about 25 families using the "Island" as their primary residence. The majority of the remaining structures are weekend camps.
  2. **Lower Chauvin/Cocodrie**--The most southern part of LA Hwy 56 (4 1/2 miles) is outside the MTG alignment. This area includes a University Marine Research Facility (LUNCOM), several fishing marinas, commercial fishing docks and facilities, oil and gas facilities (docks) and many fishing camps. There are very few local residents who still consider this area their primary residence.

TLCD4

TLCD5

3. **The "Four Point" area in lower Bayou Grand Caillou/Dulac**--This only area in the Grand Caillou area that is outside of the MTG Alignment is the fishing camps and small marina at the end of Four Point Road. I do not think anyone uses this area as a primary residence.
4. **Lower Bayou Dularge**--This is the most populated area not included in the MTG alignment. This area has many local commercial fishermen along with Docks and one marina. Several years ago, either during the Reconnaissance or Feasibility Study Phase, the Corps excluded the lower Dularge area from the MTG alignment. That is why there is currently no Reach C or D along the alignment. These reaches were in the originally in the study are but were excluded. TLCD currently maintains about 15 miles of local levees in lower Dularge with a 56 ft. wide barge floodgate at the end of Bayou Dularge. TLCD intends on protecting the entire Dularge community as much as possible.

- **Preliminary Evaluation of Alternative Levee Alignments (Sec 4.3--pgs. 36-40)**--In 2008, the N.O. Dist. Corps evaluated 4 alternative alignments before moving forward with the PAC Report. One of these alternatives was (#3) suggested by NGO's and it is referred to as the "Multiple Lines of Defense Strategy". After this analysis, it was determined that the authorized alignment would be the most cost effective and least damaging to the wetlands. I suggest that the Final PAC report should refer back to the Memo from Gen Walsh to Col Lee in Nov, 2008 directing the Alignment to follow the authorized alignment. A copy of this Memo should be made part of the Report Appendices.
- **Modifications to the Authorized Alignment (Sec 5.1--pgs. 41--50)**--This section of the draft report has a very good and detailed explanation of the process used for the 5 modifications that have been made along the authorized alignment. I can appreciate the effort this has taken, having participated and witnessed this process for 2 of the 5 modifications.
- **Non-Federal Responsibilities (Sec 8.3(b)--pg. 87)**--States that the Non-Federal sponsor shall not use funds from other Federal Programs as part of the non-Federal match. Any funds expended from other Federal sources, such as FEMA or CDBG, will not be counted as the non-Federal 35% match. One future source of funding should be clarified as to whether OCS funds can be used toward the non-Federal 35% requirement. Considering Congress granted this revenue to the 5 gulf states in 2006, I assume it would be eligible.
- **Non-Federal Responsibilities (Sec 8.3(s)--pg. 89)**--This paragraph deals with "betterments" of the Federal system. This states that the non-Federal sponsor has to "Pay all costs due to any project betterment" to the Fed Government. My question is that if the non-Federal sponsors are paying regardless, I assume we do not have to use the Corps for project betterments. The best example of a project betterment for the MTG alignment would be the lower Dularge area discussed

TLCD6

TLCD7

TLCD8

TLCD9

above. I think we, as non-Federal sponsors, would want to handle all these efforts on our own.

**From:** [Mitch J. Marmande](#)  
**To:** [Stark, Elaine M.MVII](#)  
**Cc:** [Reggie Dupre \(rdupre@tlcd.org\)](#); [James McMenis \(James.McMenis@la.gov\)](#); [Jack Moore \(jmoore@tmsd.org\)](#)  
[\(jmoore@tmsd.org\)](#)  
**Subject:** Program Management PAC Report Comments  
**Date:** Wednesday, January 30, 2013 3:28:22 PM  
**Attachments:** [PAC\\_Report\\_Comments.docx](#)

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Elaine,

Thanks for meeting with us on Monday. Let me know if you have any questions or comments.

Mitch

Mitchell J. Marmande, P.E., P.L.S.

Senior Project Manager

Description: M:\MKTG\\_SECURE\Logos\Century of Solutions\TBAK11-02 100th Annv\_CENTURY1\_no llc.jpg

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**PAC Report Comments**

**TLCD Program Manager**

**General Comments/Questions**

1. How are deviations from the Report accepted or considered in PED phase? Will J-1 be approved as work in kind upon authorization or signing of PPA? TLCD-PM-1
2. In the timeline presented on page 11, I think it would be prudent to show the FEMA claim events or tropical events that have occurred over the existing timeline. Table 3-2 in RPEIS depicts this information but it could be shown in this timeline as well. TLCD-PM-2
3. Section 1.5 How can the standards applied in HSDRRS be adapted to fit MTG? TLCD-PM-3
4. Section 1.7 Instead of cash payment can we put money towards design or construction? This comment refers to bringing the 75/25 Report cost share to the 65/35 construction cost share. TLCD-PM-4
5. Section 1.9 TLCD does not control or maintain 92 miles of levees. This may be a combination of TPCG local drainage levees and TLCD levees. TLCD-PM-5
6. Section 2.7 Not enough distinction describing local levees that are built as a base of MTG and parish drainage levees. TLCD-PM-6
7. Section 2.8 Overtopping criteria could be better adapted to account for the interior reservoir capacity of MTG thus reducing footprints. This refers back to developing MTG standards adapted from HSDRRS standards. TLCD-PM-7
8. Section 4.2 Information is not detailed enough and section 5.5.1 seems to be omitted from the report TLCD-PM-8
9. 6.2 While I know geotechnical considerations are very conservative in this report, as they should be, recent construction projects have yielded better results. Especially along the natural bayou ridges and consolidated portions of the alignment. In light of these conservative estimates and the massive quantities associated with this project, actual conditions could change the borrow needs greatly. This could change the estimated project costs by orders of magnitude. Likewise, changes in criteria could also reduce quantities, settlement, and cost greatly. TLCD-PM-9
10. Section 6.4 Should local mitigation efforts be mentioned and is it creditable work? TLCD-PM-10
11. Section 6.5.1 The buyout assumption stated here assume complete structure buyout when there is existence of elevated structures which will not be bought out or be bought out at a reduced rate. As stated this is the most conservative scenario and the actual costs realized could be reduced from estimates. TLCD-PM-11
12. Section 6.6 Can we have a detailed breakdown of O &M costs and assumptions to be understand the local obligations for the project? TLCD-PM-12
13. It is stated that the HNC lock complex is a part of other projects or studies. Is MTG given credit for fully bearing the costs of this project? TLCD-PM-13

14. The incorporation of relative sea level rise add material, mitigation to the MTG project. Should the estimated levels be lower levees may not need to be lifted to the final design elevations. Structures would however be designed at these conservative heights. The intermediate seal level assumption is chosen for MTG but it seems that low level assumption would be acceptable for the same reason the intermediate level was chosen. Please provide more detail. As stated this could change the overall costs of the project by 99 million dollars.
15. Section 7.3.2 Will environmental structures be built to final design elevations and what sequence will they be constructed as they relate to the reaches they are contained in.
16. Average haul distances can be greatly reduced (25 miles one way) thus changing the construction costs for these projects greatly.
17. Non Federal Responsibilities in this report are listed in several pages in this report while federal obligations are listed only in several sentences. This would not seem to reflect the 65/35 federal/non federal cost share.
18. Please clarify the differences between fully funded MTG and FY14 costs.

TLCD-PM-14

TLCD-PM-15

TLCD-PM-16

TLCD-PM-17

TLCD-PM-18

**RPEIS Comments/Questions**

1. Section 3.7.2 Would the implementation of MTG reduce the amount of converted open water areas?
2. Lake Boudreaux Freshwater Introduction does not seem to appear in the list of CWPPRA Projects
3. Section 5.1 Would it be pertinent to list the things that have greatly affected the environmental setting of this area such as closure of Bayou Lafourche in 1903, the construction of channels, canals, roads and oilfield activity? These are mentioned in the Section 5.2.10 and also in Section 6.2 but I think it is important to note that all of these things make up the environmental setting in addition to the fact that the basin is a freshwater/sediment starved system.

TLCD-PM-19

TLCD-PM-20

TLCD-PM-21

## Public Comments

**From:** [Bill Bender](#)  
**To:** [Morganza Comments](#)  
**Subject:** Floating Levee Idea  
**Date:** Monday, January 07, 2013 9:34:45 AM  
**Attachments:** [Drawing 1 Cross Section.pdf](#)  
[Drawing 2 Overview.pdf](#)  
[Drawing 3 Cross Section Pyramid.pdf](#)  
[Drawing 4 Cross Section Keel.pdf](#)  
[Drawing 5 Idea on Keel.pdf](#)  
[Drawing 6 Idea on Keel.pdf](#)  
[Provisional Patent.pdf](#)

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A few years back I got a nutty idea of how to protect New Orleans with a "Floating Levee". I received a provisional patent, but couldn't get the funding to get a regular patent. Maybe this idea could work for you. I can't see how it would cost \$12.9 billion. By the way,

BEND1

I AM NOT AN ENGINEER.

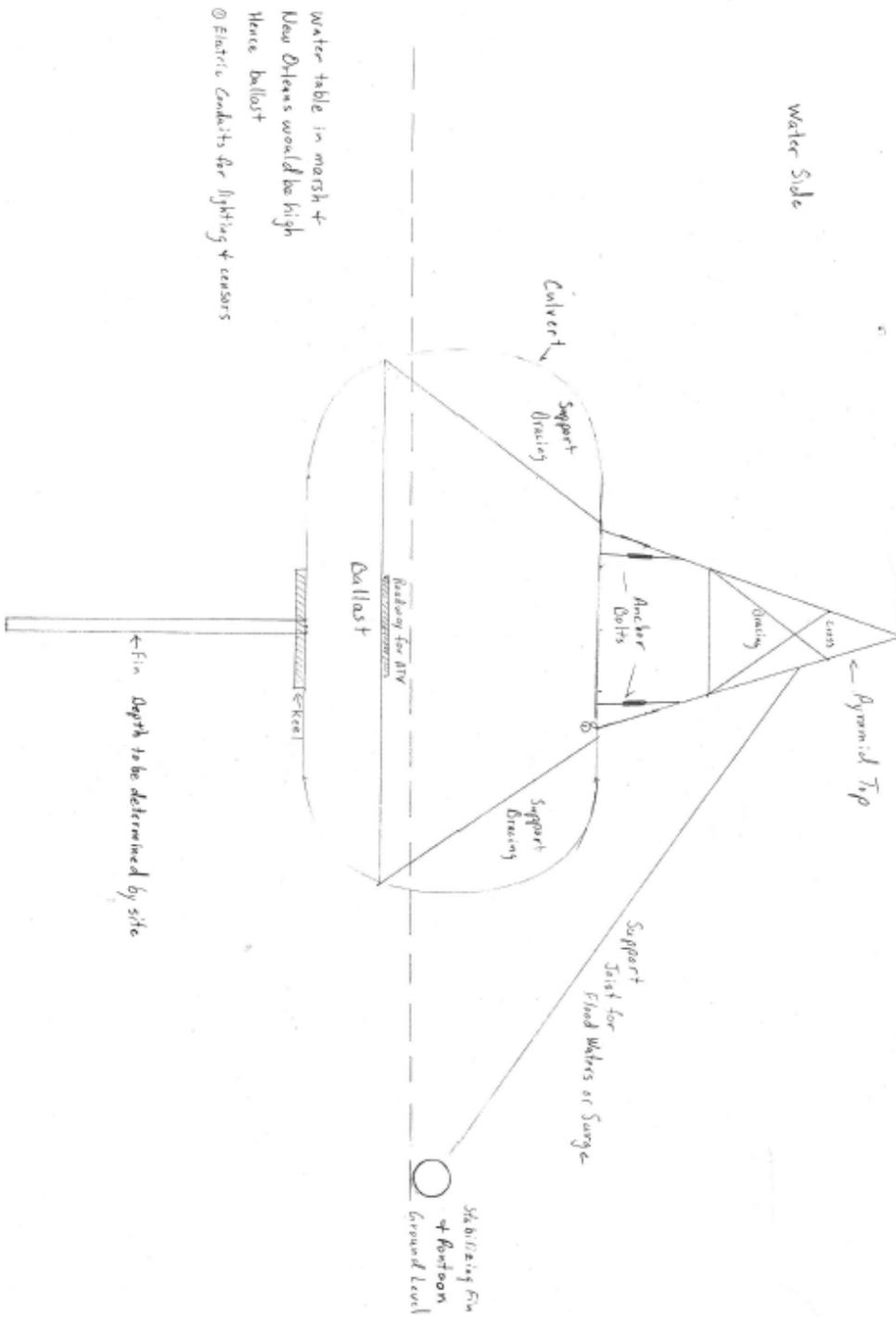
With your \$70 million feasibility study already done, I doubt you can change in the middle of the stream, but I've always thought it was a good and cheaper idea.

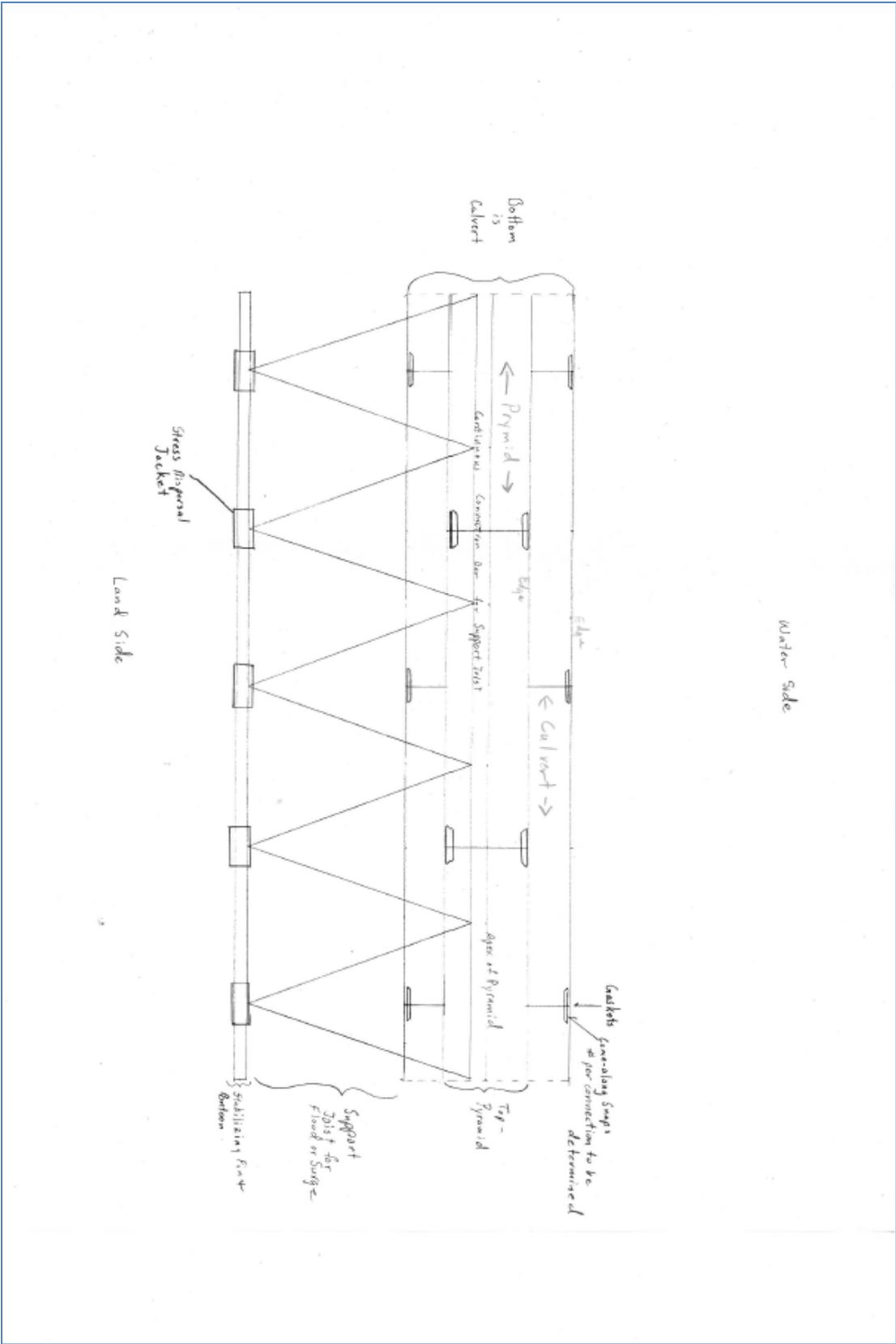
William R. Bender  
Accountant

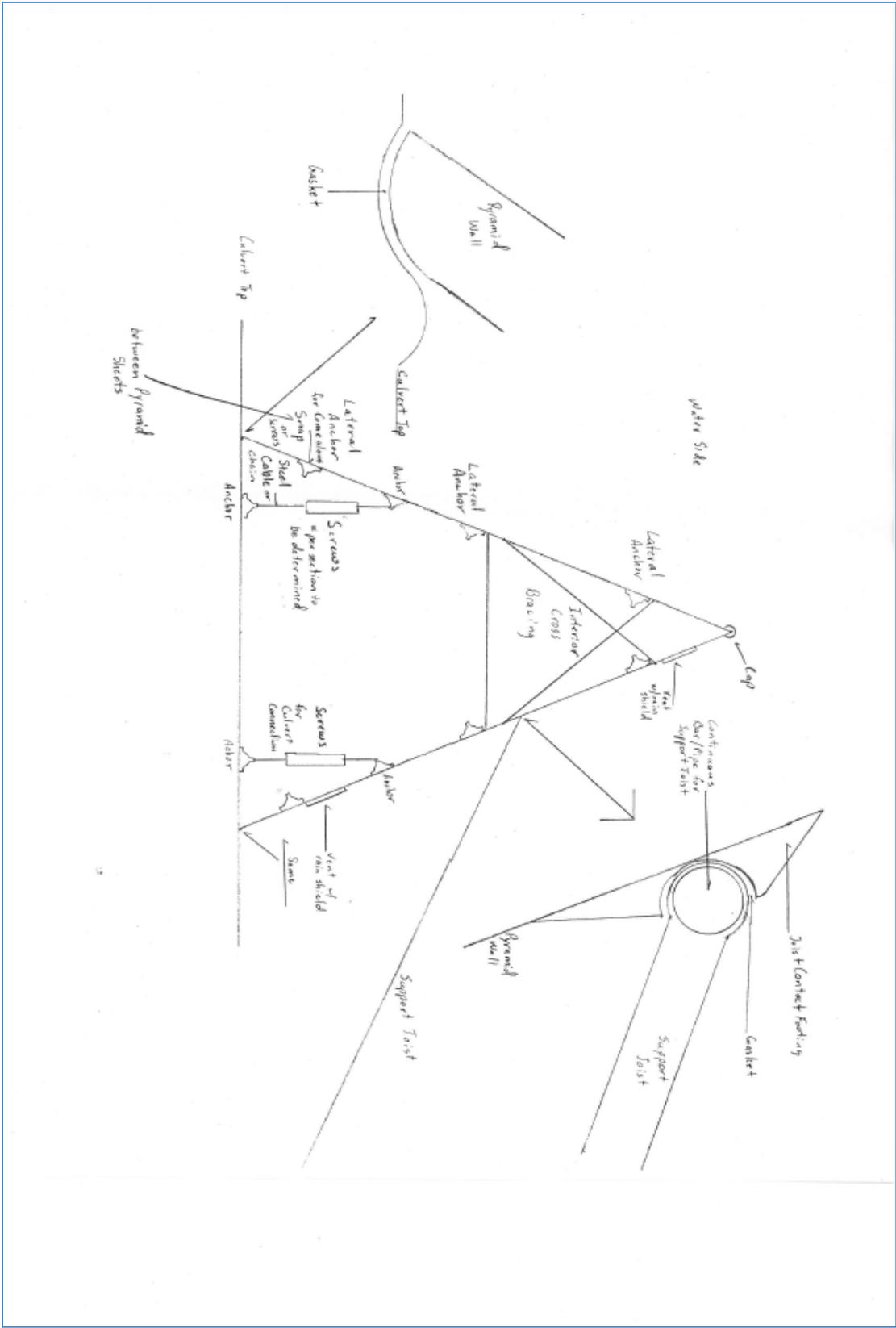
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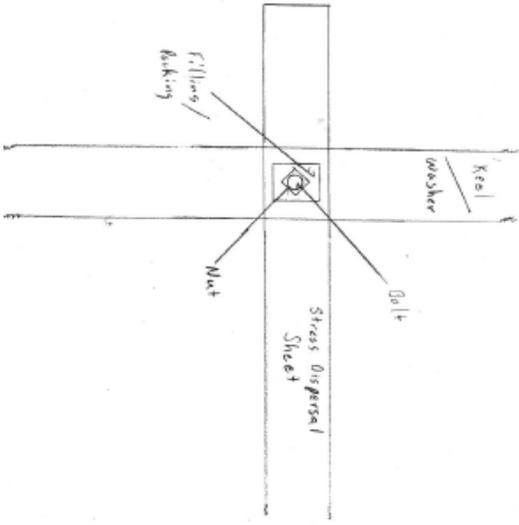
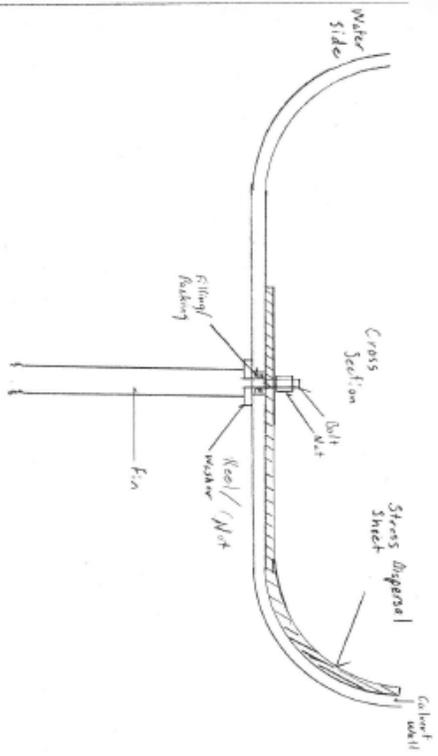
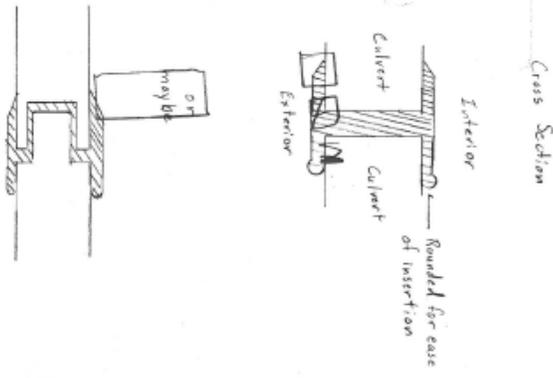
### Calvert Style Levee



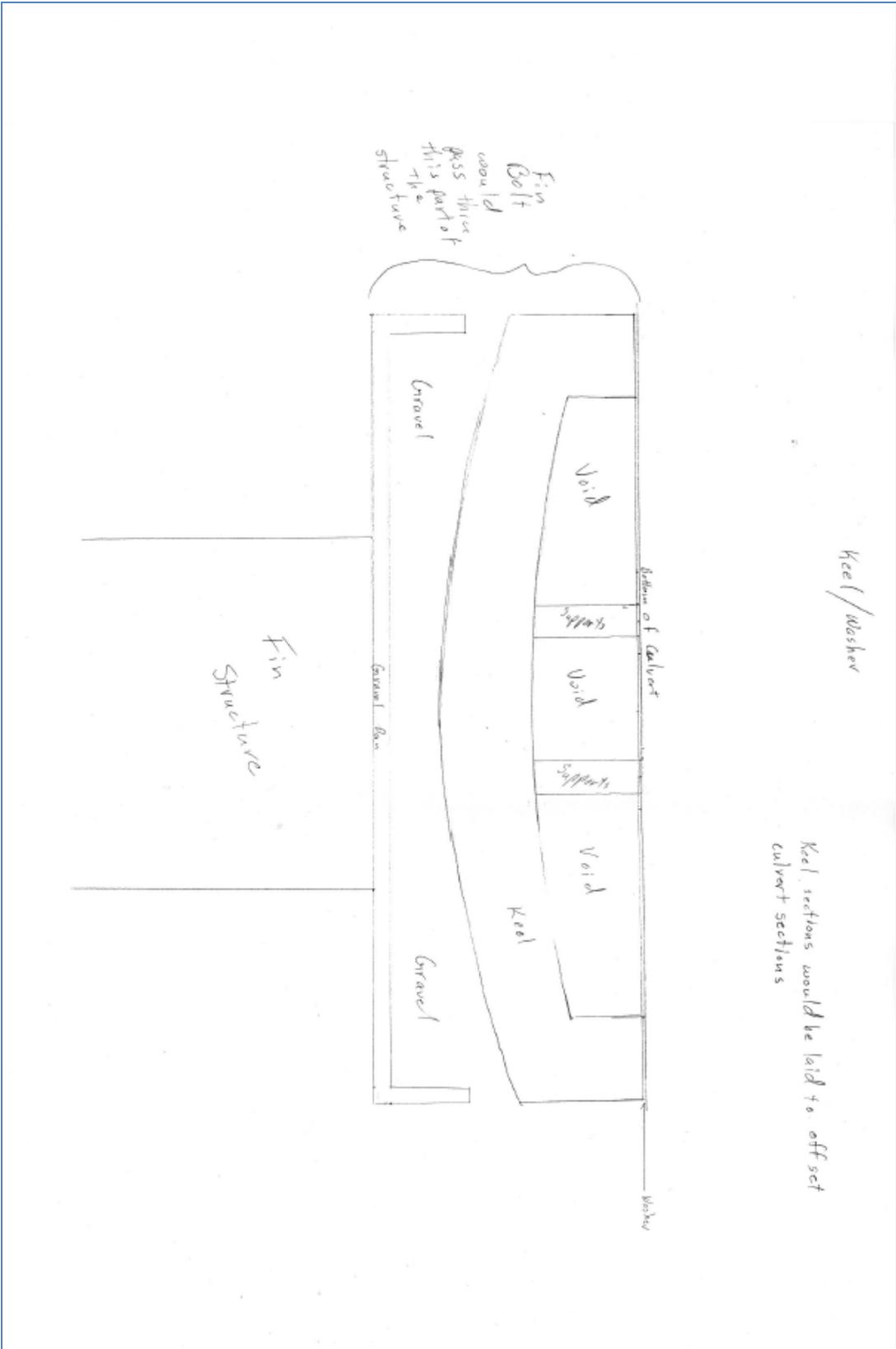




Gasket w/ Culverts









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61/545,501	10/10/2011		125	5212492		

CONFIRMATION NO. 1781

FILING RECEIPT

William Bender  
8131 Rainbow Dr.  
Baton Rouge, LA 70809



Date Mailed: 10/24/2011

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

William Randolph Bender, Baton Rouge, LA;

Power of Attorney: None

If Required, Foreign Filing License Granted: 10/20/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 61/545,501**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

**\*\* SMALL ENTITY \*\***

Title

"Floating levee" system that can be utilized on substandard soil

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## INVENTION TITLE

A "floating levee" system that can be utilized on substandard soil.

## DESCRIPTION

[Para 1] The present invention relates to a "floating levee" system that can be utilized on substandard soil. Substandard soil is defined as soil that will not support earthen levees much like the soil that surrounds much of New Orleans.

[Para 2] The product is comprised of the following components: 1. "the tube" – connected culverts, 2. "the pyramidal wall" – concrete slabs, 3. "the keel" – a thin wall extending underground, 4. support joists and 5. terminal or turn buildings.

[Para 3] Much of the current levee system surrounding New Orleans is a continuous mound of dirt with a retaining wall on top. The retaining wall increases the height of the levee. If dirt were used instead of the concrete wall, the levee system would sink under its own weight at a rate unsustainable. Also, the retainment walls, as seen breaking after Hurricane Katrina, are not an effective counter measure to hurricane surges or high water.

[Para 4] There are no measurements provided in this section. This is due to differences in soil consistencies, water tables, expected height and pressures exerted by hurricane surges, and other factors that must be considered before the construction of the "floating levee" system.

[Para 5] Component 1: The Tube

[Para 6] "The Tube" consists of connected culverts. The edges of the culverts will have water tight gaskets. The culverts will be of a size and width that will support a "pyramidal structure" on its top and not sink in substandard soil. The culverts will be of a size that will sustain the pressures placed on it by rising or surging water.

[Para 7] Component 2: The Pyramidal Wall

[Para 8] "The Wall" is a pyramidal structure that runs along the top of "the tube". A section of "the wall" is composed of concrete slabs that lean together and are attached at the top. The amount of separation at the bottom of the slabs will be determined by the desired height of the levee and the amount of estimated pressure the water and / or surge will exert on the floating levee and wall. A water proof gasket will be placed between the top and bottom edges of the concrete slabs. The top the slabs will be bolted together, using interior anchor sites. To prevent water intrusion, a cap will be placed on

the top edge of the slabs. Water proof gaskets will be placed along all slabs edges. The bottom of the slabs will be fixed in place to the top of the culverts by interior anchor bolts. The slabs and the culverts are the same length. The bolting of the wall sections to the culverts are offset so that each end of a wall section rests in the middle of a culvert. This is done to provide more rigidity and strength to the levee. Walls will be bolted end to end on the interior sides of the walls.

[Para 9] Component 3: The Keel

[Para 10] "The Keel" is a thin wall structure that extends from the bottom of the culverts into the soil. The keel is not flat. If looked at from the top, the keel appears to be a series of right side up and right side down connected U's. The keel is used to off set the pressure place on the culverts and wall during a high water event. The depth of "the keel" will be determined by the estimated water pressure that could be placed on the above ground section of the levee during a surge. On the top part of the "the keel" are bolts that will extend through openings in the bottom and into the culvert cavity. Using large washers to disperse stress (and maintain water integrity), "the keel" is bolted to the bottom of the culvert. "The keel" structures are also the same length as the culverts. "The keels" will be bolted from the mid section of one culvert to the next so as to provide rigidity and strength to the levee.

[Para 11] All elements are necessary. In consideration of a storm surge, a continuous line of support joists are attached to the landward side of the wall. The joists extend from the wall to a concrete brace backed by earth.

[Para 12] The culverts run along the ground. Keel sections are attached to the bottom of the culverts. The "pyramidal" wall runs along the top of the culverts. This "floating levee" will need to make turns due to contours of the land. The "floating levee" will connect to the walls of a terminal / turn building. Terminal / Turn buildings are anchor points for the "floating levee" and allow for the turning of the levee.

[Para 13] The culverts provide buoyancy for the wall and the keel. The culverts provide a platform for the wall to rest upon. The keel prevents the levee from keeling over from water pressure on the wall and culverts. The wall provides the height needed to keep water from "over topping" it during a storm surge (Remember Katrina's surge and subsequent over topping of the canal levee walls.). The terminal buildings provide

access to the interior of the floating levee and anchor and turning points of the levee. The terminal buildings will provide sites for monitoring the levee system.

[Para 14] This is a major construction project. All components of the levee would be constructed off site and shipped to the location of the levee. The keels would be shoved into the ground via a specially designed pile driver. A crane would then lower the culvert onto the keel allowing the keel bolts to fit through the bottom culvert holes. Gaskets and washers are placed over the bolts extending from the keel. The gaskets and washers would be locked down with nuts. The pyramidal wall is made by leaning two concrete walls together on top of the culverts. The width of the base is to be determined by estimates of expected water heights and surge pressures. The walls are placed on top of gaskets that run the length of the levee. The walls are then attached to the top of the culverts with bolts at interior wall and culvert anchor points. A gasket is placed between the top of the walls. The tops of the walls are attached by cross bracing again using bolts and anchor points. The culverts, keels, and walls are all the same length. The ends of the keels and walls are offset to fall in the middle of the length of the culvert. Support joists are attached above the center of the landward side walls. The joists are attached to a concrete bracing that rests on the ground and is backed by a land berm. The five basic parts of this levee system can not be interchanged and still function.

[Para 15] This levee is to be used in regions where soil composition can not support traditional levees. Southern Louisiana provides an excellent example of this type of soil composition. The height needed to provide the necessary protection would result in a weight unsustainable by the soil. The levee would sink. New Orleans, along with the coastal regions of south Louisiana are the primary areas where a "floating levee" can be best utilized.

**What is claimed is:**

[Claim 1] A levee system that can be utilized on substandard soil at a height that standard levees can not sustain.

**ABSTRACT**

[Para 1.6] Levees in the New Orleans area need to be a certain height to keep out storm surges or high water. The substandard soil sinks under the weight of a typical levee. Additional material must be added to the levee to maintain the required height. The containment walls on top of the levees must be repaired due to buckling caused by

sinkage of the levee system. My levee system floats on the substandard soil that the present levee system sinks into.

From: [Judith P. Johnson](#)  
To: [Morganza Comments](#)  
Subject: EIS  
Date: Tuesday, January 08, 2013 3:16:46 PM

---

Mr. Dayan,

Re: Mississippi River & Tributaries-Morganza to the Gulf of Mexico, Louisiana

I am writing to request a copy of the EIS for Louisiana Sea Grant Executive Director, Robert Twilley, as referenced in the January 3, 2013 letter from Ms. Joan M. Exnicious.

JOHN1

My physical and email addresses are listed below.

Thank you.

Judy Johnson  
Coordinator  
Louisiana Sea Grant College Program  
216 Sea Grant Building, LSU  
Baton Rouge, LA 70803  
O (225) 578-6036, F (225) 578-6331  
[judyjohnson@lsu.edu](mailto:judyjohnson@lsu.edu)

**From:** [Joe.Hutchinson@mortenson.com](mailto:Joe.Hutchinson@mortenson.com)  
**To:** [Morganza Comments](#)  
**Subject:** Morganza Levee  
**Date:** Wednesday, January 09, 2013 2:05:24 PM

---

How can contractors get on the bidders list?

Joe Hutchinson  
Project Engineer - Mortenson Civil Group  
Mortenson Construction: Building what's next.  
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cell 612.749.3413  
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Minneapolis, MN 55422  
[www.mortenson.com](http://www.mortenson.com/) <<http://www.mortenson.com/>>

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HUTC1

1.

**From:** [Sara Gonzalez-Rothi](#)  
**To:** [Morganza Comments](#)  
**Cc:** [Melissa Samet](#); [Malia Hale](#); [George Sorvalis](#)  
**Subject:** Request for RPEIS, Morganza to the Gulf  
**Date:** Monday, January 14, 2013 3:47:23 PM

---

Please provide a copy of the RPEIS to:

KRON1

Sara Gonzalez-Rothi Kronenthal, Esq.  
Protecting and Restoring Coasts and Floodplains  
National Wildlife Federation  
901 E Street NW, Ste. 400  
Washington, DC 20004  
(202)797-6886

Thank you.

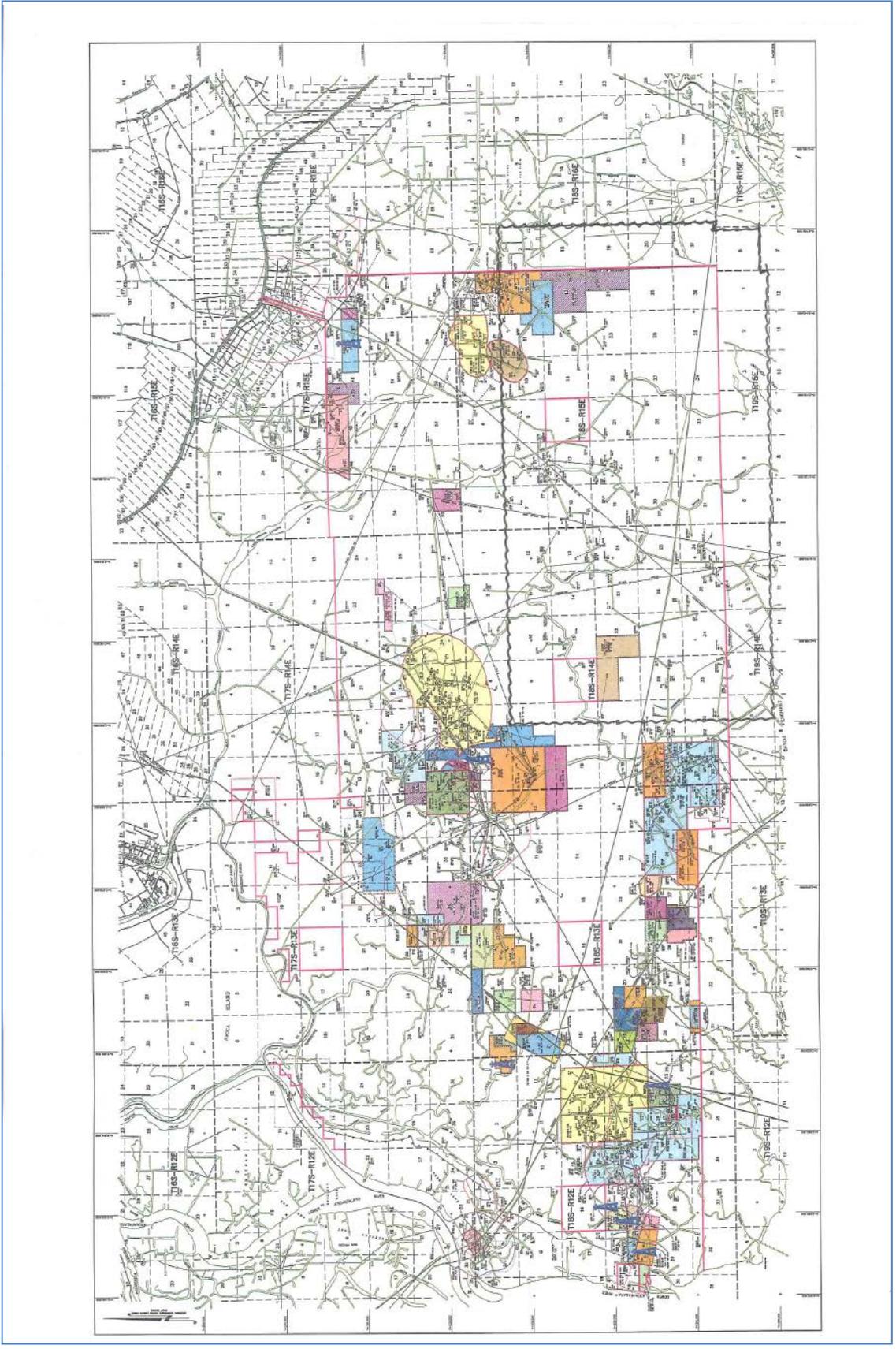
**From:** [George A. Strain](#)  
**To:** [Nathan, Dayan S.MVN](#)  
**Subject:** FW: CL&F Map  
**Date:** Tuesday, January 15, 2013 2:19:09 PM  
**Attachments:** [CL&F Map-Extended Sections.pdf](#)

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Nathan- Here is a map of CL&F's property in Terrebonne Parish. Please ignore the squiggly lines. Our boundary is outlined in pink. A couple of landmarks for you: our western boundary is the Lower Atchafalaya River and the southeast corner of the property is due north of Lake Penchant.

STRA1

George A. Strain  
Vice President  
Continental Land & Fur Co., Inc.  
CL&F Resources LP  
111 Veterans Memorial Blvd., Suite 500  
Metairie, LA 70005-3099  
gstrain@clf-co.com  
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29793 Ono Blvd.  
Orange Beach, AL 36561  
Office (251) 271-4189  
Cell: (985) 804-7525

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USACE  
New Orleans District

January 29, 2013

RE:Alignment of proposed levee from Falgout Canal Flood Gate.

Dear Sirs;

This letter is a request to re-align the proposed Falgout Canal Levee from the North side of the proposed Flood Gate that will connect with the existing Dularge Levee system immediately North of the Falgout Canal Marina at the existing pump station.

I am in the Permit Phase of a new Development that will provide about 50 new Camp Sites in conjunction with the existing Campsites and boat houses. There is a strong demand for such sites and there is no current substitute Campsites in Terrebonne, especially ones that are in lower DuLarge and ones that will be within a Levee protection area. There are also very few available properties with access directly into existing Canals or Bayous in Terrebonne.

I am requesting that the existing levee alignment be adjusted slightly Westward in order to allow me the same distance Westward that is being afforded the existing canal immediately North of my proposed Development. If not it may not be affordable to incur the expenses anticipated with this Development due to a loss of many proposed lots.

I have enclosed a map drawn by my Surveyor showing the affect the current alignment will have on my proposed Development. My Surveyor is Kenneth Rembert at 985-979-2782 and my contact numbers are shown above.

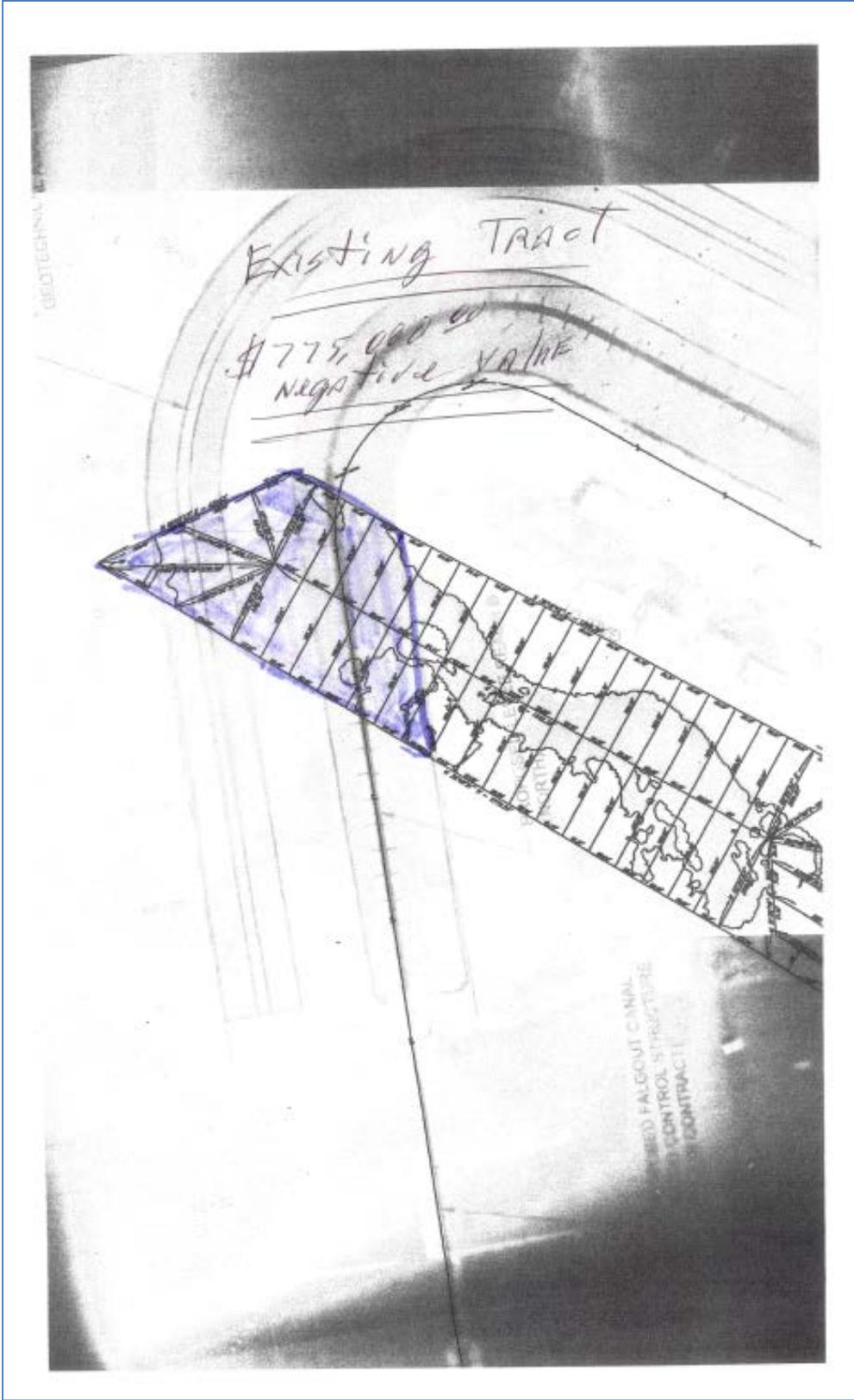
I thank you, in advance, for your concern and for whatever action you may take to prevent the existing Levee alignment from causing financial harm and possibly stopping this Development which is badly needed in Terrebonne Parish.

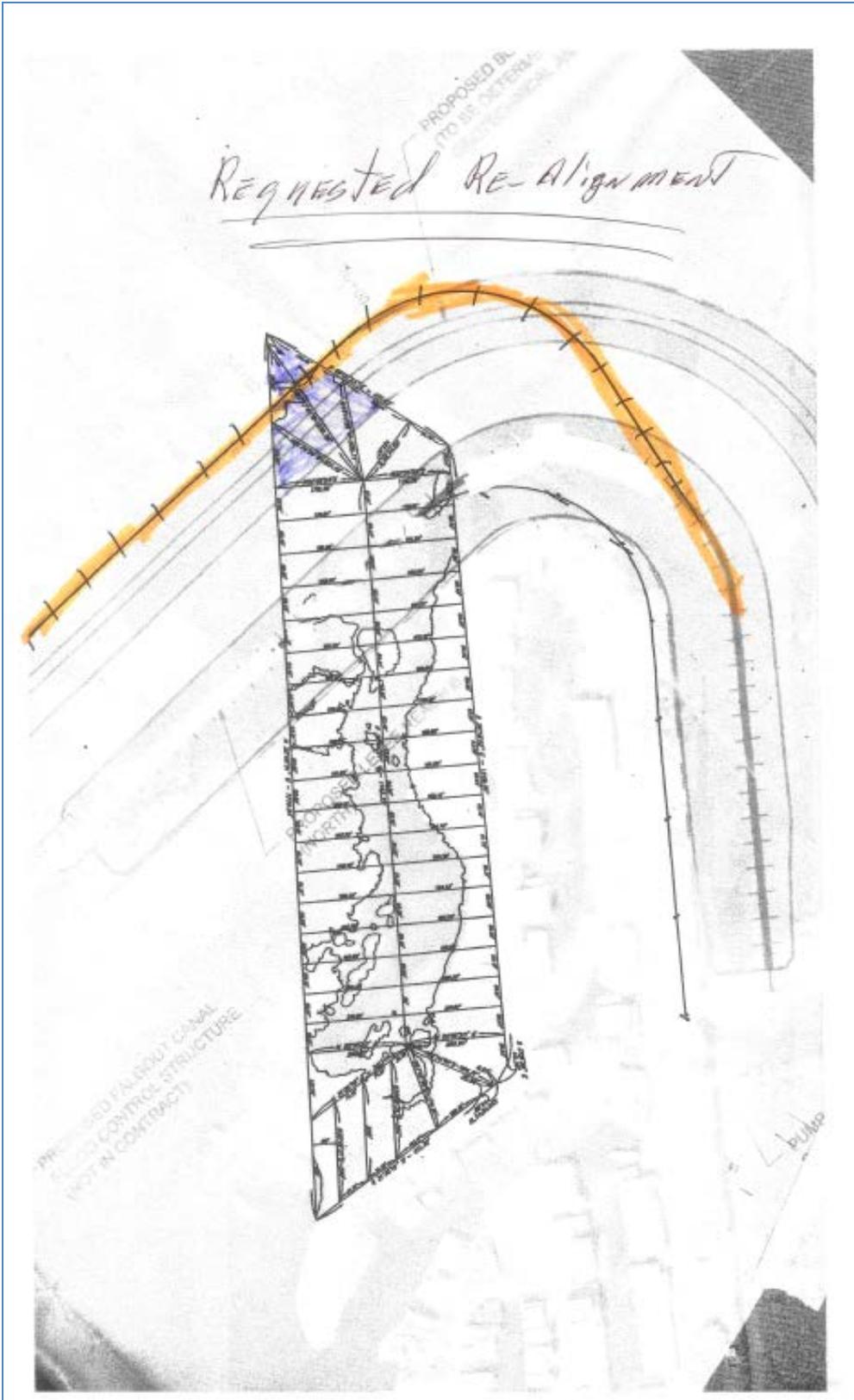
Sincerely,



Robert L. Hale III

HALE1







Gulf Intracoastal Canal Association  
PO Box 6846  
New Orleans, LA 70174

February 16, 2013

Mr. Nathan Dayan, Environmental Manager  
U.S. Army Corps of Engineers  
P.O. Box 60267  
New Orleans, LA 70160-0267

Dear Mr. Dayan:

The Gulf Intracoastal Canal Association (GICA) is pleased to comment on the Draft January 2013 Post Authorization Change Report and Programmatic Environmental Impact Statement, Morganza to the Gulf of Mexico, Louisiana. GICA is a 108-year-old trade association representing 200 industry members involved in towboat and barge operations, shipping, shipyards and associated waterways industries which use the Gulf Intracoastal Waterway (GIWW) between Brownsville, Texas and St. Marks, Florida. GICA is committed to ensuring the GIWW is maintained, operated and improved to provide safe, efficient, economical and environmentally-sound water transportation, serving petrochemical facilities, refineries, farms, mines, ports, commercial fisheries, and recreation.

GICA's stakeholder comments center on the two flood control structures proposed for construction on the federally authorized GIWW, west of Houma, LA near GIWW MM 64 WHL and near Bayou Lafourche near GIWW MM 36 WHL. In the Draft Report's Engineering Appendix it is reported that sizing options for these floodgates were considered by USACE's Engineer Research and Design Center (ERDC) in 2006. Using hydrologic and hydraulic data for a six month period (January-June 2004) as a basis, several combinations of sector gates and sluice gates (of different sizes and numbers) were modeled in an attempt to assure that current flows through the structures could be maintained at speeds less than 3 mph or 4.4 fps. In the Engineering Appendix, ERDC concludes and recommends, as an initial gate design, a 175' sector gate for the Houma site with six 16' sluice gates and a 175' sector gate pair at the Lafourche site with three 16' sluice gates (Table 70 – Final Sizing Table for All Structures, pp. 158, 159 of 369).

However, in the main body of this report, the Tentatively Selected Plan, in Section 7, describes GIWW floodgates as 125' sector gates at both locations with six 16' sluice gates at Houma and three 16' sluice gates at Larose. There is no evidence that these particular sizes or sluice gate combinations were modeled by ERDC; and there is no explanation for the reduction in sector gate size from 175' to 125'. GICA and several of its sister waterways trade associations, as well as the U.S. Coast Guard, have commented before, on the record, about the sizing of flood control structures on the GIWW. Specifically, we addressed this issue during the construction of the West Closure Complex's 225' sector gates and the IHNC Surge Barrier's 150' gates, both located on the GIWW. We continue to firmly believe that larger sector gates contribute to greater overall safety to the mariner and to the public at large and object to the construction of narrow 125' sector gates on the GIWW.

GICA1

Additionally, it appears that 125' sector gates, if placed in the center of the channel as planned, would not comply with USACE's own permitting guidelines and policy regarding navigation safety and the encroachment of

GICA2

landside structures on the waterway. Presently, any applicant proposing to build a structure on the waterway is restricted to placing that structure outside a New Orleans District proscribed Structure Limit Line, measured from the centerline of the channel. In this reach of the GIWW, the authorized channel width is 125' and the Structure Limit Line (in place to assure navigation safety and to protect structures from damage) is 150' from the centerline of that channel. This means no structures are permitted in a 300' wide lane of water. If USACE were to follow its own permitting guidelines and policy for these structures in the GIWW, the width of the gates should be no less than 300' to ensure that its gate structures would remain outside the Structure Limit Line. Although a 300' gate may not be necessary, the point is that USACE does recognize the danger of placing structures within a certain distance of the channel and should extend that safety analysis and focus to the task of locating and sizing sector gate structures associated with this project.

Although critical to effective flood control, it is clear that these sector gates will not be closed often. They will spend the great majority of their design lives as encroachments on the GIWW reducing the navigability of the waterway. They will be choke points which could hinder the flow of cargo through the GIWW to markets east and west. The Louisiana reaches of GIWW carry some 77 million tons of cargo per year and directly impact at least 20 states and several major oil and chemical refiners. The navigation risk of imposing too narrow a structure on the waterway, one that runs counter to present USACE Structure Limit Line policy, translates directly to significant economic risk should an incident at the gates result in a protracted waterway closure. The impacts would be national in scope and should be carefully considered in any analysis of gate sizing.

GICA remains concerned over the safety of narrow structures on the waterway, given our experience with casualties at bridges along the GIWW of similar or even wider widths. We are already experiencing higher than expected currents, requiring multiple tripping through the 150' wide IHNC Surge Barrier Sector Gate, causing delays as tows wait to pass. Our experience further dictates that a minimum safe structure navigation clear span of 225' is appropriate. GICA strongly urges that USACE reconsider the sizing of any sector gate structures contemplated for construction on the GIWW and recommends the following:

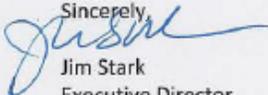
- USACE conduct additional physical modeling, using more recent data collected over a longer period of time.
- Include GIWW navigation stakeholders in this modeling effort. Especially consider the inputs of experienced towboat operators who frequently navigate the GIWW and existing narrow structures.
- USACE include in its analysis the second order impacts to the national economy and industries that rely on the 77 million tons of cargo that flow through these reaches of the GIWW should potential accidents close the waterway at these sites.

GICA3

GICA4

GICA5

Thank you for the opportunity to comment on this important project.

Sincerely,  
  
Jim Stark  
Executive Director

Cc: RADM Roy A. Nash, Commander, Eighth Coast Guard District  
Mr. Mark Wright, Vice President, Southern Region, American Waterways Operators  
Mr. Karl Gonzales, Greater New Orleans Barge Fleeting Association

RESTORE  
P.O. Box 233  
Longville, LA 70652

Mr. Nathan Dayan  
Environmental Manager  
U.S. Army Corps of Engineers  
New Orleans District  
P.O. Box 60267  
New Orleans, Louisiana 70160-0267

Dear sir:

RESTORE [Restore Explicit Symmetry To Our Ravaged Earth] is a non-profit organization based in Longville, Louisiana. We offer the following comments on the Draft Revised Environmental Impact Statement (EIS) on the Morganza to the Gulf Hurricane Protection Project:

Achieving sustainability for Louisiana's coast is a pressing issue, with many complex aspects. A key focus of RESTORE's work has been addressing the pervasive chemical contamination of our area of Louisiana, which is part of the Calcasieu River drainage basin. To our south lies Lake Charles, where long-standing pollution from refineries and other facilities has impacted local water bodies in the Upper Calcasieu River Estuary.

While Calcasieu Lake and the lower estuary remain popular recreational fishing areas, the upper estuary has been designated an area of natural resource damage by federal agencies. The National Oceanic and Atmospheric Administration (NOAA) and partner agencies issued a Draft Damage Assessment and Restoration Plan and Environmental Assessment (DARP/EA) for Bayou Verdine, a small tributary of the Calcasieu River, in March 2009, citing sediment contamination from heavy metals and volatile compounds that have impacted benthic organisms ([www.darp.noaa.gov/southeast/bayou\\_verdine/injury.html](http://www.darp.noaa.gov/southeast/bayou_verdine/injury.html)). Nearby, Bayou d'Inde has been the subject of potential designation as a Superfund Site because of studies linking its HCB/HCBD, PCB, and 2,3,7,8-TCDD contamination to serious bioaccumulation and biomagnification in seafood species that use the Calcasieu Estuary. Similar situations exist throughout Louisiana's coastal zone.

Like the rest of Louisiana's coast, the Chenier Plain in the southwest has had its natural hydrology substantially altered. The extensive marshes that lie behind barrier beaches were fed by sheet flow from the north, which has been blocked by the construction of major channels like the Gulf Intracoastal Waterway (GIWW), and "cookie cutter" division of wetlands into agricultural fields, fishing and hunting ponds, and other impoundments. An unintended result of this alteration is that saltwater inundation from hurricanes can remain trapped in these freshwater areas, compounding the damage to plants and soil.

The prospect of accelerated sea-level rise and lack of large rivers that might provide sediment inputs have led to a number of proposals for levee projects that would ostensibly keep the Gulf of Mexico back. The 2012 Coastal Master Plan for Louisiana included an Abbeville to Lake Charles Levee proposal that has some similarities to the Morganza to the Gulf Project, in that it would attempt wall off the areas to its north from hurricane impacts and sea-level rise.

This levee would utilize the GIWW, and presumably include structures to allow freshwater to be released to the south when levels permit, but it also raised questions about impacts to hydrology to the north as well as the south, since it could potentially impede the remaining drainage across this highly altered area (with unknown effects for the coastal restoration projects for the area included in the Master Plan.)

RESTOR1

(The possible adverse ramifications of impeding natural southbound drainage were made very evident during this January's extensive flooding of the communities along the Mermentau River upstream from the water control structure south of Lake Arthur.)

The Master Plan also included potential ring levees south of Lake Charles that would provide hurricane protection for this population center, at a lower cost. There are also large prospective levee systems for the eastern Chenier Plain and Central Coast that run south of communities such as Kaplan, Abbeville, and Erath. All of these proposals raise serious environmental and fiscal questions, along with major engineering challenges. Hopefully the Southwest Louisiana Coastal Louisiana Feasibility Study currently underway by the Corps of Engineers will help clarify the feasibility and environmental sustainability of all of these options

<http://www.mvn.usace.army.mil/pd/projectsList/home.asp?projectID=205>.

This brings us to the Morganza to the Gulf Levee Project. The Revised EIS is the latest version of a long series of studies of this project. In contrast to the Chenier Plain, the project area, largely the region south of Houma in Terrebonne Parish, lacks much in the way of remaining barrier shorelines, with only remnant barrier islands at this point, and the southernmost areas that were formerly marsh have been converting to open water.

A basic question that arises is the compatibility of the project's recommended alignment with coastal restoration. The Draft REIS states that the project was designed to not interfere with dedicated dredging for marsh creation, the distribution of freshwater from the GIWW into wetlands, and the multipurpose control of the Houma Navigation Canal (HNC) (p. 3-13.) But the REIS also states that the Louisiana Coastal Protection & Restoration Authority Board notified the Corps in letters dated August 20 and October 16, 2012 that it wishes to suspend study and design on three projects contained in the authorized Louisiana Coastal Area Study (LCA): Convey Atchafalaya River Water to Northern Terrebonne Marshes and Multipurpose Operation of the Houma Navigation Lock, Modification of the Davis Pond Diversion, and the Land Bridge between Caillou Lake and the Gulf of Mexico.

RESTOR2

These projects involve the eastern/northeast, western, and southern/southwestern parts of the Morganza to the Gulf project area. The REIS does not state why the state made this request, but if they have ascertained that the restoration projects (diversions, land bridge construction) are not compatible with the impacts of the preferred levee alignment, that raises questions about how the levee project will ultimately impact the area. The estimated cost of the approved alignment (now put at \$12 billion in some news articles) emphasizes the need for restoration of natural features to the Gulf side of the study area to the greatest degree possible to ensure the greatest amount of sustainability for whatever levee system is eventually constructed. That cost estimate also puts the estimated costs of restoration projects into a new context.

The 2012 Master Plan includes restoration of the Isles Dernieres and Timbalier Barrier Island systems in the 1<sup>st</sup> Implementation Period (2012-2031), at estimated costs of \$343 million and \$524 million, respectively (Master Plan, p. 126). The Terrebonne Bay Rim Marsh Creation project is presented as

slated for accelerated study. The estimated cost for the North Terrebonne Bay Marsh Creation south of Montegut is set at \$1.555 billion. Each of these projects, and others like them, can act as storm buffers, and would seem vital to ensure that any new levee system is sustainable from a fiscal standpoint, given the likely impacts of storms on completed sections and those in progress.

RESTORE urges all planners and decisionmakers to keep in mind the “build it and they will come” reality. An accompanying truth is that levees create a false sense of security among people who believe that they, their children, and their investments will be safe from harm, no matter what. That seduction, that enticement of more and more victims into areas that will inevitably suffer inundation, is inexcusable.

RESTOR3

Sustainability is the key concept, whether we are thinking about safety, ecosystem health, or the economy.

RESTOR4

Thank you for the opportunity to submit these comments.

Sincerely,

Michael Tritico, Biologist and President of RESTORE

Restore Explicit Symmetry To Our Ravaged Earth

**FEBRUARY 17, 2013**  
**TO: US ARMY CORP OF ENGINEERS NEW ORLEANS DISTRICT**  
**ATTENTION Ms Elaine Stark**  
**MORGANZA TO THE GULF OF MEXICO LEVEE ALIGNMENT**  
**REQUEST FOR MODIFICATION**

OSTH1

Please realign your levee in the vicinity of Minors Canal so that all of our cleared land is enclosed within it, and our ability to develop it in the future into an upscale waterfront community is not compromised.

We own 300 cultivatable acres just west of Minors Canal. It extends from Hwy. 182 to the Intracoastal Canal. It is surrounded by a ring levee and has its own private pump station. We also own about 330 acres of swamp, mostly on our western side. On the crop land, my daughter and two of my brothers currently have their residences, along with a dormant oilfield facility, dock, a vegetable farm, and several hundred acres of sugar cane.

We are asking that instead of crossing the GIWW East of Minors Canal and going up its East bank, before going westward onto the Barrier Plan, that you stay on the South bank of the GIWW until just East of Hanson Canal then cross the GIWW and go northward to the Westward Barrier Plan. This would put you west of our cleared land, and allow you to follow the Bergeron Ridge Northward (which years ago had a dirt road to Hatch Point on it) to your westward Barrier Plan. The GIWW is narrower there and you could move the control structure in Minors Canal to the South side of the GIWW. The land on the South bank of the GIWW is owned by the Mandalay Refuge, while we own about two-thirds of the land on the Northward part.

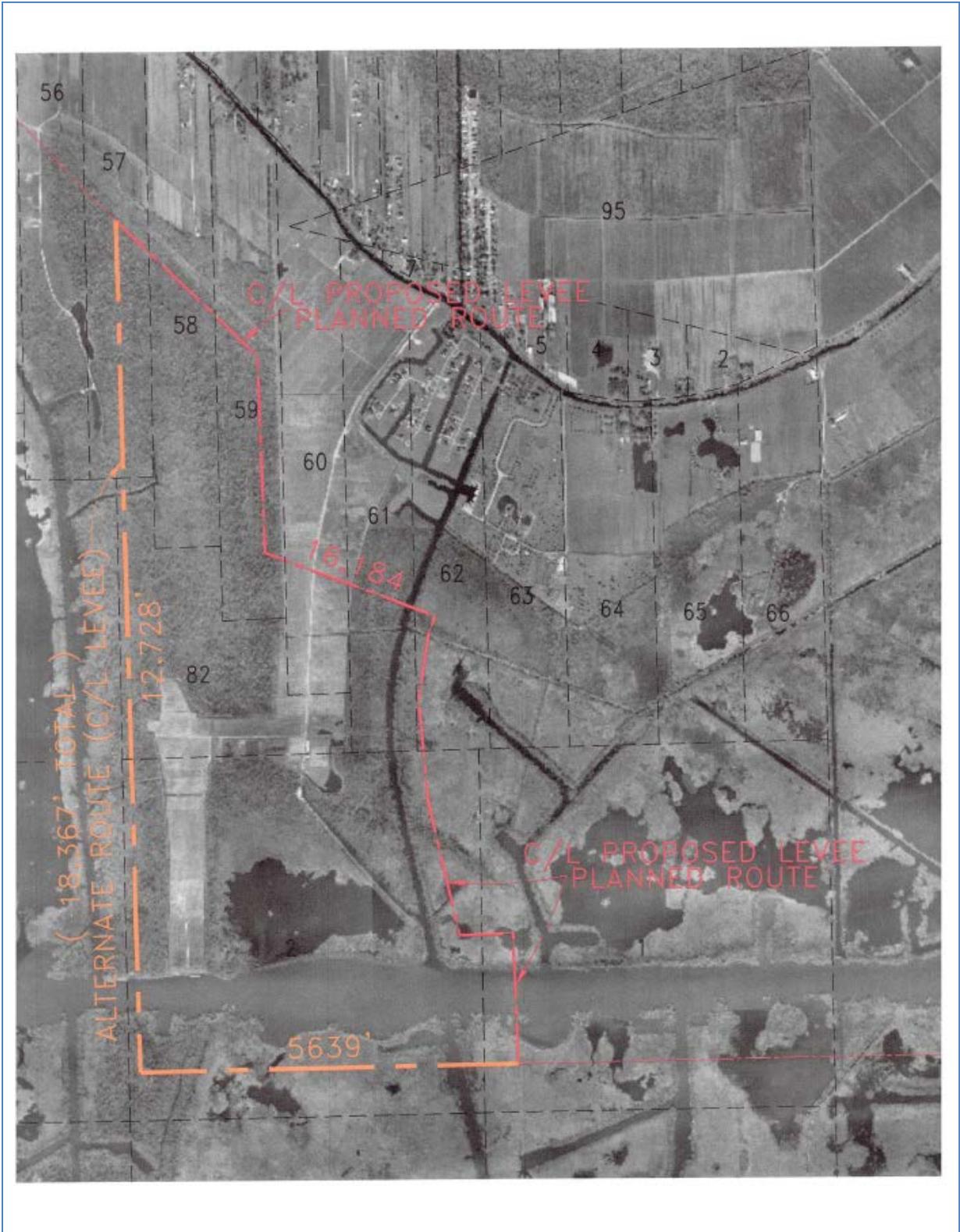
This proposal, while having the disadvantage of lengthing the project slightly, has the following positives:

- A. It preserves the integrity of the last natural ridge that extends from highway 182 to the GIWW in western Terrebonne.
- B. It has little negative effect on our property, and offers it protection from salt water storm surge.
- C. It should preserve the cypress swamp between the Bergeron Ridge and our farm land.
- D. It will provide dry ground that is sparsely populated for animal evacuation in a storm surge condition.
- E. Given the length the plan goes in other areas to preserve and protect our Parish, it would seem to be the appropriate thing to do.

Thank you for your consideration.

**W. ALEX OSTHEIMER**

*W. Alex Ostheimer*  
P.O. Box 485  
Houma, LA 70361  
Phone: 985-879-2316





Ostheimer  
Proposed Realignment  
2/19/13



Mr. Nathan Dayan  
U.S. Army Corps of Engineers  
P.O. Box 60267  
New Orleans, La. 70160-0267

LEAN

February 18, 2013

**Comments on Morganza to the Gulf Draft Revised Programmatic EIS**

Dear Mr. Dayan,

The Louisiana Environmental Action Network (LEAN) submits the following comments on the Morganza to the Gulf Draft Revised Programmatic Environmental Impact Statement (RPEIS). LEAN is a non-profit organization long committed to support for a sustainable coast for Louisiana and its people.

The Morganza to the Gulf Project is an attempt to provide hurricane protection and risk reduction for a critical part of Louisiana’s coast whose vulnerability is increasing, as stated on page 3-1 of the RPEIS. The Tentatively Selected Plan in the RPEIS would include 98 miles of levees, 23 water control structures, 22 floodgates, and a new lock on the Houma Navigation Canal. It would be the largest proposed project in Louisiana’s coastal restoration and protection effort, and the most costly.

From the start of the project’s long history, important questions have been raised about its feasibility and sustainability, in particular regarding the authorized or preferred alignment. In 2007, a group of leading coastal scientists in Louisiana sent a letter to Governor Blanco about the project, expressing their serious concerns about the strategy of building large new continuous levee systems, stating that it “carries high economic, structural and environmental risk, and threatens the sustainability of the very ecosystem we are all trying to save.”<sup>1</sup>

**Our comments on this project are based on several core considerations.**

First, sea level rise as a result of global warming is accelerating. The most recent scientific studies have concluded that at least one meter of sea level rise over the next century is likely.

LEAN1

Second, it has been clear since Hurricane Katrina that levees with wetlands and other natural barriers in front of them stand the best chance of surviving major storms, rather than levees in direct or near direct contact with open water.<sup>2</sup>

LEAN2

Third, coastal marshes can respond to sea level rise to some degree by vertical accretion, provided they have sufficient inputs of freshwater and nutrients, as a number of studies in Louisiana have shown.

LEAN3

Fourth, the estimated costs of the Morganza to the Gulf Project have increased significantly over the life of the project. The construction costs were authorized in the 2007 WRDA Act at \$886.7 million (PAC Report p. 7). It has been projected for a number of years that the costs would total over \$10 billion.<sup>3</sup> Current cost estimates for construction and operation/maintenance over the next few decades are \$12.7 billion. The reasons for the cost increase include federal post-Katrina levee standards, a longer alignment than proposed previously, and at a basic level the rising costs of energy and materials. The latter are projected to continue to rise on a global level and would thus increase the costs of the Morganza to the Gulf Project over the life of the project.

LEAN4

#### Sea-Level Rise

As the RPEIS reiterates, Louisiana's coastal area is experiencing relative sea-level rise (RSLR), a combination of global and local sea level change and local subsidence. Louisiana has one of the highest rates of RSLR in the world. Monthly measurements at Grand Isle from 1947-2006 put the rate at 9.24 mm per year, or about 3 feet in 100 years.<sup>4</sup>

The RPEIS references the guidance document on sea-level rise for the Corps of Engineers on p. 3-9, which requires development of low, intermediate, and high RSLR scenarios. The RPEIS then states that "feasibility designs, cost estimates, and benefit-cost ratios developed for the current alternatives are based primarily on the intermediate RSLR scenario of 2.4 feet... It is expected that the project would be constructed over a period of 40 or more years. If during that time RSLR rates are higher or lower than expected, then final levee heights and project costs would be adjusted accordingly. The structure heights would not change."

A number of recent studies have concluded that the IPCC 2007 sea-level rise figures were significant underestimates, and that rise of at least one meter is likely.<sup>5</sup> This means that the high level RSLR scenario for the project area is the most accurate and should be the reference for the project design.

LEAN5

#### Levees and Wetlands, Marsh Accretion

Day et al (2007) and other studies support the contention that levees with wetlands (marshes, swamps) and other natural barriers in front of them are more sustainable than those exposed to open water. The project area has seen a severe loss of coastal wetlands, and the lower section of Terrebonne Parish is being converted to open water. The RPEIS points out that the project area is challenged by its distance from the Mississippi River, the primary source of freshwater and sediment to the east.

LEAN6

The Atchafalaya River is the primary source of freshwater and sediment to the west. The RPEIS states that the Louisiana CPRA requested that the Corps suspend study and design for the authorized Louisiana Coastal Area Study (LCA) project to divert Atchafalaya River water to Terrebonne Marshes. A long distance sediment pipeline project from the Atchafalaya River to the eastern and central Terrebonne basin will apparently be retained. There is no discussion in the RPEIS of the relative scales of restoration possible under these projects, or how/whether Atchafalaya River flows will be utilized in the project area aside from flood conditions.

LEAN7

The importance of natural barriers between existing and future levees and the Gulf is critical under any scenario. The LCA also included a Terrebonne Basin Barrier Shoreline Restoration Project, and a Land Bridge between Caillou Lake and the Gulf.<sup>6</sup> The RPEIS states that the latter LCA project was also requested to be suspended by the state CPRA. The state's early Natural Resources Damage Assessment (NRDA) list of projects includes a Caillou Lake Land Bridge, intended to restore 1600 acres of marsh, which may be essentially the same project.<sup>7</sup>

LEAN8

An important class of natural barrier prominent in the state's early NRDA project list (for restoration in response to the 2010 BP Oil Disaster) is oyster reefs. Scientific researchers and some private organizations are working to demonstrate the value of oyster reefs for both habitat restoration and storm surge buffers.<sup>8</sup> Oyster reefs have the added value of being able to establish themselves quickly, enhancing their value as "speed bumps" for storm surge from the Gulf.

LEAN9

Oyster reefs can also aid in retaining sediment deposited by storms and tidal events, which plays an important role in aiding coastal marsh accretion. It has been known for some time that coastal marshes can to a degree rise in elevation in response to sea-level rise, with adequate inputs of sediment that aids the buildup of organic matter and root mass in vegetation.

#### **Project Costs and Parameters**

The Project's estimated costs rose by more than 20% following Hurricane Katrina and subsequent changes in hurricane levee standards, necessitating a reauthorization process under the Water Resources Development Act Section 902. This process included completion of another Environmental Impact Statement and a Post Authorization Change Report. The project's previous EIS, Feasibility Study, etc. were completed before Hurricane Katrina and subsequent storms, and before the development of the 2007 Coastal Master Plan. The RPEIS attempts to address the changes that have occurred since then (PAC Report, p. 12)

LEAN10

The non-federal sponsors of the project have undertaken construction of up to 9 miles of "what would amount to first lift levees" along several reaches (PAC Report, p. 15). The RPEIS states that "In the absence of an executed PPA [with the Department of the Army prior to work being undertaken], the locally constructed levees do not form an integral part of the Morganza to the

LEAN11

Gulf project, and the work performed by the non-Federal sponsor is not eligible for consideration and approval of work-in-kind credit... Congress would have to enact express authority authorizing the USACE to consider and approve such a credit upon a finding that the levees meet USACE engineering criteria, are economically justified, and environmentally acceptable.” (PAC Report, p. 15)

The Technical Committee appointed to review the project several years ago noted that “a major challenge for the Morganza project is how to integrate it into... coastal protection and restoration as outlined by the State Master Plan.” The Technical Committee also noted that this challenge is especially difficult with projects like Morganza that were authorized prior to the development of the Master Plan (as well as Hurricanes Katrina and Rita), but stated that “with the Master Plan, the [state] adopted principles of coastal sustainability, which must now be reconciled with projects that were developed [previously.]”<sup>9</sup>

LEAN12

#### **Project-Specific Questions**

These considerations should be key elements in assessing the feasibility and sustainability of the authorized/preferred alignment. The project area is rapidly changing due to storm impacts and the effects of sea-level rise. It is important for the Indirect Impacts considered by the RPEIS to reflect this. The Post-Authorization Change (PAC) Report does discuss the effects of sea-level rise on the degree of closure in the levee-gate system. Closure under current conditions would occur approximately 1.5 days per year, but under the High RSLR Scenario this would rise to 24 days per year by 2035 and 365 days per year by 2085. Those estimates, like the ones for maintenance costs, do not include possible responses to major storm impacts in the interim, which could result in the system becoming largely or totally closed much sooner.

LEAN13

Increased closure of the structures would have significant effects on the fishery resources of the area and the communities who depend on them. Egress for estuarine species, and access for fishermen, are critical parts of the productive coastal fishery that the area supports. Increasing closure would also affect water quality in the areas impounded behind the levees. Over time, the project would change from an open to closed system.

LEAN14

The RPEIS includes a discussion on “induced surge” on the Gulf side of the levee system, which would affect those communities still on the outside. But there does not seem to be discussion of the possibility of high water on the inside of the levee system while surge is approaching from the Gulf, which could occur due to passage of two storms in close succession (as occurred in 2005 and 2008), and/or a slow moving system like Hurricane Isaac which deposits huge amounts of rain in the project area and upstream of its waterways. Water could not drain out of the floodgates if they were closed to block concurrently approaching surge from the Gulf, and the ability to pump out interior floodwaters could be compromised if the levees were simultaneously

LEAN15

overtopped. The likelihood of overtopping is an assumption of the project plan, since building levees to a height capable avoiding overtopping would be far more expensive.

The current plan calls for a series of lifts of substantial portions of the levee as they are constructed over the next few decades in response to subsidence, especially for the southernmost portions and those areas that cross marsh and open water in the authorized alignment. “To achieve levee design elevations at target years 2035 and 2085, each reach requires two or three additional lifts between approximately 2020 and 2070.” (PAC Report, p. 57) This adds substantially to the project cost, and to the engineering challenge involved in building and raising these sections. As noted earlier, impacts from a major storm could necessitate substantial rebuilding of the levee, especially in the more exposed sections.

LEAN16

The RPEIS essentially considers only one alignment at different elevations (for the 1% and 3% AEP level of protection) and the “No Action” option. We are not convinced that the other option – the “Multiple Lines of Defense” (MLOD) alignment – has been adequately assessed, or that it has been too quickly dispensed with as less cost-effective, since the engineering and repair costs of the more southerly authorized alignment are likely to be higher than estimated due to the effects of sea-level rise and storms on construction and maintenance.

LEAN17

The MLOD 2008 Report proposed an alternative incorporating a series of ring levees and natural barriers outside the levees to increase their stability/resiliency, including marshes and cypress stands.<sup>10</sup> If increasing salinity levels render cypress stands unworkable, there has been substantial research at Louisiana universities on the expansion of black mangroves in the coastal zone and their utility as storm surge buffers.<sup>11</sup>

LEAN18

The driving motivation behind the current attempt at a rapid resolution of the long-standing questions about the Morganza to the Gulf Project is the need for the area’s population centers and infrastructure to have effective hurricane protection. But the estimated 20 year-plus time frame for completion of the authorized alignment, along with its escalating costs, only serves to elevate the question of whether this option truly represents the best means of “protection” or effective risk reduction.

LEAN19

The need for protection is real and urgent enough to allow for a re-evaluation of alternatives and the potential for new combinations of actions that could provide that benefit in a more effective and timely manner, and that are more adaptable to the rapidly changing conditions in this part of Louisiana’s coast.

LEAN20

NOTES:

<sup>1</sup> Letter to Governor Blanco and Lieutenant General Strock on the Morganza to Gulf of Mexico Hurricane Protection Plan, March 13, 2007; included in Appendix C (p. 51) of Louisiana's Comprehensive Plan for a Sustainable Coast (2007), [www.coastalmasterplan.louisiana.gov/leading-the-way/2007-master-plan/](http://www.coastalmasterplan.louisiana.gov/leading-the-way/2007-master-plan/)

<sup>2</sup> Points 2 and 3, with cited references, are discussed in "Restoration of the Mississippi River Delta: Lessons from Hurricanes Katrina and Rita," Day et al, *Science*, Vol 315, March 23, 2007, <http://www.sciencemag.org/content/315/5819/1679.short>

<sup>3</sup> M. Schleifstein, "Jindal breaks ground on Morganza-to-the-Gulf levee," Times Picayune, January 14, 2009, [www.nola.com/news/index.ssf/2009/01/jindal\\_breaks\\_ground\\_on\\_morgan.html](http://www.nola.com/news/index.ssf/2009/01/jindal_breaks_ground_on_morgan.html)

<sup>4</sup> NOAA, "Mean Sea Level Trend 8761724, Grand Isle, Louisiana," [http://tidesandcurrents.noaa.gov/sltrends/sltrends\\_station.shtml?stid=8761724](http://tidesandcurrents.noaa.gov/sltrends/sltrends_station.shtml?stid=8761724)

<sup>5</sup> Rahmstorf, "A Semi-Empirical Approach to Projecting Future Sea-Level Rise," (2007), <http://www.sciencemag.org/cgi/content/abstract/1135456>; Vermeer and Rahmstorf, "Global sea level linked to global temperature" (2009), <http://www.pnas.org/content/106/51/21527>; Rahmstorf, "A new view on sea level rise," (2010) <http://www.nature.com/climate/2010/1004/full/climate.2010.29.html>; Rahmstorf, et al (2012) [http://iopscience.iop.org/1748-9326/7/4/044035/article#\\_USI\\_C6H2H0A\\_email](http://iopscience.iop.org/1748-9326/7/4/044035/article#_USI_C6H2H0A_email)

<sup>6</sup> Louisiana Coastal Area, [www.lca.gov/Projects/ProjectList.aspx](http://www.lca.gov/Projects/ProjectList.aspx)

<sup>7</sup> Louisiana CPRA, "Natural Resource Damage Assessment," <http://coastal.louisiana.gov/index.cfm>

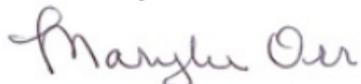
<sup>8</sup> The Nature Conservancy, "Louisiana: Rebuilding Oyster Reefs for People and Nature," [www.nature.org/ourinitiatives/regions/northamerica/louisiana/oyster-reef-restoration-in-louisiana.xml](http://www.nature.org/ourinitiatives/regions/northamerica/louisiana/oyster-reef-restoration-in-louisiana.xml)

<sup>9</sup> Morganza-to-the-Gulf Technical Panel Review: Final Report, December 5, 2008; p. 3, P. 12; posted online at [www.houmatoday.com/assets/pdf/HC14180128.PDF](http://www.houmatoday.com/assets/pdf/HC14180128.PDF)

<sup>10</sup> Multiple Lines of Defense Report, [www.mlods.org/PU3A\\_ONLY\\_MLODV1\\_12-09.pdf](http://www.mlods.org/PU3A_ONLY_MLODV1_12-09.pdf)

<sup>11</sup> M. Hester, J. Willis, "Restoration enhancement of black mangrove establishment in barrier island/headland project design: determination of differential tolerance thresholds of propagules and seedlings," 2007, [www.gulfcrest.org/Science/Project%20reports/hester\\_final\\_report.pdf](http://www.gulfcrest.org/Science/Project%20reports/hester_final_report.pdf)

Sincerely,

A handwritten signature in cursive script that reads "Marylee Orr".

Marylee Orr

Executive Director

Louisiana Environmental Action Network

Lower Mississippi Riverkeeper



Louisiana Audubon Council

1522 Lowerline St., New Orleans, Louisiana 70118-4010

February 18, 2013

U.S. Army Corps of Engineers,  
Attention: Nathan Dayan  
New Orleans District,  
P.O. Box 60267,  
New Orleans, LA 70160-0267.

Re: Draft, Revised Programmatic Environmental Impact Statement (DRPEIS);  
and Draft Post-Authorization Change Report (DPAC) Morganza to Gulf of  
Mexico, Louisiana.

Dear Mr. Dayan,

The Morganza to Gulf project includes 98 miles of earthen levees (21 segments), 22 floodgates, 23 environmental water control structures and a lock complex on the Houma Navigation Canal (HNC). The Tentatively Selected Plan (TSP) 1% AEP system, is a moving target. The report states in many places that the study will likely change between now and the Final EIS. It also mentions that other NEPA documents will be prepared. Will the Final EIS need to have additional supplements to fulfill the legal requirements of NEPA?

LAC1

The Louisiana Audubon Council has reviewed the DRPEIS and DPAC and have the following comments to be included in the record.

**Selection of the TSP:**

The Tentatively Selected Plan, (1% AEP system) was chosen from the four alternatives. One of the alternatives was the MLOD Alternative 3, (USACE 2013b, p. 36). This alternative had not been considered in prior EISs because MLOD report was not completed until April 2008. There is no detailed review of this Alternative in either the DPAC nor the DRPEIS. It appears the only criterion used to reject the MLOD alternative is that it abandons the location of the HNC structure used in the TSP. If a moveable sill was placed in the Canal to stop the saltwater intrusion, the main structure could be moved north to coincide with the MLOD protection levee where it would cross the Canal. What are the costs and benefits of using Alternative 3? We request that Alternative 3 be properly reviewed showing the costs and benefits of using this alignment in the Final RPEIS.

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LAC3

**Outdated Benefit/Cost analysis:**

A benefit/cost analysis, Table 4-1 (DPAC, p. 38), includes all the alignments but was completed in 2008 (5 years ago). Is there a B/C analysis for 2013? Since the alignments of segments have been changed and there is now 98 miles of levees (a 26 mile expansion), these changes must be included in an updated B/C analysis. The B/C Ratio for Alternative 1 (TSP) is only 1.07, which is barely over 1.0. These calculations came before new structures and an addition of 26 miles of levees were added to the project.

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**Inadequacy of DRPEIS:**

We find that the DRPEIS is incomplete. This conclusion is also voiced by USF&WS (2012):

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"Given that the indirect impact assessments for the constructible features are incomplete, and that the direct construction impacts for the remaining levee features are of only a programmatic assessment level, this Supplemental Coordination Act Report does not fulfill the requirements of the Fish and Wildlife Coordination Act and does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of that Act." (Dec. 6, 2012, USF&WS letter to Col. Fleming).

LAC8

We are also concerned that the Final PEIS will also be incomplete. It appears to us that the NEPA process is piecemeal and that the cumulative affects are not being addressed. The purpose of this "rush" is, "To assure that the PAC report is expeditiously processed through the Administration and to Congress." "The results of HDRRS designs . . . will be completed during Preconstruction Engineering and Design (PED) phase." (Summary, USACE, 2013a).

This process is reminiscent of the Alternative Arrangements to NEPA used by the Corps as part of the emergency process to rebuild the post-Katrina levees around New Orleans. The piecemealing of the project evades the proper NEPA process by putting off the comprehensive evaluation of impacts of the entire project. The DRPEIS withholds important information to be used by the public and agencies in evaluation of the project. The documents also avoids the cumulative environmental impacts of MtG project.

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The Final PEIS (USACE, 2002) was also incomplete and many of the failures of that document have been continued in the DRPEIS (USACE, 2013d). The borrow sites have not been selected for all the segments. How do we know the direct and indirect impacts to wetlands if the borrow sites have only been identified for three out of 21 levee segments. According to the DPAC additional NEPA documents are to be prepared for segments where studies have not been completed.

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LAC14

The use of non-structural measures to avoid loss to structures outside the levee system is a good approach and we are glad to see this added to the DRPEIS. The inclusion of sea-level changes from Engineering Circular 1165-2-212 is also a positive addition and is consistent with the State's Master Plan. We believe that more non-structural alternatives can be used for this project to reduce long-term costs.

**Incomplete Report on Borrow locations:**

"Design details of each of the programmatic elements will be further refined and the impacts assessed in a future NEPA document." (DPAC p. 82).

"Borrow costs are by far the largest component of this project. Borrow material for first lift levees is primarily obtained adjacent to the levees. Constructible feature borrow sites have been identified; however, for future lifts, it is assumed that borrow material will come from yet to be identified government-furnished borrow areas. The current status of unknown supply locations may be a concern to project reviewers/approvers." (USACE, 2013d, p. 1-9)

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Location of borrow sites. "not all borrow sources have been identified" USACE (2013a, p. ix). The report states that borrow sites for only 3 out of 21 levee segments have been identified. Which habitat types will be directly impacted by the location of the unnamed borrow sites?

LAC16

**Wetlands acreage behind levee system:**

We did not see an estimate of the enclosed wetlands acreage included in the DRPEIS. We are therefore using the 80,000 acre number from the FPEIS (USACE, 2002). The system has now grown to 98 miles of earthen levees. What is the current estimate of wetland acreage on the protected side of the levee system? The correct wetlands acreage should be added to the FRPEIS for each of the four Alternatives presented. They must also be used in any new B/C Ratio calculations. The B/C Ratios used in the document are from 2008 and are therefore out-of-date.

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**Direct impacts to wetlands: (TSP; 1% AEP alternative)**

The document states that there are 4,113 acres directly impacted by the construction of the TSP levee system. Does the levee footprint include: 1) the width of the borrow canal? 2) the offset between the

LAC19

berm and the borrow canal? 3) A 50 ft buffer zone from toe of slope? The entire impacted footprint of each levee section must be included as part of the direct impacts and wetland losses.

"Creation of impounded wetlands with induced development and indirect impacts (flooding/freshwater into wetlands) has been and continues to be a controversial issue within the environmental community of Southern Louisiana. Maintaining ecosystem hydrology with drainage structures within the levee could be challenging in the future given some sea level rise scenarios. The issue is further exacerbated by the continued subsidence of the marsh lands; however, the wetland ecosystem will be impacted by relative sea level rise either with or without the Morganza project in place." USACE (2013b, p. 98).

Each Alternative alignment presented in the PAC report should include the total number of wetland acres enclosed by the levee system. The report does not include this information. This is another inadequacy of the DPAC.

**Cumulative impacts:**

"The cumulative impacts of the 1% AEP Alternative and other planned or ongoing measures will be stabilization and potential enhancement of wetlands and marsh habitat throughout the study area." (USACE 2013d, p. 6-49). This is not supported by other statements in the document. If the gates are closed because of RSLR and the wetlands are isolated from the GOM, how will this be an enhancement?

LAC20

It should be included in a cumulative impacts study. The disruption of sheet flow is also an environmental impact. Does the Corps know how to manage a "leaky" levee over the 50 life of the project?

"In some areas, the proposed levee would restrict fish access to navigable and environmental structures only." (USACE 2013d, p. 6-48). The document continues: "Planned and on-going measures along with 1% AEP Alternative measures will likely be beneficial to the ecosystem and to recreation resources in numerous ways as habitat for various stages in the life-cycles of fish and wildlife are stabilized, protected, improved, and expanded. Improved fish habitat will increase the numbers and variety of fish, which will be beneficial to recreational fishing." (USACE 2013d, p. 6-49). The statement is not supported by the document. It is speculative and is counter to other statements made in the DPAC and DRPEIS.

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LAC23

Eliminating sheetflow in some areas will negatively affect fisheries. Spawning fish and invertebrates would be funneled into the culverts which may have higher velocities than natural for organisms to move between the protected and unprotected sides of the levees. Has this been discussed with the resource agencies? Will the critical velocities be maintained for water flow through the culverts and other structures over the life of the project?

LAC24

**Maintaining integrity of Levee system:**

We strongly support the incorporation of the post-Katrina engineering design criteria-especially the new soil standards into the federal levees. The failure of many New Orleans levees was as a result of poor soils incorporated into the federal levees. Any local earthen levees, to be incorporated into the Morganza to the Gulf federal levee system, must meet these new post-Katrina soil standards. One weak link in the system and there could be a catastrophic failure. We hope that proper soil borings with adequate spacing were taken through all the local levees to be included in the federal system. The material incorporated into these local levees must meet the post-Katrina Federal standards for earthen levees.

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"To analyze final designs if this project is authorized, additional deep undisturbed borings (approx. 400), shallow general type borrow borings (approx. 400), and Cone Penetrometers (CPTs) (approx. 600) will be necessary. Details on this will be furnished upon request." (USACE 2013e, p. 238).

LAC28

The detailed soil borings have not yet been taken. The data from these borings may alter the design or placement of some levee sections. We are surprised that these geological/engineering data have not been collected yet.

**Impacts to fisheries and marshes by a "leaky" levee system:**

We do criticize the inclusion of over 80,000 acres (125 sq mi) of wetlands within the federal "leaky" levee system. If MLOD Alternative were used, many of the issues would be moot. There are several issues of concern related to this vast acreage:

First, the wetlands will be isolated from storm surges which carry suspended sediments. It has been shown that suspended sediments distributed inland by storms and cold fronts are part of the natural process of wetlands nourishment (Roberts et al, 2012). Marshes can be sustained by only millimeters of suspended mineral sediments deposited annually. Without this influx of suspended sediments, the marsh will continue to subside, drowning the marsh, thus turning the enclosed area into open water. We request that the Corps and other agencies look at this process before agreeing to enclose and isolate 80,000 acres of wetlands. What are the environmental costs if these marshes are lost to productivity? This is a scenario which should be considered.

Second, the isolation of the wetlands over time will reduce the fisheries productivity in Terrebonne Parish. Fisheries species need unimpeded access to the interior fresh and intermediate marshes for spawning and juvenile growth. Will the number of culverts and navigational openings be sufficient over the 50 year life of the project to assure ingress and egress of fisheries species? This was not adequately discussed in the RPEIS. Will the openings compensate for the elimination of sheet flow?

Third, we also have concerns about the sustainability of the 6x6 ft culverts which will cross under the levees. Because of high subsidence rates where the levees cross marshes (especially Reaches J, K, L), how will the Corps assure that water circulation will be maintained as these levee segments subside? The elevation of some segments are to be built to presettlement elevations of 28 ft. There are many examples of highway embankments in which culverts were installed to maintain water circulation. These failed to provide normal hydrology over the life of the project because subsidence of the embankment and filling in of the culverts.

Will the culverts be built on pilings? How will the cross sectional areas be maintained over the life of the project? As RSLR increases, how will this affect the movement of water through the culverts over the life of the project?

Fourth, the PREIS states that because of Relative Sea Level Rise (RSLR), the openings in the levee system will have to close if the water levels reach +2.5 ft. It is stated that:

"Under future conditions, closure frequency could increase if the closure trigger is not adjusted to account for sea level rise. For example, under existing conditions, HNC floodgate closure (based on a 2.5-ft closure stage only, not the salinity triggers) would occur approximately 1.5 days per year. If the trigger remained the same through 2085, low RSLR would require closure 5 days per year by 2035 and 168 days per year by 2085 (refer to RSLR rates in table 3-1). Intermediate RSLR would require closure for 15 days per year by 2035 and 354 days per year by 2085. High RSLR would require closure for 24 days per year in 2035 and 365 days per year in 2085. To prevent frequent structure closings, operation plans will need to be re-evaluated periodically and closure trigger elevations may need to be increased if significant sea level rise occurs." USACE (2013b, p. 81).

"Environmental control structures will be closed for storm surge control if:

1. The water surface elevation on the staff gage reaches +2.5 feet NAVD88 at the flood gates when there is a named tropical storm in the Gulf.

LAC29

LAC30

LAC31

LAC32

LAC33

LAC34

LAC35

LAC36

LAC37

LAC38

2. If the National Weather Service issues a hurricane warning for the project area, the gates will be closed, if they have not already been closed due to condition (1) above." USACE (2013b, p. 80).

LAC39

If the system must remain closed for even 24 days per year, what affect will this have on fisheries? If the closure comes at critical times for migrating fisheries how will this affect the productivity of the Terrebonne marshes?

LAC40

"The trigger elevation may vary at different structure locations and will be further refined in the final PAC report." This information should have been included in the DRPEIS.

LAC41

The USF&WS (2012, p.2) in a letter to Col. Fleming raised issues with the closure and its impacts on fisheries resources: "Because of potential future sea level rise, the revised operational criteria may result in increasing closure frequency and duration over time, and corresponding increases in fisheries access impacts." (USFWS, 2012, letter, p.2)

We are equally concerned by closure of the environmental structures and the impacts this will have on the fisheries resources. This would not be a such a problem if fewer wetlands were included within the levee system as recommended in MLOD (Alternative 3).

LAC42

**Mitigation:**

"Approximately 4,364 acres of wetlands, including marsh, swamp, and bottomland hardwood habitats, are to be constructed for mitigation associated with direct loss of wetland habitat from levee construction. A portion of this mitigation would consist of construction of 1,175 acres of marsh habitat using the top 5 ft of borrow material from adjacent borrow areas associated with initial levee lifts." USACE (2013c, p. 6).

LAC43

LAC44

We do not accept the Corps' concept of mitigation (e.g. using some material dredged from a linear borrow pit to create marsh). There is no net gain. The remaining canal will be a permanent disruption to the environment, its depth will exceed the normal depth of the open water in the marsh and could become anoxic. While the use of the organic material for marsh creation is acceptable, the mitigation should be more than 1 to 1. Will the linear canals be a benefit or detriment to the ecosystem? This must be discussed in the final report. Will mitigation projects be located on the Gulf side or the protected side of the levee system?

We are also concerned that the project could stimulate additional clearing of bottomland hardwoods for agriculture. These indirect impacts also need to be mitigated. The 2002 FPEIS, (p. 144), stated that, "An estimated 88,700 additional acres [138 sq. miles] are considered marginally developable although wetlands." Does the Corps still consider the wetlands, included in the TSP, to be "marginally developable" ? If so, these wetlands should be identified and added to the impacts of the project.

LAC45

LAC46

**Completion of levee system:**

It is stated in the Report that the area will have protection when the first levee lift is completed. In what year will that happen?

LAC47

"Levees would be constructed in a total of four lifts for all reaches except for reach G, which will be constructed in three lifts. Variable and sometimes large time intervals (4-35 years) would separate lift cycles." USACE (2013c, Appen. C, p. 5)

The following time periods are given as the implementation schedule:

Real Estate Acquisition, Utility Relocations, and Mitigation	2014 to 2025
Construction of Structures	2015 to 2024
Construction of Levee Lifts to Achieve Base Year Elevations	2015 to 2035

Construction of Levee Lifts to Achieve Future Year Elevations 2035 to 2071

According to USACE (2013c, Appendix 404(b)(1) evaluation), building the levee system to base year elevations will take 20 years and be completed in 2035. Does this mean that the project area will not have 1% risk reduction until 2035? If so, do citizens living behind the proposed levees know that their protection will take 20 years?

LAC48

LAC49

LAC50

LAC51

LAC52

While we support hurricane protection for developed areas along the coast, we question a hurricane protection project in which 63% of the area to be protected are wetlands and water bottoms. Only 10% of the project area is identified as urban land. We also question an economic analysis which would choose such a preferred alternative.

Sincerely,



Barry Kohl, Ph.D.  
Geologist, and President of  
the La Audubon Council

Additional Note: On Feb. 13th we contacted the Corps to request a copy of Annex 2 (Soils Report) which included information on borings locations, borings logs, geologic profiles, settlement info, soil lab testing results etc. The Reference section in the Draft Engineering Appendix stated that, "all listed references are available upon request" p. 356 of 369. We have not received the information as of this date.

cc:  
Sierra Club, Delta Chapter  
Gulf Restoration Network (GRN)  
Atchafalaya Basin Keeper (ABK)  
Louisiana Environmental Action Network (LEAN)  
USF&WS, Lafayette  
NMFS, Baton Rouge  
National Audubon Society, Baton Rouge  
EPA, Dallas  
LDW&F  
La DNR

**References:**

Roberts, H.H., R. LeLaune, C. Li, D. Braud, C. Sasser, Z. Muhammad and S. Khalil, 2012. The Influence of Cold-Front Passages in Sediment Dispersal During Floods: Wax Lake Delta and Surrounding Marshlands. Abstract, State of the Coast: Preparing for a Changing Future, June 25-27, 2012, New Orleans, LA

USACE 2002. Final Programmatic Environmental Impact Statement (FPEIS) Mississippi river and Tributaries Morganza, Louisiana to the Gulf of Mexico Hurricane Protection.

USACE, 2013a. Summary of the Morganza to the Gulf of Mexico, Louisiana, Draft Post Authorization Change Report, January 2013. Included in CD distributed by NOD as MtG Item 01, 13 pp.

- USACE 2013b. Draft Post Authorization Change (DPAC) Report Morganza to the Gulf of Mexico, Louisiana, January 2013. Included in CD distributed by NOD as MtG Item 02a, 114 pp
- USACE 2013c. Morganza Appendix to Draft RPEIS Jan 2013. Included in CD distributed by NOD as MtG Item 03b, 267pp
- USACE 2013d. Draft Revised Programmatic Environmental Impact Statement (DRPEIS) Morganza to the Gulf of Mexico, Louisiana. Included in CD distributed by NOD as MtG Item 03a, 240pp
- USACE 2013e. Morganza to the Gulf of Mexico, Louisiana Draft PAC Draft Engineering Appendix. Included in CD distributed by NOD as MtG Item 01a, 369 pp
- USFWS 2012. Letter from J.D. Weller, (Supervisor La Ecological Services, USF&WS, Lafayette office) to Col. E.R. Fleming, NOD USACE. 9 pp (Included in CD distributed by NOD as MtG Item 03b, pdf, p. 79.



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18 February, 2013

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Re: Draft, Revised Programmatic Environmental Impact Statement (DRPEIS) and Draft Post-Authorization Change Report (DPAC), Morganza to Gulf Project

Dear Mr. Dayan:

I am writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. We have serious concerns about the ability of project to protect life and property within the project area.

The basis of our concerns lies in the deviation of the preferred alignment from a 'Lines of Defense' strategy taken elsewhere on the Louisiana coast. Given the ongoing loss of land and displacement of population within and from our region, this strategy was written to protect human life and property from storm surge threat while striking the balance necessary to maintain the ecosystem services that sustain coastal lifeways and economies. A Lines of Defense strategy allows for and entails the restoration and re-integration of protective coastal processes and features such as land-building and land-sustaining river floods, forested ridges, large expanses of interior and exterior marsh wetlands, and barrier islands--while planning for elevation and floodproofing of homes behind protective features, as well as planning for regular evacuation events. A lines-of-defense strategy also includes planning for relocation of distal coastal communities when and where it is necessary, so that coastal cultures can be maintained wherever possible.

GULF1

GULF2

GULF3

It is this strategy that has heavily influenced the Louisiana 2012 Coastal Master Plan.

The outward alignment selected as the preferred alternative has a long history, and was chosen before the latest science on the subsidence within the project area was as well understood. The preferred alignment is an alignment designed with "erosion," or loss of wetlands from the distal end of the basin inward, as the primary mechanism of coastal land loss; it is now understood

GULF4

that subsidence is the primary geological mechanism by which the interior marshes have been lost and the primary threat to the land within the project area in the future. In addition to this new understanding, we have learned more about the negative effects of impounding wetlands behind levees and roads from this very project area.<sup>1</sup> New research<sup>2</sup> also suggests that regular tidal fronts can deposit a non-trivial amount of sediment into connected coastal marshes, giving even more credence to the MLOD strategy of leaving estuarine systems connected for flood risk reduction, and thus striking a balance between flood protection and a sustainable ecosystem.

GULF5

GULF6

Rather than strike this balance, the preferred alignment extends a barrier against the sea far out into the estuary. And so, the levee alignment extends through open water areas for much of its length. In order to compensate for this large alteration in hydrology, the alignment contains flood gates that allow the exchange of tidal waters so long as they remain open. It is very likely that the changes in sea level rise will ensure that the gates will be increasingly closed, until, as sea level rises above 2.5 feet + NAVD, the gates will remain permanently closed.

GULF7

The increasing, then permanent closure of these gates will not only weaken the remnant or restored wetlands in this area, but also inhibit and then restrict the water-dependent economic activity which sustains the coastal communities resident in the areas to be protected.

GULF8

More immediately, the project as proposed would mislead the public into a presumption of flood protection for the intervening period before the base date of 2035 or the settlement of the final lifts in 2085.

Based upon these considerations, our comments are as follows:

**1) There are insufficient funds authorized for non –structural measures and relocation.**

GULF9

Given that the purpose of this project is 1% flood risk reduction, and that flooding of the area by is likely between 2012 and 2035, or between 2012 and 2085, it is within the scope of the project to consider elevation and floodproofing of structures, and relocation for populations within the project area as well as without. Currently, there are only relocation plans for populations without the preferred alignment that will receive induced surge.

Authorization for non-structural and relocation dollars should include a broader swath of the populated area, including not only the communities of Gibson, Bayou Du Large, Dulac, Cocodrie, and Isle de Jean Charles; but also the communities of Montegut, Point Aux Chenes, Chauvin, Boudreaux, and Theriot.

<sup>1</sup> See Appendix A, *Comments on Falgout Canal*

<sup>2</sup> H.H. Roberts et al. 2012, presented to State of the Coast. [The Influence of Cold-Front Passages in Sediment Dispersal During floods](#)

Internal displacement from the chronic degradation of the land, from chronic social issues, from repeated storms, and from changes in federal flood insurance is already causing a disorganized population migration away from these areas of coast (RPEIS, 5-44).

In order to maintain cultural values and access, a lines of defense strategy, as embodied in the 2012 Master Plan, allocates a quarter of total protection and restoration funding to “non-structural” measures within and without the levee system.

GULF10

Authorization of these funds for reduction of flood risk would communicate the risk of flooding in the more distal areas of the basin, and without these more distal communities being considered for floodproofing and relocation, the Army Corps risks misleading coastal communities that they will be protected from the project storm.

GULF11

Among the listed communities in the real estate plan appendix, the Isle de Jean Charles community is not included, despite its inclusion in other areas of the RPEIS because of the fact that that community will receive induced surge from the predicted alignment. *The absence of Isle de Jean Charles in the Real Estate Appendix is an error and does not give us confidence that the Executive Order on Environmental Justice (E.O. 12898) is being taken seriously.*

GULF12

*We request that funds for non-structural risk reduction be authorized within the project area, as well as relocation funds for more distal areas of the basin.*

GULF13

### 2) Lack of consideration of updates to the DFIRM and Biggert-Waters Reform Act of 2012

Although the population projections for the project area are projected to rise overall, the analysis of population growth within the basin does not distinguish between the areas more proximal to the Mississippi River, which are growing in population, and the distal areas, where people are leaving (RPEIS, 5-44). This pattern reflects a general trend across the coast.

GULF14

Parishes along the coast have recently seen or will see in the future, large changes to federal flood insurance rates. Across Louisiana coastal communities, flood insurance rates are the major talk of the day, and will likely influence the current intra-basin migration up the bayou.

*We question any population analysis that ignores the changes in federal insurance, as well as the existing intra-basin trend of population growth. We request an economic benefits analysis that includes these geographic details.*

### 3) Lack of consideration of existing and future ring levees

GULF15

It is stated at the Alternative 3 alignment for the Morganza to the Gulf Project, the MLOD or “lines of defense” alignment, has a larger footprint upon bottomland hardwood forest habitat. But this RPEIS does not consider the environmental impact of the other existing and proposed levees necessitated by flood risk reduction.

Additionally, several additional ring levees have been noticed through the 404 permitting process for the area north of Lake Boudreaux that would directly and indirectly impact the bottomland hardwood habitat in the area.

We argue that these ring levees, which in places rise to the heights of the first lift of the Morganza project, are a de-facto Alternative 3 being built in addition to the preferred alternative, and so these damages to habitat are proposed in addition to the damages of the preferred alignment.

GULF16

As the MLOD report was completed in 2008, after previous EIS efforts, and before the project-specific design proposals for these ring levees, it is unknown whether an Alternative 3 alignment would have larger forest impact.

GULF17

Although many modifications of the preferred alternative have been made to adjust for impacts, the same rigor has not been applied to Alternative 3.

GULF18

*We request that the full levee system, including ring levees, within the project area be evaluated for environmental impacts.*

GULF19

*We request a full analysis of Alternative 3 based upon the ring levees proposed for the area.*

**4) Mitigation of public lands should take place within the bounds of public lands**

Given the low proportion of public lands in coastal Louisiana, damages to what few public areas exist are damages to public recreation and aesthetic enjoyment.

Specifically, Impacts to Mandalay National Wildlife Refuge should take place within the bounds of that Refuge; impacts to Point Aux Chenes WMA should also take place within the bounds of that area. Both areas have been heavily impacted by legacy oil and gas activity. Mandalay has more potential for the backfilling of inactive oil and gas canals, and flotant marsh restoration; Point Aux Chenes WMA is heavily impacted by industry to the point that marsh creation with outside sediments must occur for restoration.

GULF20

Restoration of both of these areas would provide flood risk reduction to communities within the project area, as well as reduce the likelihood of damage from regular storm fronts to the project structures themselves, lowering maintenance costs.

*We request that mitigation for Mandalay NWR and Point Aux Chenes WMA occur within the bounds and management of those areas.*

**5) The levee system should be mitigated for with the most current mitigation standard.**

GULF21

In our previous letters, we have written about the general lack of mitigation plans available for comment concurrent with project authorization.<sup>3</sup>

We have also written about the general failure of mitigation to replace ecological function.<sup>4</sup>

In the New Orleans District, both in regulatory and civil works departments, mitigation for damages generally occurs in basins proximal to the Mississippi River, and thus the mitigation program generally aids the retreat from the coast, degrading vulnerable distal watersheds and leaving coastal areas more vulnerable to storm surges.

This specific project area once contained a “marsh management” mitigation project, Fina La Terre, that was ruled invalid because the impoundment of wetlands behind levees and roads led to lowered accretion of marshes, and thus weaker marsh roots.<sup>5</sup>

*We request that the highest mitigation standard be applied to this public project, and that floodside mitigation be included at every possibility.*

GULF22

It is troubling that this misunderstanding of coastal processes is reflected in the fact that this preferred alignment for the Morganza to the Gulf levee follows the footprint of several failed “marsh management” structures.

We reserve the right to rely on other comments submitted for this EIS.

For a healthy Gulf

[sent via e-mail]

Scott Eustis, M.S., Coastal Wetland Specialist

Cc: Matt Rota, Director of Science and Water Policy, Gulf Restoration Network

Aaron Viles, Deputy Director, Gulf Restoration Network

Cyn Sarthou, Director, Gulf Restoration Network

Barry Kohl, PhD, Louisiana Audubon Council

Dean Wilson, Atchafalaya Basinkeeper

Mary Lee Orr, Louisiana Environmental Action Network

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<sup>3</sup> See Appendix A, *Comments on Falgout Canal*

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

**Appendix A**

**Comment on section 404 permit application for the Falgout Canal segment of the Morganza to the Gulf project**



## UNITED FOR A HEALTHY GULF

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15 July, 2011

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RE: MVN 2011-1090 – WPP

Falgout Canal Reach of the Proposed Morganza to the Gulf Levee System

WQC 110503-04

Dear Mr. Duplantis and Mr. Phillippe:

I am writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. We have serious concerns about the application for a Section 404 permit (MVN 2011-1090– WPP) submitted to the U.S. Army Corps of Engineers (“Corps”), and a Water Quality Certification (WQC No. 110503-04) submitted to the Louisiana Department of Environmental Quality (“LDEQ”) by the Terrebonne Levee and Conservation District (“TLCD”).

TLCD is requesting a Section 404 permit for the construction of a system of levees and water control structures across areas of open water in the Terrebonne basin. Despite the fact that the description and plats for this document (the “Segment”) is one of many for this levee “system,” multiple permits have been initiated. Comments that apply to this permit will also apply to the other permits for this project, given that the cumulative impact of the system must be evaluated. At the time of this writing, these permits appear to include but are not limited to

MVN 2011 - 01087 WJJ (WQC 110503-02, CUP P20110539) “Reach J2”

MVN 2011-1088 – WJJ (WQC 1100503-04, CUP P20110522) “Reach G2 and H1”

MVN 2011 – 01090 WPP (WQC 110503-04, CUP P 2011 0522) “Falgout Canal”

We reserve the right to rely on other comments submitted for this permit as well as the other permits initiated for the singular “Levee System” project.

The proposed construction of the segment consists of filling and directly altering 20 acres of jurisdictional brackish marsh. The project would require the deposition of an estimated 746,018 cubic yards of “hauled-in material.”

20 acres of brackish wetland have been cited as the footprint of this permit; however, approximately 4,000 acres of intermediate wetlands and waters of the United States, including thousands of acres of marsh, will be impounded or impacted by this project. These acres are not included within the 20 acres attributed to the TLCD’s application.



**Map showing the 4,000 acre approximate area which will be further impounded by the levee segment. This area is already degraded, but will suffer further hydrological disconnection should this segment be permitted.**

The GRN opposes TLCD’s request for a Section 404 permit and Water Quality Certification, and we ask that the Corps and LDEQ deny this request based on the following concerns:

**1. The Plan subverts the Goals of the Comprehensive Plan for Coastal Restoration in Terrebonne Parish<sup>6</sup> (CPCR), and the goals of ecosystem restoration in Coastal Louisiana in general.**

The goals of the Comprehensive Plan are to

- Restore the coastal ecosystem
- Preserve natural coastal processes
- Minimize loss of natural ecosystem services (e.g. flood water storage)
- Ensure availability of a diverse array of natural goods and services

Four primary objectives have been set for the CPCR :

1. Increase integrity of barrier island systems
2. Increase vertical accretion of wetland soils
3. Maximize habitat diversity of coastal wetlands
4. Minimize residential development in wetlands south of the GIWW

Filling in and impounding wetlands with the levee alignment proposed achieves none of these goals or objectives and in fact subverts all of them.

It goes without saying that a levee system designed to protect property does not restore or preserve the natural system or processes. This particular alignment of the Morganza project will impound acres of wetlands, which will not minimize the loss of natural ecosystem services, and lessen availability of the diverse array of natural goods and services the local marshes provide.

The history of levee construction in the Mississippi River Delta shows that the Levee System will encourage residential and other unsustainable development in wetlands south of the GIWW. Other levees within the Louisiana delta have already been extended too far into the estuary. Where residential and commercial development has not followed the construction of the levee, the marshes have suffered soil subsidence, rather than accretion. The weakening of marshes leads to marsh loss, water retention loss, and an increase in the volume of the tidal prism<sup>7</sup> flowing in and out of the estuary; and thus an increase in both daily and acute erosional forces upon the marshes as well as the barrier island system at the edge of the basin.

The “environmental” value of this levee system is based upon a misunderstanding that erosion rather than subsurface subsidence is the main driver of wetlands change and loss in the area. Because of this idea that erosional forces are the main driver of previous wetland loss, the conclusion is that a “marsh management” system will preserve remaining wetlands in the area. Marsh management, the use of structures (such as canal plugs, weirs, gates, culverts, levees

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<sup>6</sup> Draft Comprehensive Plan for Coastal Restoration in Terrebonne Parish, February 2009  
[http://www.tpcg.org/coastal\\_restoration/docs/TPCPCR\\_FINAL%20DRAFT.pdf](http://www.tpcg.org/coastal_restoration/docs/TPCPCR_FINAL%20DRAFT.pdf)

<sup>7</sup> [Encyclopedia of Earth Sciences Series](#), 2005, 18, 833, DOI: 10.1007/1-4020-3880-1\_271

and spoil banks) to manipulate local hydrology in coastal marshes<sup>8</sup>, has been shown to alter the pattern of hydrological exchange significantly beyond the objectives of reducing saltwater intrusion and reducing wave energies. In an earlier review of marsh management<sup>9</sup>, the Fina LaTerre (currently Apache LaTerre) mitigation bank west of Bayou DuLarge was the object of an MMS study found that 'diurnal tidal variations, winter storms, and lunar tidal cycles were not of sufficient magnitude or duration to cause changes in water level' within the managed area. In other words, natural cycles were stopped rather than "managed."

Monitoring of two brackish marshes during drawdown years indicated that management reduced (1) water-level fluctuations; (2) the import of water, sediment, and nutrients; (3) vertical accretion; (4) soil bulk density; (5) accumulation of organic and mineral matter; and (6) the ingress and egress of marine transient fish species.

--Cahoon and Groat, 1990

During water drawdown periods, unmanaged brackish marsh outside of the impoundment structure had a significantly higher vertical accretion rate, higher soil bulk density and soil mineral matter, as well as a higher rate of organic accumulation.

The State Master Plan also states that "overall hydrology must be improved by minimizing impediments to water flow."<sup>10</sup> Allowing TLCD to impact over 4,000 acres of wetlands and waters of the United States in this Segment is obviously inconsistent with the mandate to improve hydrology and minimize impediments to water flow. The destruction of water flow is contrary to the objectives of the Master Plan.

It is apparent, then, that the alignment of this levee project impounds the marsh in such a way that undermines the goals of Louisiana and Terrebonne parish. The goal of vertical accretion is one that ensures a healthy marsh with strong soils that can withstand storms, hold water, and grow with the rising sea level. Impounding them weakens vertical accretion, and destroys the function of the marsh. Impounding the marshes also increases the costs of future restoration of these marshes, prohibitively. It can exclude the sunken marsh platform from ever being restored.

*This levee system alignment, as proposed, rests on a misunderstanding of the ecology of coastal marshes and the geology of the region. Because of this misunderstanding, this alignment subverts the objectives and goals of the Terrebonne Comprehensive Plan and the State Master Plan for coastal restoration. Therefore, construction of this Segment should not be allowed.*

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<sup>8</sup> "Ecological Impacts And Evaluation Criteria For The Use Of Structures In Marsh Management" USEPA EPA-SAB-EPEC-98-003, Jan 1998.

<sup>9</sup> Cahoon and Groat, ed. 1990. A Study of Marsh Management Practice in Coastal Louisiana.  
<http://www.gomr.boemre.gov/PI/PDFImages/ESPIS/3/3658.pdf>

<sup>10</sup> [http://www.lacpra.org/assets/docs/cprafinalreport\\_pg77\\_pg85\\_5-2-07.pdf](http://www.lacpra.org/assets/docs/cprafinalreport_pg77_pg85_5-2-07.pdf)

**2. The Levee system, and particularly this Segment, is technically unsound.**

Although the ecological damages to wetlands are the major matter of concern to the CWA 404 review, the corps should consider that the proposed levee system will not provide adequate flood protection, and may aggravate the vulnerabilities of the public to flooding from coastal storms. The protective capabilities of the levee system as proposed are overstated and misrepresented to the public.

The acreage listed as the footprint of the segment demonstrates that the levee will be built directly in tidal waters of the United States.

As the segment is built directly in water between ridges, it will fill like a basin when the gates are closed, and will potentially backflood communities on the ridges behind it as rainwaters from the hurricane fill the artificial "bowl." This problem will become worse as the marsh behind the segment degrades.

The segment crosses between ridges, across highly organic soils, which are likely "to have very poor geotechnical attributes for construction of a levee" (LPBF, 2008)<sup>11</sup>. Therefore, the Corps should not allow a levee to be built in this area. After the failure of hurricane levees post-Katrina, new soil standards for levees were adopted by the Corps. As this levee project is intended to encourage the Corps to build proper, higher levees along this alignment at a later date, Fill hauled in for this levee should be to the elevated standard.

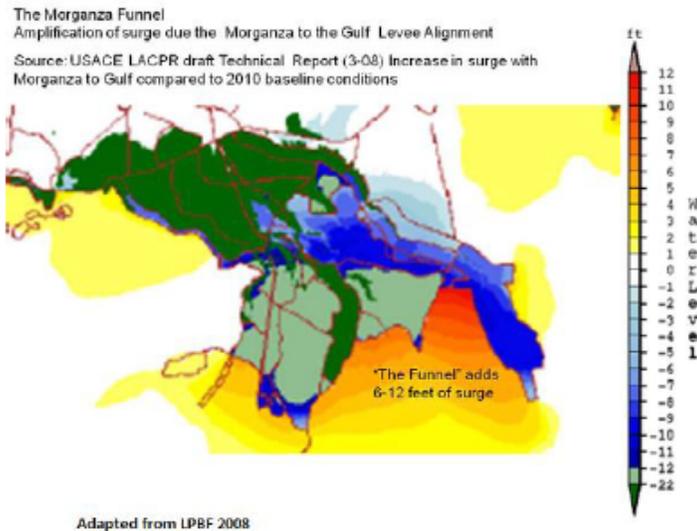
The Project would create a funnel effect<sup>12</sup> that will require evaluation. This 'funnel effect' refers to levee alignments, which are not smooth but have angles between somewhat linear segments of the levee. To have a funnel effect, the angle needs to be open on the flood side of the levee.

Therefore, as surge approaches the levee, the surge is deflected toward the apex of the angle where there is less space for the water, forcing it upward. The water is focused by the convergence of the levees and is forced upward, raising surge elevation higher than what might occur without the levee...(LPBF, 2008)

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<sup>11</sup> <http://mlods.org> (LPBF, 2008)

<sup>12</sup> Robinson v. U.S., 06-cv-02268



Adapted from LPBF 2008. hydrological modeling has shown that a gulfward levee alignment whose angles open toward the gulf can create a "Funnel" effect.

This proposed alignment for Morganza to the Gulf may create a funnel effect of 8-12 feet between the ridges of Bayou Pointe Chien and Bayou Terrebonne, thus increasing the likelihood of overtopping the few feet of levee proposed.

As reported by the technical review comment<sup>13</sup> for the project,

The construction of some segments prior to others (such as is already taking place with the TLCDC Reach J Segment 1 work) may have unforeseen implications for surge focusing. Surge modeling should be repeated for the project area each time there is a major phase completed.

Under certain project storms modeled by the Corps, the Project will create a funnel effect possibly as high as the height of the levee itself. This is without consideration that the levee will sink in height as time passes.

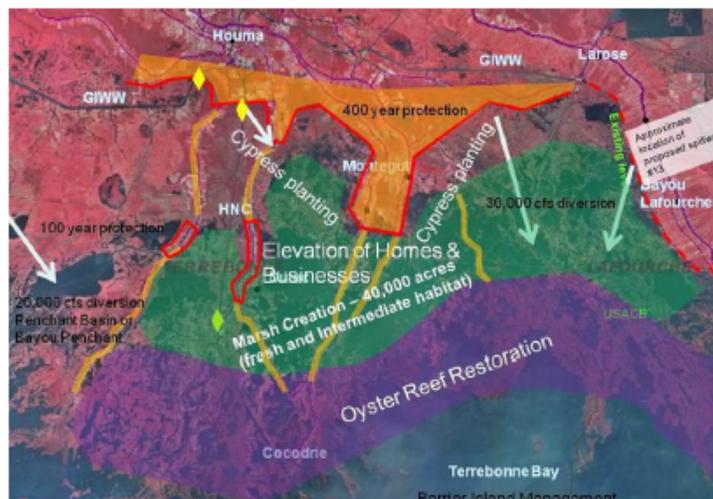
*As the damages are great and the benefits meager, and the public does not understand the risk reduction entailed, the Corps should not allow this segment or this project as aligned.*

<sup>13</sup> <http://www.houmatoday.com/assets/pdf/HC14180128.PDF>

**3. The many alternatives proposed for this project have not been adequately addressed. Alternatives do not include this segment of the project.**

The Public Notice gives no indication whether applicant evaluated any of the existing or any new alternatives. This alternative analysis must include direct, indirect, secondary, and cumulative impacts that take into account water quality, wildlife, and flood protection.

For example, Given a certain length for the levee alignment, indirect impacts to wetland areas could be minimized if the development were relocated to natural ridge lines, and direct impacts could be minimized by locating the project closer to the GIWW while augmenting the parish ring levees to a higher level of protection.



Lines of Defense alignment recommendation in red (LPBF 2008). this alignment would allow for much higher protection behind levees, and allow for restoration of areas impounded by this segment and project, in line with the stated Goals and objectives of the CPR.

Alternatives aligned further up the estuary than the current segment and project alignment would allow for future restoration of the marshes, and would provide greater protection if combined with proper land use planning and evacuation strategies as additional "Lines of Defense."

*We request that the notice include an evaluation of the alternatives proposed for this project, with a rationale for their rejection.*

**4. The standing mitigation plan is woefully inadequate. The final plan, including a mitigation plan, should be made available to the public before any permits are granted.**

Under a previous mitigation plan, the Corps required only “1,352 acres of new marsh” for the hundred thousand acres or more impacted by the project at this alignment. Thousands of acres of marsh are impounded by this Segment alone. This is abysmally low, and the applicant and the Corps (according to the Modified Charleston Method) should justify why there is so little mitigation for the destruction over such a large area.

We demand that the Corps justify this lack of mitigation for direct, indirect and secondary impacts.

We feel that the current Public Notice system is not adequate to fully involve the public in the Section 404 permitting process. The only item available to the public in the entire process is the initial Public Notice, which occurs before the Corps and the permitted go through the “avoid, minimize, and mitigate” process. Therefore, the public is never given the opportunity to comment on the final project including the mitigation plan.

*We request more information in the initial Public Notice (e.g., preliminary mitigation plans, efforts made to avoid impacts, necessity of project location, adequate alternative analysis, environmental assessments, etc.).*

*We also request this information in writing, and in the other public notices associated with this Levee Project.*

**5. We question that any mitigation for lost wetlands could completely replace the function and values lost.**

Mitigation is required for all impacts of this Segment. Compensatory mitigation in distant ecosystems with no ecological interrelation with the parcel and locality at issue wholly removes any meaning behind the word “compensatory.”

The obvious location for mitigation would be created marshes gulfward of the levee alignment, Marsh created outside of the ridge as mitigation would protect the levee, reducing maintenance costs and increasing protection from storms. The marsh would be created atop an older marsh platform that has been destroyed over a couple of decades by oil and gas and shipping industry impacts.

In conclusion, the Corps and LDEQ must take the mandates of the Clean Water Act and related federal regulations seriously; this is compounded by the inadequacy of the Public Notice, particularly in regard for proposed alternatives.

*We request notification of approvals/denials/changes to TLCD’s Section 404 permit and Water Quality Certification request, as well as an Updated Environmental Impact Statement that quantitatively evaluates direct, indirect, secondary, and cumulative impacts.*

**6. Because this permit and project is located within an area vulnerable to storm surge, FEMA should be included in the agency review of this permit.**

These wetlands lie within the inland extent of storm surge per the SLOSH model of the National Hurricane Center, as well as within the 100-year floodplain. Since FEMA is charged with administering the flood insurance program for this levee project, they should also be informed of this permit, which places people and developed property in harm's way.

As this levee project is not intended to meet 100-year standards of flood protection, FEMA should be duly notified to increase their educational efforts for the affected population, who will be misled.

**7. Direct, indirect, secondary, and cumulative impacts must be fully considered.**

Given the information in the Public Notice, it does not appear that TLCD has fully considered the direct impacts, or even addressed indirect, secondary, and cumulative impacts of the proposed wetland fill and clearing:

Direct impacts – The direct impacts of this project are certainly significant. There could be a considerable impact to water quality and wildlife habitat.

Also, the fill of such a large area is in violation of the federal and state anti-degradation policy. The Louisiana policy states, "the administrative authority will not approve any wastewater discharge or certify any activity for federal permit that would impair water quality or use of state waters."<sup>14</sup>

Additionally, the Federal regulations have not been fully implemented. Per executive orders 11988 and 11990, in order to prevent impacts to wetlands certain aspects need to be analyzed.

Title 18 of the Code of Federal Regulations states,

It is the policy of the Council to provide leadership in floodplain management and the protection of wetlands. Further, the Council shall integrate the goals of the Orders to the greatest possible degree into its procedures for implementing the National Environmental Policy Act. The Council shall take action to: Avoid long- and short-term adverse impacts associated with the occupancy and modification of floodplains and the destruction or modification of wetlands; Avoid direct and indirect support of floodplain development and new construction in wetlands wherever there is a practicable alternative; Reduce the risk of flood loss; Promote the use of nonstructural loss reduction methods to reduce the risk of flood loss; Minimize the impact of floods on human health, safety and welfare; Minimize the destruction, loss or degradation of wetlands; Restore and preserve the

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<sup>14</sup> LA. ADMIN. CODE tit. 33, pt. IX §1109(A)(2).

natural and beneficial values served by floodplains; Preserve and enhance the natural and beneficial values served by wetlands.<sup>15</sup>

Given that the public notice does not thoroughly adhere to the executive order, LDEQ and the Corps should deny the permit application.

Indirect and Secondary impacts – This project has and will further destroy wetlands that act as a buffer to reoccurring storms and localized flooding. The destruction of these wetlands, in subversion to the Terrebonne and State Master Plans, would certainly contribute to the weakening of the state's storm defenses. The Code of Federal Regulations recognizes the significance of secondary impacts from wetland destruction by emphasizing that "minor loss of wetland acreage may result in major losses through secondary impacts."<sup>16</sup> Although the applicant claims that these structures will benefit the impounded wetlands, marsh management has been shown to weaken the marsh. The Applicant should offer an analysis of probable secondary impacts based upon the review of marsh management previously cited.

Cumulative impacts

**The Corps must be required to look at cumulative impacts before they can approve 404 permits.** According to Federal Regulations, cumulative and secondary impacts must be considered for proposals that consider dredging and filling wetlands<sup>17</sup>. This requirement has been reinforced by court rulings. For example, the 5th Circuit Court of Appeals held in 2007 in the case of O'Reilly v. US. Army Corps of Engineers, that when the Corps performs an Environmental Assessment, or EA, it is required to look at cumulative impacts of the project that the agency has permitted along with any past, present, and foreseeable future development in the project area. In the case of that development proposal, the Court determined that the Corps was required to consider the cumulative impacts of 72 other Sec. 404 permits the agency had issued within a 3-mile radius of the proposed project site. The future developments the Court required the Corps to consider included "closely related and proposed or reasonably foreseeable actions that are related by timing or geography."

A cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other *past, present, and reasonably foreseeable future actions* regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Fritiofson v. Alexander, 772 F.2d 1225, 1245 (5th Cir. 1985)

Despite the 2007 court ruling and the Federal Regulations, the Corps has not been able to account for cumulative impacts in the New Orleans District despite numerous requests from the NGO community in the years that preceded and have followed the court decision.

*Therefore we request that Corps headquarters analyse the cumulative impacts of this project, in light of the long history of human impact to the area, and the future challenge of sea level rise.*

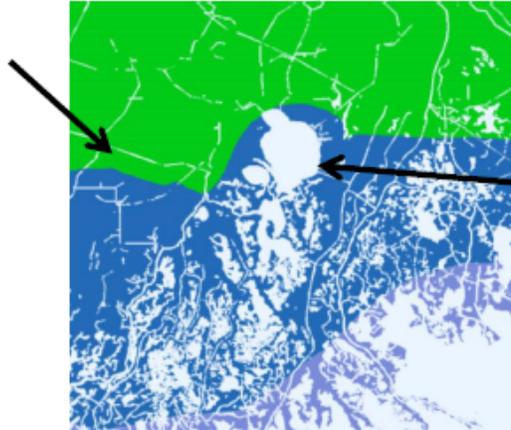
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<sup>15</sup> 18 C.F.R. §725.2.

<sup>16</sup> 40 CFR §230.41.

<sup>17</sup> 40 CFR § 230.11(g)

There will be more than a hundred thousand acres of damages to the Terrebonne Basin as a result of this Project. There have already been many thousands of acres lost to human impact in the impacted area.

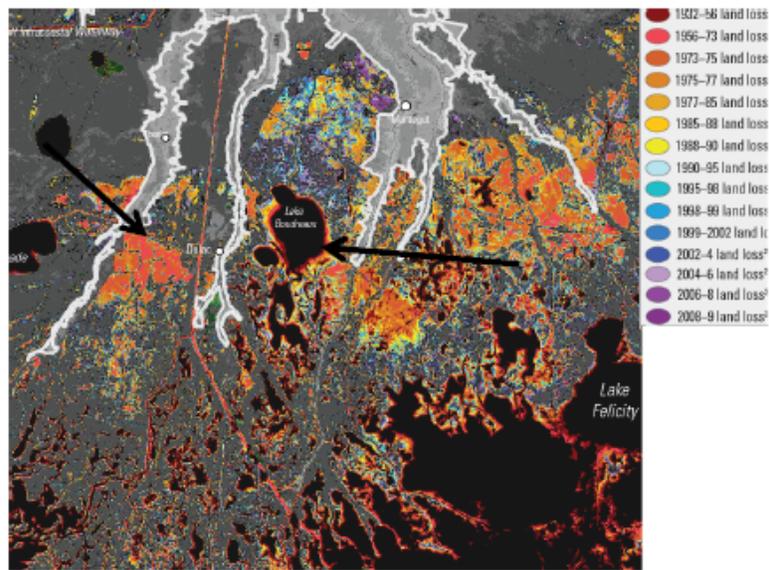


Adapted from O'Neil, T., 1949. "The Muskrat in the Louisiana Coastal Marshes." This 1949 wetlands classification, shows fresh marsh above and around Falgout canal and above Lake Boudreaux in light green, Brackish marsh in blue, and Saline marsh in purple. Arrows point to Falgout Canal (on left) and Lake Boudreaux (on right) as common features.



Adapted from LDWF, 2001. 2001 wetlands classification, showing the increase of fastlands further down the bayou, the retreat of freshwater and brackish marsh, the increase in number of canals and intermediate marsh plant communities (light blue) in the marsh management areas in question, as well as general land loss and advancement of saline marsh up the bayou.

Before The Houma Navigational Canal was dredged, fresh marsh and some cypress forest extended to the Falgout canal. After this canal placed more salt water into the marshes, and oil and gas extraction caused rapid subsidence of the area, the marshes below falgout canal declined rapidly. The marshes above the canal were protected and impounded with marsh management structures and rock armoring of the Houma Navigation Canal. The description and history of these marshes in the Coast 2050 document<sup>18</sup> mentions the high rate of subsidence, but fails to cite a mechanism. This was clarified by USGS open file report 00-418, and further work, based on the methods of Morton et al.<sup>19</sup>, would clarify the importance of separate mechanisms of wetlands loss.

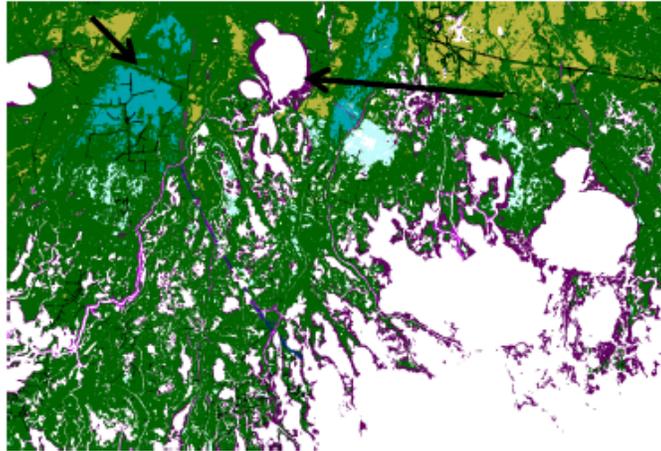


Adapted from Couvillion et al., 2011, "Land Area Change in Coastal Louisiana (1932-2010)" SIM 3164. Time periods of land loss within and around the Project area. The vast majority of interior marsh lost to water was lost between 1956 and 1977. The exception is erosion around Lake Boudreaux, and different impacts interior of Lake Boudreaux.

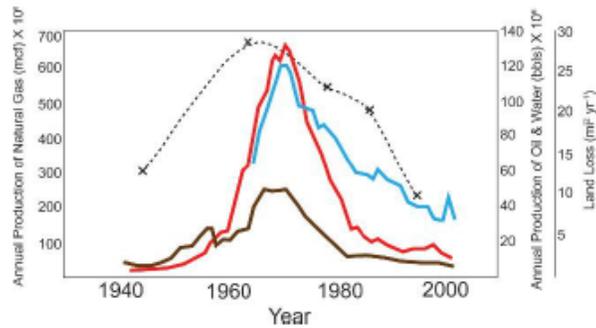
<sup>18</sup> Coast 2050: Toward a Sustainable Coastal Louisiana; appendix E: Region 3 Supplementary Information.

[http://www.crcl.org/images/2050app\\_e.pdf](http://www.crcl.org/images/2050app_e.pdf)

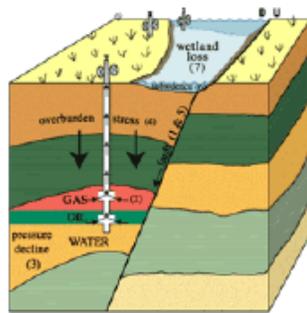
<sup>19</sup> <http://coastal.er.usgs.gov/gc-subsidence/>



Penland et al, 2000. USGS ofr 00-418. "Process Classification of Coastal Land Loss Between 1932 and 1990..." Areas in green are persistent wetlands as of 1990. Yellow areas are acreages of marsh lost to indirect oil and gas impacts. Black are direct removal of marshes by oil and gas canals. Dark blue areas are marshland lost through a combination of oil and gas and other hydrological impacts. Purple areas have been lost due to erosion, dark purple is natural erosion, light purple is erosion from shipping activity.

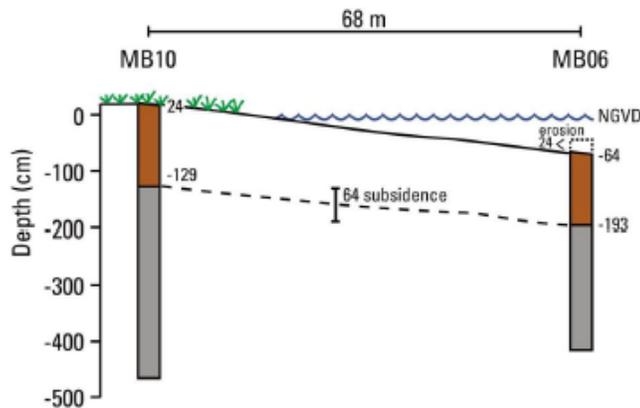


From Morton et al, 2005. Land loss and fluid extraction from the Louisiana Delta are correlated in space and time, for individual oil fields as well as for the region as a whole. The dotted line shows the trend of land loss, the brown line oil, the red line gas, and the blue line water.



From Morton et al. rapid "hotspot" subsidence from fluid withdrawal activates subsurface faults, such that the footprint of the sunken marsh does not track the footprint of oil fields exactly. This sunken (rather than eroded) marsh can be detected by vibracores.

### Madison Bay



From Morton et al., 2008. How paired vibracores show the difference between surface effects and subsurface effects. The organic marsh layer is represented in brown. In Madison Bay, subsurface subsidence attributed 64 cm to RSLR. Subsidence of this magnitude is attributed to many factors; fluid extraction has the largest subsidence effect.

The Segment is being built in an area subject to rapid interior subsidence due to oil and gas extraction and impoundment, as well as additional hydrological impacts from the Houma Navigational Canal<sup>20</sup> (shown in darker blue in the figure above.) Thousands of acres of marsh has already been impacted in this sub-basin and the sub-basin gulfward of it by human activity. The destruction of this marsh has allowed surges further into the interior, endangering property and the public welfare, and spurring a call for artificial protection.

<sup>20</sup> Penland et al, 2000. USGS open file report 00-418

The project could incite additional construction and in turn jeopardize even more wetlands unique to this area. This activity, combined with similar wetland-destroying projects, could result in more flooding in surrounding communities, as well as degraded water quality in the Lake Boudreau and Bayou Chauvin Sub-basins, the Terrebonne Basin, and its surrounding wetlands. The whole area must be looked at as an interrelated ecological unit in order to adequately assess the true cumulative impacts.

These activities, combined with similar wetland destroying projects, could result in more flooding in surrounding communities, as well as degraded water quality in the Houma canal and Bayou DuLarge Sub-basins and the Terrebonne Basin.

Since the public notice does not assess, or even recognize, all of the potential direct, indirect, and cumulative impacts that will result from the impacts to 4,000 acres of wetlands and waters of the United States (also former wetlands), the Corps must not approve this permit as submitted.

In Summary, The GRN opposes TLCD's request for a Section 404 permit and Water Quality Certification, and we ask that the Corps and LDEQ deny this request because

- 1) The Exterior Alignment of the levee system as proposed in this series of permits subverts the Louisiana State Draft Master Plan as well as the Terrebonne Parish Comprehensive Plan through an incredible amount of direct, indirect, and cumulative impact to marshes.
- 2) The Exterior Alignment of the levee system as proposed in this series of permits is technically unsound, being built in subsiding waters on unfit soils with soils possibly unfit for levees. The levee system is not being built to technical standards necessary for 100- year protection and may, through the funnel effect and backflooding, aggravate the destructive effects of storms.
- 3) Alternative alignments for the Morganza to the Gulf Levee System that would avoid these damages and provide better flood protection have not been evaluated.
- 4) Mitigation for the damages of this project that would aid in flood protection of the area has not been part of the public notice.
- 5) FEMA must be part of agency review for a project in this region that could make the population and property more vulnerable to storms.
- 6) The Exterior Alignment of the levee system as proposed is based upon a misunderstanding of the degradations of the past—the decades of impacts of previous hydrologic alternations, impoundments, and induced subsidence—as well as a misunderstanding of the challenges of the future, specifically sea level rise.

For a healthy Gulf,

[sent via e-mail and post]

Scott Eustis, Coastal Wetland Specialist

Cc: Matt Rota, Director of Science and Water Policy

Michael Murphy, Tulane Environmental Law Clinic

Tamara Mick, U.S. EPA, Region 6

John Ettinger, U.S. EPA

Bobby Quebedeaux, USACE

Jessica Williamson, LA DNR, OCM

Sharon McCarthy, LA DNR, OCM

Nicole Dandurand, LA DNR, OCM

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February 18, 2013

Mr. Nathan Dayan  
Environmental Manager  
U.S. Army Corps of Engineers  
New Orleans District  
P.O. Box 60267  
New Orleans, Louisiana 70160-0267

Dear Mr. Dayan,

The Atchafalaya Basinkeeper wishes to submit the following comments on the Revised Programmatic Environmental Impact Statement (RPEIS) for the "Morganza to the Gulf of Mexico, Louisiana" project. Atchafalaya Basinkeeper is a non-profit organization dedicated to protecting and restoring the ecosystems within the Atchafalaya Basin, the largest freshwater swamp in North America and a critical component of Louisiana's coastal ecosystem. We work consistently to ensure that the Atchafalaya Basin and River are protected from pollution, ecosystem degradation, poor management, and illegal activities.

The Atchafalaya and Mississippi Rivers are the largest contributors of freshwater to the Gulf of Mexico. As the RPEIS states, freshwater inflows within the project study area were historically driven by the Atchafalaya River (along with Bayou Lafourche before its closure), and flows within the area are currently driven by water stages in the lower Atchafalaya River. The potential role of the Atchafalaya River in future restoration of the coast is a critical question.

Flows in the Atchafalaya River are managed through the Old River Control Structure and Morganza Spillway. During the 2011 flood, the Spillway was opened for the second time since the flood of 1973 and at one point over 172,000 cubic feet per second (cfs) of water was flowing through 17 open floodgates. But because of the diffuse nature of the Atchafalaya sediment plume and distance from the rivers, the Barataria and Terrebonne Basins had less sedimentation from this historic flood event than expected (Falcini et al, *nature geoscience* 5 (2012), [http://www.nature.com/nggeo/journal/v5/n11/full/ngeo1615.html?WT.ec\\_id=NGEO-201211](http://www.nature.com/nggeo/journal/v5/n11/full/ngeo1615.html?WT.ec_id=NGEO-201211)).

The RPEIS describes how major waterways in the study area divide the Terrebonne Basin into three sub-basins: the Verret sub-basin, dominated by freshwater from the Atchafalaya River and Atchafalaya Bay; the Penchant Sub-basin between the Atchafalaya River and Atchafalaya Bay to the west, Bayou du Large on the west, and the Gulf to the south, which "is heavily influenced by flood flows from the Atchafalaya River"; and the Timbalier sub-basin bordered by Bayou du Large (west), Bayou Lafourche (east), the Gulf Intracoastal Waterway (GIWW) (north), and the Gulf (south), which has limited freshwater inflow from rainfall and Atchafalaya River high flows through the GIWW. (RPEIS, p. 5-2)

Two proposed projects utilizing the Atchafalaya River feature prominently in the 1<sup>st</sup> Implementation Period plan for the Central Coast (2012-2031) in the *Louisiana Comprehensive*

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*Master Plan for a Sustainable Coast* (2012): a 150,000 cfs sediment diversion from the river into Penchant and southwest Terrebonne marshes, and an increase of Atchafalaya flow to Eastern Terrebonne through dredging of the GIWW and a bypass structure at the Bayou Boeuf Lock. (Master Plan, p. 126)

The importance of Atchafalaya River sediments for coastal restoration in the area is also reflected by a number of projects described in the RPEIS.

The *Coastal Impact Assistance Program* (CIAP) includes a planned Atchafalaya River Long Distance Sediment Pipeline, which is envisioned as carrying sediment slurry from the Atchafalaya River near Morgan City to eastern and central Terrebonne marshes. The RPEIS states that locations for marsh restoration in the area "would be selected to enhance the sustainability of existing and planned levee systems." (RPEIS, p. 3-17)

The *Coastal Wetlands Planning, Protection, and Restoration Act* (CWPPRA) includes several planned projects in the Morganza to the Gulf study area (RPEIS, pp. 3-20, 3-21):  
The Lost Lake Marsh Creation and Hydrologic Restoration project, which would utilize variable-crest weir structures "to increase freshwater and sediment delivery from the Atchafalaya River/Four League Bay system and to provide flow-through conditions in the system."  
The South Lake de Cade Freshwater Introduction project, located 15 miles southwest of Houma, proposes three control structures to allow controlled diversion of Atchafalaya River water, nutrients, and sediment into area marshes.

The Central Terrebonne Freshwater Enhancement Grand Pass would "increase Atchafalaya River freshwater influence in the area" by modifying a weir structure north of Lake Decade, along with maintenance dredging for freshwater conveyance from the GIWW.  
The RPEIS states that flooding in northwestern Terrebonne Parish has increased because of "amplified Atchafalaya River flows via the GIWW" (to be addressed by the additional CWPPRA project, GIWW Bank Restoration of Critical Areas in Terrebonne.)

The *Louisiana Coastal Area Plan* (LCA) authorized by Congress in the 2007 WRDA bill, prominently featured the Convey Atchafalaya River Water to Northern Terrebonne Marshes project as one of six "near-term critical restoration projects" that are "directly linked to the Morganza to the Gulf project, even sharing much of the same project area." (RPEIS, p. 3-18).  
The six initial near-term projects were formally agreed on by the state and Corps in 2011 ([http://www.nola.com/environment/index.ssf/2011/12/coastal\\_restoration\\_projects\\_m.html](http://www.nola.com/environment/index.ssf/2011/12/coastal_restoration_projects_m.html)).  
This project (or an earlier version) was prominently featured in the 2007 Coastal Master Plan (p. 88), and the *Coast 2050 Plan* from 1998 (p. 106). Its final EIS and Integrated Feasibility studies were completed by the U.S. Army Corps of Engineers in 2010 (<http://www.usace.army.mil/Portals/2/docs/civilworks/Project%20Planning/LCA6-2.pdf>)

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It is surprising, therefore, to read in the RPEIS that the Convey Atchafalaya River Water to Northern Terrebonne Marshes project is among three LCA projects that the state Coastal Restoration & Protection Authority (CPRA) notified the Corps "that it desires to suspend study and design" for, in letters of August and October, 2012. (RPEIS, p. 3-18) The RPEIS states that this decision "results in some degree of uncertainty regarding implementation of these projects as part of the authorized Federal LCA)."

BASIN1

The US Fish & Wildlife Service (USFWS) Recommendations for the project's Post-Authorization Change Report state that "in keeping with the project's Congressional Authorization", [the report] "should clearly reiterate that features of the Tentatively Selected Plan will be designed to maintain existing freshwater inflows from the Atchafalaya River via the [GIWW]. Those designs shall accommodate restoration needs determined via future restoration planning, to the extent possible." (RPEIS, p. 8-8)

We believe that a fuller explanation of these issues is warranted, along with a discussion of whether ultimately not conveying Atchafalaya River water into Terrebonne marshes would result in further deterioration, which could have impacts on future levee systems in the area through loss of wetlands that lie between them and the Gulf.

Another very serious problem that the EIS failed to address is the way that the Corps of Engineers currently manages sediments, critical for coastal restoration, in the Atchafalaya Basin. The Corps of Engineers is currently diverting a significant amount of sediments into forested wetlands within the Atchafalaya Basin Floodway, effectively filling in with sediments the most productive and important wetland forests in the nation. As a consequence of this ill-conceived plan, wetlands that provide the most important migratory bird habitats are being converted to uplands, forever disappearing from the planet. At the same time, these critically important sediments are prevented from reaching the coast, where they are urgently needed. Consistency of the proposed alignment with CWPPRA is an important issue that is not addressed in the RPEIS.

BASIN2

The August 2002 Chief of Engineer's Report, cited on page 10 of the new Post Authorization Change Report, states clearly that:

"Consistent with reducing hurricane and storm damages in an environmentally sustainable manner, the project will be designed and operated to achieve coastal wetland conservation through the improved distribution of freshwater inflows to wetlands wherever feasible. The specific designs and operating plan will be formulated in consultation with the interagency habitat [evaluation] team." The current EIS suggests that this directive has changed in some fundamental ways.

BASIN3

Since we do not live forever, it is important to act as land stewards for future generations. With a predicted sea level rise of 2.4 feet and possibly 4.8 feet by 2085, it is a poor investment and little more than a short-term solution to build a levee through what soon will be open water, especially

BASIN4

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considering the cost estimate for this project. In addition, the Morganza to the Gulf levee will most likely increase the speed of coastal erosion by blocking sediments from moving through the system and increasing storm surge levels south of the levee. It does not take a scientist to imagine what would happen to an earthen levee, built through open water, being pounded by waves. Earthen levees cannot protect us from the open sea unless the levee is armored with rocks or cement. The study fails to address the comparison of the benefits of the project against the long term benefits of implementing a project that would have lasting effects to the aid or present and future generations. The \$12.9 billion may be better spent to fund an orderly retreat from the coast, helping people adjust to the coming waters, and coastal restoration that would truly make a difference for generations to come, like opening Bayou Lafourche as soon as possible to restore the delta, closing the Houma Navigation Canal, and diverting some Atchafalaya River water to combat coastal erosion and relative sea level rise.

BASIN5

BASIN6

BASIN7

The fact that the population for the project area is expected to increase overall reflects the negligent handling by the State of Louisiana of the crisis of rising water levels and increased frequency and intensity of flooding. With the rate at which we are losing our coast and the predicted sea level rise, the State of Louisiana should be working to depopulate the area and discourage further development along the coast.

BASIN8

The EIS should include the cumulative impacts, including several ring levees that have been permitted through the 404 process in the area north of Lake Boudreaux and would directly and indirectly impact the bottomland hardwood forest in the area. Although these ring levees are not part of the Morganza to the Gulf project, the habitat damages they cause should be considered in addition to the negative impacts caused by the preferred alignment because they are within the project area.

BASIN9

Sincerely,

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Executive Director  
Atchafalaya Basinkeeper  
225-692-4114

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Delta Chapter, Sierra Club

740 7<sup>th</sup> Street  
New Orleans La 70115  
February 18, 2013

U.S. Army Corps of Engineers,  
Attention: Nathan Dayan  
New Orleans District,  
P.O. Box 60267,  
New Orleans, LA 70160-0267.

Re: Draft, Revised Programmatic Environmental Impact Statement (DRPEIS);  
and Draft Post-Authorization Change Report (DPAC) Morganza to Gulf of  
Mexico, Louisiana.

Dear Mr. Dayan,

The Delta Chapter of the Sierra Club wishes to make the following comments on the above referenced  
DREIS

**Incompleteness of DRPEIS**—The Delta Chapter agrees with the US Fish and Wildlife Service, which  
states:

"Given that the indirect impact assessments for the constructible features are incomplete, and  
that the direct construction impacts for the remaining levee features are of only a programmatic  
assessment level, this Supplemental Coordination Act Report does not fulfill the requirements of  
the Fish and Wildlife Coordination Act and does not constitute the final report of the Secretary of  
the Interior as required by Section 2(b) of that Act." (Dec. 6, 2012, USF&WS letter to Col.  
Fleming)."

For example, the borrow sites have not been selected for all the segments. How do we know the  
direct and indirect impacts to wetlands if the borrow sites have only been identified for 3 of 21  
segments? According to the PAC additional NEPA documents are to be prepared for segments  
where studies have not been completed.

We are also concerned that the Final PEIS will also be incomplete. It appears to us that the  
NEPA process is piecemeal and that the cumulative affects are not being addressed.

SIERRA1

**Impacts to fisheries and marshes by a "leaky" levee system:**

We do criticize the inclusion of over 80,000 acres (125 sq mi) of wetlands within the federal "leaky" levee system. If MLOD Alternative were used, many of the issues would be moot. There are several issues of concern related to this vast acreage:

SIERRA2

First, the wetlands will be isolated from storm surges which carry suspended sediments. It has been shown that suspended sediments distributed inland by storms and cold fronts are part of the natural process of wetlands nourishment (Roberts et al, 2012). Marshes can be sustained by only millimeters of suspended mineral sediments deposited annually. Without this influx of suspended sediments, the marsh will continue to subside, drowning the marsh, thus turning the enclosed area into open water. We request that the Corps and other agencies look at this process before agreeing to enclose and isolate 80,000 acres of wetlands. What are the environmental costs if these marshes are lost to productivity? This is a scenario which should be considered.

SIERRA3

Second, the isolation of the wetlands over time will reduce the fisheries productivity in Terrebonne Parish. Fisheries species need unimpeded access to the interior fresh and intermediate marshes for spawning and juvenile growth. Will the number of culverts and navigational openings be sufficient over the 50 year life of the project to assure ingress and egress of fisheries species? This was not adequately discussed in the RPEIS. Will the openings compensate for the elimination of sheet flow?

SIERRA4

SIERRA5

Third, we also have concerns about the sustainability of the 6x6 ft culverts which will cross under the levees. Because of high subsidence rates where the levees cross marshes (especially Reaches J, K, L), how will the Corps assure that water circulation will be maintained as these levee segments subside? The elevation of some segments are to be built to presettlement elevations of 28 ft. There are many examples of highway embankments in which culverts were installed to maintain water circulation. These failed to provide normal hydrology over the life of the project because subsidence of the embankment and filling in of the culverts.

SIERRA6

Will the culverts be built on pilings? How will the cross sectional areas be maintained over the life of the project? As RSL increases, how will this affect the movement of water through the culverts over the life of the project?

SIERRA7

Fourth, the PREIS states that because of Relative Sea Level Rise (RSLR), the openings in the levee system will have to close if the water levels reach +2.5 ft. It is stated that:

"Under future conditions, closure frequency could increase if the closure trigger is not adjusted to account for sea level rise. For example, under existing conditions, HNC floodgate closure (based on a 2.5-ft closure stage only, not the salinity triggers) would occur approximately 1.5 days per year. If the trigger remained the same through 2085, low RSLR would require closure 5 days per year by 2035 and 168 days per year by 2085 (refer to RSLR rates in table 3-1). Intermediate RSLR would require closure for 15 days per year by 2035 and 354 days per

year by 2085. High RSLR would require closure for 24 days per year in 2035 and 365 days per year in 2085. To prevent frequent structure closings, operation plans will need to be re-evaluated periodically and closure trigger elevations may need to be increased if significant sea level rise occurs." USACE (2013b, p. 81).

SIERRA8

"Environmental control structures will be closed for storm surge control if:

1. The water surface elevation on the staff gage reaches +2.5 feet NAVD88 at the flood gates when there is a named tropical storm in the Gulf.
2. If the National Weather Service issues a hurricane warning for the project area, the gates will be closed, if they have not already been closed due to condition (1) above." USACE (2013b, p. 80).

If the system must remain closed for even 24 days per year, what affect will this have on fisheries? If the closure comes at critical times for migrating fisheries how will this affect the productivity of the Terrebonne marshes?

"The trigger elevation may vary at different structure locations and will be further refined in the final PAC report." This information should have been included in the DRPEIS.

The USF&WS (2012, p.2) in a letter to Col. Fleming raised issues with the closure and its impacts on fisheries resources: "Because of potential future sea level rise, the revised operational criteria may result in increasing closure frequency and duration over time, and corresponding increases in fisheries access impacts." (USFWS, 2012, letter, p.2)

We are equally concerned by closure of the environmental structures and the impacts this will have on the fisheries resources. This would not be a problem if less wetlands were included within the levee system as recommended in MLOD (Alternative 3).

The document states that there are 4,113 acres directly impacted by the construction of the TSP levee system. Does the levee footprint include: 1) the width of the borrow canal? 2) the offset between the berm and the borrow canal? 3) A 50 ft buffer zone from toe of slope? The entire impacted footprint of each levee section must be included as part of the direct impacts and wetland losses.

SIERRA9

"Creation of impounded wetlands with induced development and indirect impacts (flooding/freshwater into wetlands) has been and continues to be a controversial issue within the environmental community of Southern Louisiana. Maintaining ecosystem hydrology with drainage structures within the levee could be challenging in the future given some sea level rise scenarios. The issue is further exacerbated by the continued subsidence of the marsh lands; however, the wetland ecosystem will be impacted by

relative sea level rise either with or without the Morganza project in place." USACE (2013b, p. 98)

Each Alternative alignment presented in the PAC report should include the total number of wetland acres enclosed by each levee system. The report does not include this information. This is another inadequacy of the PAC.

SIERRA10

.Mitigation:

"Approximately 4,364 acres of wetlands, including marsh, swamp, and bottomland hardwood habitats, are to be constructed for mitigation associated with direct loss of wetland habitat from levee construction. A portion of this mitigation would consist of construction of 1,175 acres of marsh habitat using the top 5 ft of borrow material from adjacent borrow areas associated with initial levee lifts." USACE (2013c, p. 6).

We do not accept the Corps' concept of mitigation (*e.g.* using some material dredged from a linear borrow pit to create marsh). There is no net gain. The remaining canal will be a permanent disruption to the environment-- its depth will exceed the normal depth of the open water in the marsh. Will the linear canals be a benefit or detriment to the ecosystem? This must be discussed in the final report. Will mitigation projects be located on the Gulf side or the protected side of the levee system?

SIERRA11

We are also concerned that the project could stimulate additional clearing of bottomland hardwoods for agriculture. These indirect impacts also need to be mitigated.

SIERRA12

These concerns reinforce the need for the Sierra Club policy on wetland mitigation to be followed for such a far reaching project. We particularly note the policy recommending at least a 2:1 replacement ratio for lost wetlands. We also note that the Sierra Club policy strongly recommends that the mitigation sites be implemented/completed to a point where reasonable assurance of success has been established before the levee project may commence.

SIERRA13

The objective of a mitigation plan should be the long-term and incremental gain in a comprehensive range of wetland values, through at least a 2:1 replacement of acreage of the disturbed wetland. The following conditions should be met:

SIERRA14

1. The cost of the entire mitigation process must be borne by the applicant, and long-term responsibilities and evaluation criteria for the success of the mitigation project should be specified in the permit conditions. These conditions must be enforced by contract and performance bonds to ensure the implementation and completion of the mitigation project.
2. No mitigation plan should be considered unless the authorizing agency has committed the requisite staff, expertise, and resources for long-term monitoring and enforcement. These responsibilities may be delegated to a third party under contract and accountable to the authorizing agency, but funded entirely by the applicant. Similarly, the agency should contract for planning and implementation with funding provided by the applicant.
3. Mitigation should address all temporary and long-term negative impacts of the development project -- direct, indirect, cumulative, and synergistic.
4. Mitigation activities generally should be confined to restoration of degraded wetlands or previously functioning wetlands, provided that sites are available within the authorizing agency's jurisdiction and that they meet the needs of a comprehensive restoration plan. Preference should be given to restoration of the same wetland type within the same hydrologic system (drainage basin or waterway) as that to be altered, and should take into consideration the most critical and endangered wetland types in the local regional setting.

Under no circumstances should an applicant be allowed to destroy part of a wetland area in return for "improving" another part of the same area, or to gain mitigation "credits" for restoring a wetland he/she has degraded. Creation of wetlands in upland areas is generally undesirable, particularly at the current level of scientific and technical understanding. Wetland mitigation should not result in the loss of their biologically valuable habitats; the destruction of adjacent habitats and communities should be avoided.

5. Based on detailed hydrological and biological assessment of the wetland and its surrounding watershed, an adequate buffer should be provided to assure the future protection of the restored or created wetland. At least 300-500 feet should usually be recommended. Access to and uses of the restored wetland should be restricted as a "temporal buffer" until regeneration is assured. If the wetland is located adjacent to water, a buffer area should extend at least as far in the adjacent shallow water.
6. Preferably, the mitigation should have been completed and shown to be at least 75% successful before work may begin in the development project. At a minimum, the mitigation project must have been implemented to a point where reasonable assurance of success has been established before the development project may be commenced. Two growing seasons should be the minimum time to determine the success of the mitigation project.
7. The restored or created wetland must be protected by legal mechanisms, such as a special zoning designation, deed restrictions, or covenants, to ensure their continued existence

8. and protection. Created wetlands should be subject to all of the legal protections of jurisdictional wetlands.
9. Mitigation must result in a net gain in wetland acreage and in the full panoply of wetland functions (e.g., trading of flood control at one site for habitat improvements at another cannot be counted as a net gain in wetland functions).
10. Complete, consistent, and accurate documentation of the development and the mitigation projects must be collected and retained by the authorizing agency as part of the permanent public record. This is particularly important because of the still experimental nature of wetland restoration and creation. This record should include details of the site evaluation before and after the development disturbance (inspection reports, maps, photographs, and analyses), all biological, hydrological, and engineering designs and plans, site monitoring data, and evaluations of the development and mitigation projects by other federal, state, and local agencies. In addition, names, addresses, telephone numbers, and affiliations of all personal who have a working knowledge of the projects should be retained.
11. Donation or preservation of another wetland is not acceptable alone as mitigation for the loss of the project wetland, as this still constitutes a net loss in wetland acreage and values. The overall mitigation plan must provide for restoration and/or creation of wetlands.
12. Mitigation banks should be integrated into a comprehensive program for wetlands restoration under the authority of a "resource" agency. Provision must be made for public participation in all phases of the mitigation bank, including planning, operation, and education; conditions 1-11 should be applied.

(From Sierra Club Conservation Policies—Wetlands  
[www.sierraclub.org/policy/conservation/wetlands.aspx](http://www.sierraclub.org/policy/conservation/wetlands.aspx))

**Cumulative impacts:**

"The cumulative impacts of the 1% AEP Alternative and other planned or ongoing measures will be stabilization and potential enhancement of wetlands and marsh habitat throughout the study area." (USACE 2013d, p.6-49)

This is not supported by other statements in the document. If the gates are closed because of RSLR and the wetlands are isolated from the GOM, how will this be an enhancement? It should be included in cumulative impacts study. The disruption of sheet flow is also an environmental impact. Does the Corps know how to manage a "leaky" levee over the 50 life of the project?

SIERRA15

"In some areas, the proposed levee would restrict fish access to navigable and environmental structures only." (USACE 2013d, p. 6-48)

The document continues: "Planned and on-going measures along with 1% AEP Alternative measures will likely be beneficial to the ecosystem and to recreation resources in numerous ways as habitat for various stages in the life-cycles of fish and wildlife are stabilized, protected, improved, and expanded. Improved fish habitat will increase the numbers and variety of fish, which will be beneficial to recreational fishing." (USACE 2013d, p. 6-49).

SIERRA16

The above statement is not supported by the document. It is speculative and is counter to other statements made in the PAC and DRPEIS.

SIERRA17

Eliminating sheetflow in some areas will negatively affect fisheries. Spawning fish and invertebrates would be funneled into the culverts which may have higher velocities than natural for organisms to move between the protected and unprotected sides of the levees. Has this been discussed with the resource agencies? Will the critical velocities be maintained for water flow through the culverts and other structures over the life of the project?

**Maintaining integrity of Levee system:**

The Delta Chapter of the Sierra Club strongly supports using post-Katrina engineering design criteria-especially the new soil standards-- into the federal levees. The failure of many New Orleans levees was a result of poor soils incorporated into the federal levees. Any local earthen levees, to be incorporated into the Morganza to the Gulf federal levee system, must meet these new post-Katrina soil standards. . Proper soil borings with adequate spacing must be taken through all the local levees to be included in the federal system. The material incorporated into these local levees must meet the post-Katrina Federal standards for earthen levees.

SIERRA18

SIERRA19

"To analyze final designs if this project is authorized, additional deep undisturbed borings (approx. 400), shallow general type borrow borings (approx. 400), and Cone Penetrometers (CPTs) (approx. 600) will be necessary. Details on this will be furnished upon request." (USACE 2013e. p. 238).

The detailed soil borings have not yet been taken. The data from these borings may alter the design or placement of some levee sections. We are surprised that these geological/engineering data have not been collected yet.

**Impacts to fisheries and marshes by a "leaky" levee system:**

We do criticize the inclusion of over 80,000 acres (125 sq mi) of wetlands within the federal "leaky" levee system. If MLOD Alternative were used, many of the issues would be moot. There are several issues of concern related to this vast acreage:

First, the wetlands will be isolated from storm surges which carry suspended sediments. Marshes can be sustained by only millimeters of suspended mineral sediments deposited annually. Without this influx of suspended sediments, the marsh will continue to subside,

drowning the marsh, thus turning the enclosed area into open water. We request that the Corps and other agencies look at this process before agreeing to enclose and isolate 80,000 acres of wetlands. What are the environmental costs if these marshes are lost to productivity? This is a scenario which should be considered.

Second, the isolation of the wetlands over time will reduce the fisheries productivity in Terrebonne Parish. Fisheries species need unimpeded access to the interior fresh and intermediate marshes for spawning and juvenile growth. Will the number of culverts and navigational openings be sufficient over the 50 year life of the project to assure ingress and egress of fisheries species? This was not adequately discussed in the RPEIS. Will the openings compensate for the elimination of sheet flow?

Third, The Sierra Club also has concerns about the sustainability of the 6x6 ft culverts which will cross under the levees. Because of high subsidence rates where the levees cross marshes (especially Reaches J, K, L), how will the Corps assure that water circulation will be maintained as these levee segments subside? The elevation of some segments are to be are to be built to presettlement elevations of 28 ft. There are many examples of highway embankments in which culverts were installed to maintain water circulation. These failed to provide normal hydrology over the life of the project because subsidence of the embankment and filling in of the culverts.

Will the culverts be built on pilings? How will the cross sectional areas be maintained over the life of the project? As RSL increases, how will this affect the movement of water through the culverts over the life of the project?

Fourth, the PREIS states that because of Relative Sea Level Rise (RSLR), the openings in the levee system will have to close if the water levels reach +2.5 ft. It is stated that:

"Under future conditions, closure frequency could increase if the closure trigger is not adjusted to account for sea level rise. For example, under existing conditions, HNC floodgate closure (based on a 2.5-ft closure stage only, not the salinity triggers) would occur approximately 1.5 days per year. If the trigger remained the same through 2085, low RSLR would require closure 5 days per year by 2035 and 168 days per year by 2085 (refer to RSLR rates in table 3-1). Intermediate RSLR would require closure for 15 days per year by 2035 and 354 days per year by 2085. High RSLR would require closure for 24 days per year in 2035 and 365 days per year in 2085. To prevent frequent structure closings, operation plans will need to be re-evaluated periodically and closure trigger elevations may need to be increased if significant sea level rise occurs." USACE (2013b, p. 81).

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Page 9  
DRPEIS and DPAC Morganza to Gulf  
Sierra Club comments

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If the system must remain closed for even 24 days per year, what affect will this have on fisheries? If the closure comes at critical times for migrating fisheries how will this affect the productivity of the Terrebonne marshes?

"The trigger elevation may vary at different structure locations and will be further refined in the final PAC report." This information should have been included in the DRPEIS.

The USF&WS (2012, p.2) in a letter to Col. Fleming raised issues with the closure and its impacts on fisheries resources: "Because of potential future sea level rise, the revised operational criteria may result in increasing closure frequency and duration over time, and corresponding increases in fisheries access impacts." (USFWS, 2012, letter, p.2)

We are equally concerned by closure of the environmental structures and the impacts this will have on the fisheries resources. This would not be a problem if less wetlands were included within the levee system as recommended in MLOD (Alternative 3).

#### Summary

If hurricane protection for communities along the coast is to be implemented, it should not be at the expense of the many thousands of acre of marshes and forested wetlands, much of which is currently under stress from decades of man-made destruction. For the reasons stated above, the DRPEIS has not demonstrated that the preferred alignment, with its untested "leaky" components, will not have a significant negative impact on the coastal ecology of Southern Louisiana

Thank you for the opportunity to comment and for giving serious consideration to our concerns.

Sincerely

Harvey Stern  
Executive Committee  
Delta Chapter, Sierra Club

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February 19, 2013

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Via Telecopy at 504-862-2108

Ms. Elaine M. Stark  
Project Manager  
Protection & Restoration Office  
CEMVN-PM-0

Via Telecopy at 504-862-1892

Mr. Nathan Dayan  
U.S. Army Corps of Engineers  
New Orleans District

RE: Morganza To The Gulf Protection Levee  
RPEIS Comments

Dear Ms. Stark and Mr. Dayan:

I represent Mr. and Mrs. Dane Ledet, Sr., ("Ledet, Sr."), Dane Ledet, Jr., ("Ledet, Jr."), Lagarto Properties, L.L.C. ("Lagarto") and Daneco, L.L.C. ("Daneco").

Ledet, Sr., Ledet, Jr. and Lagarto collectively own approximately 425 acres in Sections 50, 51, 52 and 53, T17S-R16E, Terrebonne Parish, Louisiana.

Daneco leases a substantial part of this acreage and conducts an extensive alligator farming operation on it involving substantial facilities owned by Daneco.

Ledet, Jr.'s ownership is approximately five acres on which his personal residence is located.

I am writing to submit my client's comments to Draft Revised Programmatic Environmental Impact Statement.

I am enclosing a copy of one of the maps showing a possible proposed alignment across Sections 50, 51, 52 and 53, T17S-R16E, Terrebonne Parish, Louisiana. My clients strenuously object to this alignment since it runs through the middle of their property and in particular, it runs through the heart of the alligator farming operation, destroying buildings including maintenance, construction fabrication and storage building, two new alligator grow out buildings that house 10,000 alligators and destroying first, second, third and fourth stages of oxidation ponds and a 35 acre reservoir which forms water purification circulation system. The proposed alignment segregates a large part of the farming facilities beyond the levee on the south or marsh

SUND1

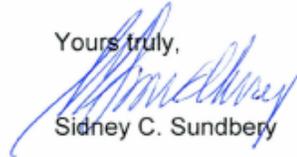
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side, including office, alligator processing building (skinning, preparation of skins and meat for sale), leather goods sale, buildings, tannery, forced drainage pumps, boat shed, boat ramp, fuel tanks. Ledet, Jr.'s residence is in that same area south of the levee. The access canal to the marsh must also be preserved in order to collect eggs and release small alligators. The cost to attempt to reestablish these facilities elsewhere, including the oxidation pond system, would run in the millions. The property to the north or upland area would be susceptible to increased flooding and drainage problems due to being trapped between the proposed levee and Highway 182, particularly in times of storm when any floodgates might be closed. My client suggests a more appropriate levee alignment would be slightly further to the south of their property along the general alignment of the Hanson Canal.

If you have questions or if I can provide additional information, please let me know.

With kind regards, I remain

Yours truly,

A handwritten signature in blue ink, appearing to read "Sidney C. Sundbery".

Sidney C. Sundbery

SCS:rmc

cc: Dane Ledet, Sr.  
Terrebonne Levee & Conservation District  
Jerome Zeringue

Post Authorization Change (PAC) Report and draft Revised Programmatic Environmental Impact Statement (RPEIS) for the Morganza to the Gulf of Mexico (MTG)

Speaker Request/Comment Card

Would you like to speak tonight? Yes  No

WILL1

Comments: Incorporate into Contract documents the following  
"The owner of this project encourage  
and support minority and local workers and  
contractor participation at all levels  
there in"

Name Clarence Williams Affiliation Terrebonne Economic Authority  
Street 2903 Hwy 311 Phone (504) 329-6835  
City, St Zip Schriever, LA Fax  
E-mail Williams.Clarence2@att.net

Post Authorization Change (PAC) Report and draft Revised Programmatic Environmental Impact Statement (RPEIS) for the Morganza to the Gulf of Mexico (MTG)

Speaker Request/Comment Card

Would you like to speak tonight? Yes  No

THIB1

Comments: Extension to modified Alignment  
appears cited very close to LA 1820 in  
Gibson's ITO that is fact, there  
will be no realistic chance of  
land owners to agree to  
forfeit ownership for levee  
construction.

Name WAYNE THIBODEAUX Affiliation  
Street P.O. Box 990 Phone 985-872-3237  
City, St Zip Gray LA 70359 Fax 985-879-1769  
E-mail twaynej@bellsouth.net

Post Authorization Change (PAC) Report and draft Revised Programmatic Environmental Impact Statement (RPEIS) for the Morganza to the Gulf of Mexico (MTG)

Speaker Request/Comment Card

Would you like to speak tonight? Yes  No

LAMB1

Comments: THE AREA THAT I REPRESENT AS TERREBOUVE PARISH COUNCILMAN I AM ABSOLUTELY SURE THAT IF MORGANZA TO THE GULF REACHES J2, J3, FLOODGATE AT BAYOU POINT LA CHEURE, AND REACHES K+L ARE NOT COMPLETED THE COMMUNITIES OF MONTGUT, POINT LA CHEURE, LOWER BOURG, GRAND BOIS WILL SIEZE TO EXIST. IN LA TAUCHY PARISH PARISH OF LAROSE, VALANTINE, LOCKPORT, AND MATTHEWS WOULD BE IN SERIOUS TROUBLE ALSO. THIS IS AS FACTUAL OF THE SITUATION THAT WE ARE IN WITHOUT THIS PROJECT BEING COMPLETED.

Name PETE LAMBERT Affiliation TERRE PARISH COUNCIL DISTRICT  
Street 861 HWY 55 Phone 985 594-9880  
City, St Zip MONTGUT, LA 70377 Fax 985 594-7802  
E-mail \_\_\_\_\_

## Public Comments

Phone conversation on 04 February 2013 with:

Mr. Chauvin

1. Very concerned – Lives in Houma has seen the changes over the past 75 years.
2. Supported that New Orleans got protection but now it is Houma's time. Needs to do something soon. Something is better than nothing – Protection levee needed.
3. If do nothing all the land will be gone.
4. Congressional action needed.

CHAU1



## Public Meeting Summary

**Morganza to the Gulf of Mexico, Louisiana  
Draft Revised Environmental Impact Statement and Post Authorization  
Change Report Public Meeting  
January 31, 2013**

<b>Location</b>	Houma Municipal Auditorium
<b>Time</b>	6:30 PM
<b>Attendees</b>	70
<b>Format</b>	Open House Presentation
<b>Handouts</b>	<ul style="list-style-type: none"> <li>• Presentation</li> <li>• Approval Process Brochure</li> <li>• 2009 Status map</li> </ul>
<b>Facilitator</b>	Ken Holder

Morganza to the Gulf of Mexico, Louisiana  
Draft Revised Environmental Impact Statement (EIS) and Post  
Authorization Change (PAC) Report Public Meeting

Houma Municipal Auditorium  
Houma, LA

January 31, 2013



US Army Corps of Engineers  
BUILDING STRONG



hand and they will come to you. We will start tonight by hearing from nine governmental organizations. We have the Houma Indian Nation Bayou Grace and the Morganza Action Coalition. We will let them make their speeches first and then we will move on to general public questions. One of the things you will see tonight is that we are recording everything so if you see someone typing and recording, they are getting your comments for the public record. We also have comment cards in the back that you can fill out if you don't wish to speak in public. Tonight with us we also have some great leaders from the area; Michel Claudet, Terrebonne Parish President, Reggie Dupre, Terrebonne Conservation & Levee and Jerome Zeringue.

**Ken Holder:** Ladies and gentlemen, thanking you for coming tonight. This will be our first public meeting on the Morganza to the Gulf project for the Corps of Engineers and I appreciate the good turnout. Tonight we will follow this format. We have at our table District Col. Ed Fleming, New Orleans District Commander, Elaine Stark, Project Manager and Nathan Dayan, Environmental Manager. They will be able to answer any questions. What we will do tonight is a brief presentation and at the end, we will do some questions and answers. Two people from our public affairs offices will walk around with microphones so you don't have to leave the area; just raise your hand and they will come to you. We will start tonight by hearing from nine governmental organizations. We have the Houma Indian Nation Bayou Grace and the Morganza Action Coalition. We will let them make their speeches first and then we will move on to general public questions. One of the things you will see tonight is that we are recording everything so if you see someone typing and recording, they are getting your comments for the public record. We also have comment cards in the back that you can fill out if you don't wish to speak in public. Tonight with us we also have some great leaders from the area; Michel Claudet, Terrebonne Parish President, Reggie Dupre, Terrebonne Conservation & Levee and Jerome Zeringue.

So why are we here tonight? We are here because this is part of the NEPA process. NEPA requires that we hold a meeting during the public comment and review period. Since Katrina, we've had more than 200 public meetings that are related to the NEPA environmental documentation and what we learned over those 200 meetings and the over 500 total meetings, is that when we talk to people in the area we get a better picture for what we need to do and how the project needs to proceed. We really need your input tonight; we want to hear what you think because all of that will go into the final document and help us make the right decision.

### Why are we here?

*The National Environmental Policy Act*

To obtain feedback on significant issues and the proposed plan related to the Morganza to the Gulf of Mexico, Louisiana Revised Draft Environmental Impact Statement (EIS) & Draft Post Authorization Change (PAC) Report  
We welcome your comments!



US Army Corps of Engineers  
BUILDING STRONG

The following notes were recorded by USACE contractors. These notes are intended to provide an overview of the presentations and public questions and comments, and are not intended to provide a complete or verbatim account of the meeting. This account is not intended to be a legal document.



# Public Meeting Summary

**Public Review & Comment Period**

Morganza to the Gulf of Mexico, Louisiana  
Revised Draft Programmatic Environmental Impact  
Statement & Draft Post Authorization Change Report  
<http://1.usa.gov/ZYe13A>

45-Day Public Review and Comment Period

Comment Due Date:  
February 19, 2013  
[morganza.comments@usace.army.mil](mailto:morganza.comments@usace.army.mil)



At the end of the slide presentation you will see and address where you can send information and there will also be a reference to our webpage. There is a 45-day period, we have until 19 February so it's been open for awhile, but you have until the 19<sup>th</sup> to make comments, but again you also have the opportunity to do that tonight. So before we begin with Col. Fleming, I would like to turn this over to President Claudet.

**President Michel Claudet:** I'm so proud for the turnout tonight and I wanted to recognize a few people in the crowd. We have Al Levron, the parish manager, Earl Eues, our Office of Emergency Preparedness Director and we have

our parish council members Mr. Dirk Guidry, Mr. Danny Babin and Mr. Pete Lambert. We do have a number of levee district members who are here as well. We also have council members from Lafourche Parish; Mr. Phillip Goaux, Mr. Lindel Toups and former councilmember Bob Hale, Wayne Thibodeaux, former school board member Rickie Pitre. There is also Representative Gordon Doug, head of the Department of Natural Resources, Jerome Zeringue, head of CPRA, Garret Graves with the State of Louisiana and we have former representative, Mr. Juba Diaz. We also have the principal chief of the Houma United Nation, Mr. Thomas Dardar, Rebecca Templeton from Bayou Grace and Sharon Bergeron who has been working on the Morganza Action Coalition. As parish president, I can tell you this, we fight the good fight every day. We have difficulty on agreeing on things, we have difficulty on if our garbage should be picked up on Monday or Tuesday, but there is no doubt we all want levees as quick as we can get them, as high as we can get them and as strong as we can get them. We are all in unity on that and tonight is a great opportunity and we thank the Corps for coming to us with this report and we are very pleased it is here as this gives us many opportunities. They are here to accept comments from our people and as always in Terrebonne Parish, we want all our comments to be well thought out, respectful and concise. If you will, let's make certain that each of use the decorum that we are so well known for. By the way, Representative Lenore Whitney just walked in and we want to recognize that. Clarence Williams who is a member of TETA (Terrebonne Economic Development Authority) is also here. That being said we are going to give the meeting to Reggie and we will go forward.

**Reggie Dupre:** First I want to recognize three of my nine commissioners from the Terrebonne Levee District, Vice-President Leward "Sou" Henry, Carl Chauvin and Dennis Ledet. From my staff, Mitch Marmande is the program manager for Terrebonne Levee District and he works for T. Baker Smith but he spends 99% of his time working for us and the people of Terrebonne on all the technical issues and has done a fantastic job. I do want to thank the Corps and the people of Terrebonne for the turnout tonight and Lafourche citizens. I especially want to thank the federal project manager, Elaine Stark, who has spent at least four years of her life on this project learning everything about Terrebonne Parish and our needs for putting the project together. She has done a great job of putting all this together and basically this is round three for Morganza to the Gulf. First round was the reconnaissance study, which started in 1992. The second round was the feasibility study that started in '95 and ended in 2002 and signed by the chief of engineers. Then we were just waiting in limbo for Congress to act upon the chief's report and they didn't pass a bill until '07 when we got authorized. Because of the new post-Katrina design standards, the Corps was forced into looking at a much greater project and that is why the costs has increased from \$888 million to \$10.5 billion dollars. Elaine and the colonel, regardless of who comes to speak at this hearing, the true public hearing from Morganza was held on December 8, 2012, when 5,879 Terrebonne Parish voters voted yes to tax ourselves for a second time in 11 years for this project. So, we may argue about means and methods and we may argue about priorities and about standards, but the people of this parish want protection. We want protection and we are willing to put our own pocketbooks on the table to pay for it along with the state of Louisiana. Together, we have done a lot of protection, it's the longest alignment in the last several years and Jerome will be coming behind me, the executive director of the CPRA and was

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the prior director of the Terrebonne Levee District. I've already submitted written comments after reading through this massive authorization report and I've submitted some written comments, but the official comments from the non-federal partners have already been prepared and are being submitted by the two non-federal project managers, Mitch Marmande on behalf of the Terrebonne Levee District and James McMennis, the state project manager who works for Jerome. I will now call up Jerome Zeringue, the executive director of the Coastal Restoration and Protection Authority and our state partners and main non-federal sponsor for Morganza.

**President Michel Claudet:** I just want to mention two people I forgot, David Cavell from Congressman Cassidy and Denise Reed, she is the head scientist for the Water Institute.

**Jerome Zeringue:** It's been awhile and a long arduous road and I'm thinking about when I first started and got involved with the Levee District in '98. My son wasn't even born yet, he was born two weeks after I started, and he is now 14 going to be 15 and the project is still waiting for authorization. I think it's frustrating, and I know these folks here from the New Orleans District are working hard, but on behalf of the Governor's Office and Garrett to express our support, but I'm also here to obviously say that we would be remiss if we didn't say that we need to address the procedure, the policy and the process in implementing these projects. I know it's beyond the scope of the district and what they can and can't do, it's under congressional and federal level, but it speaks to the concern that we have in our ability to implement projects into the future and how we can be successful in providing protection of this coastal community need and one they obviously deserve. We are going to have to continue to work on trying to reduce the risk on these communities. We know we can't build the "Great Wall of Louisiana," even if we wanted to, even though the intention is not to do that. We need to build stronger, smarter and we need to build more resilient communities, but in doing so recognizing the fact that a community that has worked so hard and has committed in terms of the financial commitments stepped up to the plate to put up from their perspective a significant amount of dollars and commitment for this project and this speaks well for the community and is also indicative of the problems we face, and will face, into the future. Again, this process is important; we need to get this project authorized. It's encouraging because of the fact that it has a positive cost-benefit ratio and from the federal perspective that is significant. It has a positive cost-benefit ratio with costs that we believe are high and that we will continue to work with the New Orleans District, as we have and they will continue to work with us I'm sure, that we can reduce the overall cost and look at ways that we can provide the protection we are trying to achieve but do it in a manner that is more cost-effective and efficient and I encourage the Corps to continue working with the locals and the state to achieve that and I think we can do that. As demonstrated by the commitment of the locals, they are going to continue to build and the state will continue to support you guys in doing that and we are appreciative of the Corps coming here tonight but also encourage them to do what they can to implement this project, expedite as best they can and work on creating the efficiencies that we need so that we can build this project and get the protection this community deserves. Again, we thank you all for coming and look forward to working with you all and the locals to get it done.

**Col. Fleming:** I'm not sure President Claudet introduced everyone; there were a couple of spiders running around the corner and he didn't introduce them. My name is Ed Fleming and I'm a colonel in the United States Army and I'm the district commander of the New Orleans District for the Army Corps of Engineers. Our responsibility, our footprint, goes all the way from the Pearl River in the east all the way past Cameron and Calcasieu Parish in the west, from the Gulf of Mexico in the south and up to Old River in the north. What does the district commander do? I'm responsible for everything that happens or fails to happen according to the Corps of Engineers within that footprint. So I'm here to spend some time to talk to you about his particular project and I'm so appreciative of the folks here in Houma and Terrebonne Parish for allowing us to come in and hosting us here. I love coming to Terrebonne, you not only TV stars but you also have movie stars too. Maybe you will see an Academy Award coming to Terrebonne Parish here in a couple weeks. It's a great value to the nation and I will highlight that in a

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couple of minutes. I'm going to say something that may surprise some folks, but a levee doesn't protect you. A levee doesn't protect your property. Prior to Hurricane Katrina, the levees that are around the New Orleans area were called the Hurricane Protection System, but a levee doesn't protect you nor does it protect your property. It reduces your risk and there are many risks and there are a lot of ways to reduce risks.



A way to reduce the risk due to damage from hurricanes is to have barrier islands. Another way to reduce the risk is to have coastal wetlands because they take the energy out from underneath the storm. Another way to reduce your risk is a levee, a floodwall, a gate or a pump station. Another way to reduce risks is to have your house built above the base flood elevation. Another way to reduce your risk is to have an evacuation plan. There are a lot of ways to reduce the risks you have due to the damage from the surge of a storm and a levee system is only one way to reduce that risk. What I'm showing here is that there are a lot of ways that we all share

in reducing that risk. The federal government has a responsibility, the state has a responsibility, the parish clearly has a responsibility, all the zoning codes that have to go along with the way things are built here and then there is personal responsibility. A levee system is one of those ways that helps reduce the risk that you have to property damage from the surge from a storm.

### The Bottom Line

*Morganza to the Gulf*

- The cost estimate has been reevaluated to reflect post-Katrina design criteria changes including new storm surge modeling, new 100-year elevations, increased factors of safety and new borrow standards.
- The \$10B cost for a 100-year Level of Risk Reduction over a 98-mile alignment is in line with post-Katrina improvements to the HSDRRS, which provides 100-year risk reduction over a 130-mile alignment.
- The MTG project represents a significant investment.
  - ▶ Local, State & Federal Interest

I think it's important to remember as there has been a lot of discussion in the level of risk reduction in comparing this system to what was built in the Greater New Orleans area. I'm here to tell you that there is no difference in what we are proposing and what was built in the Greater New Orleans area. Now we are looking at adjusting some of the design guidelines because there are a few differences in the geography. As you well know, this system is proposed to be built south of Lake Boudreaux so there is a lot of area of Lake Boudreaux to accept overtopping of water into Lake Boudreaux, which you don't have in Greater New Orleans.

Many of the levees in Greater New Orleans are built right up on people's back yards so some of the standards have to be adjusted based on the site, based on the geography, so we will look at doing that. It is going to be a 100-system, what we call the 100-year storm or a 1% system, which is the exact same thing that we built in the Greater New Orleans area. So there is not this haves and have-nots, it's the exact same system. I have to applaud Reggie, the Terrebonne Levee District and Terrebonne Parish president as well as the folks in the parish. As Reggie said, you have voted twice to tax yourself. The solution to every problem is not a federal project. We talk a lot about people, I remember as a kid hearing someone say, "Don't make a federal project out of it," meaning don't take so long, don't make a big deal out of it. This is the definition of a federal project right here and we are going to get there, but in the meantime I can't believe the amount of work you have done and I have nothing but praise and thanks and appreciation for you for being to say, you know what, this is going to be a long time. We've got to study this, design this, get authorization for it, then we've got to get the money for it and then we going to start building it. We don't have that kind of time so we are going to build something on our own so the plans that you guys have, the Terrebonne Levee District, is along the same alignment so that when we come to build this, we

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are just going to fall in and build on top of what is being built right now. There are a couple of hurdles we will have to jump over to get it. Some of them are federal laws that we have to put in place, but it's our plan to fall right in on top of and use the work that the Terrebonne Levee District is doing right now to complement our project. Again, it's just unbelievable of just what you have done because it has taken the federal government a long time to get to this place. There is a great partnership with the Terrebonne Conservation Levee District, the State of Louisiana, Terrebonne Parish and the Corps of Engineers. As Reggie said, Elaine spends a lot of her time, not only here in Terrebonne Parish, but on this project itself and we have lots of history in the Corps on this particular project and we value that partnership. That's the only way we can get this thing done together. Again, the coordination that goes into a local project being aligned and constructed that can be assumed by the federal government takes an unbelievable amount of coordination and I value that. I will also tell you that I've spent a lot of time going back and forth to Washington and your Congressional Delegation, senators and congressmen, are very supportive and very interested in this project and they ask me some tough questions. It's probably a weekly event, if not an every-other-week event. As a matter of fact, I report to Senator Vitter every other week on this project. In writing, I send him an update on where we are on this project so there are people in your Congressional Delegation in Washington who are watching this project and me very closely. I didn't want to highlight one over another, senators over congressmen, because they are all concerned about it and as I said, I answer questions from all of them on this project on a continual basis. I'll close with one thought; we've talked a lot about you guys taxing yourselves. It is my responsibility to go to Washington and to go to other parts of the country and convince people who live in Idaho or New Hampshire or North Carolina that some of their tax money should go to this project. In essence, that's what the federal government does; we bring federal funds to a project. I have to do a job of convincing folks all over the country that some of their tax money should go to this particular project. I tell you that's very easy for me because this is a valuable project. If you look at the oil and gas industry, the navigation industry or the seafood industry, the center of that universe of those industries is right here in Southern Louisiana. I remind folks that if you want to get petrochemicals from Houston to St. Louis, where does it go? It goes straight down the Intracoastal Waterway right past this building and up the Mississippi River. If you want to get grain out of the Midwest or coal out of West Virginia or steel out of Pittsburgh over to Texas to build some of these facilities, where does it go? It goes down the Ohio River, the Mississippi River and down the Intracoastal Waterway right by this building. This project is critical to the nation's infrastructure, not just coastal Louisiana but to the nation as a whole. I have to be able to convince folks all over the country that this is an important project and it's important for them to spend their tax money to come down and build the project in South Louisiana. It's taken a long time, but we are at a good point right now. The reason we are having this meeting is because we want your input; this project is out for what we call "public comment," and we value those comments, we take those comments in and we address all those comments and we will put the document out for final review. The next step after that is I will go to Washington and brief this project to Washington and then my boss's boss, the three-star general in Washington, will sign off for this report and then transmit it to Congress. If things go as plan, we are going to be doing that sometime this summer. At that point, what we do is wait for Congress to authorize this project to go into construction. I need two things to build a project. I need authorization and appropriation and those are fancy words for saying I need permission and I need money. Right now I don't have permission and I don't have money, but as I said earlier, the two senators and congressmen from Louisiana ask me about this all the time and they understand all of that and they are the folks who can help us get permission and get the money to build this. It won't be easy, but this is just another step along the way and we are committed to getting it done because it needs to be done. I'm here tonight until the last person asks the question and gets their questions answered. That's the way I do my public meetings. I will stay here as long as you want to stay here and talk about something, that doesn't include Reggie. I'm not staying until Reggie stops talking; I'll be here until tomorrow morning answering Reggie's questions. Thanks for coming. If you are employee of the Corps of Engineers, please raise your hand. There are plenty of folks here to answer questions. We have economist, we have hydraulic engineers, we have environmental folks, we have planners, project

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managers. We have a slew of folks here who can answer just about any question that you have and we are here and will stay here until the last person leaves. Thank you.

Elaine Stark: Good evening, I'm Elaine Stark and while everyone is thanking everyone, I need to thank the colonel, my division chief and everyone out there who selected me to work on this project because, they laugh at me back in New Orleans, but this is the best project on the district and it is a privilege for me to manage it. Some of us have careers in civil works, some of us do not, so I'm going to quickly run through where we've been with this project, where we are now and a little bit about our next steps.

**Study Timeline**

- Reconnaissance Study
  - Began April 1992, completed April 1994
- Feasibility Study, Authorized 1995
  - Water Resources Development Act (WRDA) 2000 included authorization contingent upon having signed Chief's Report by December 2000
  - Final Report in 2002
- Hurricanes Katrina and Rita, 2005
- IPET / HSGRRS Design Guidelines October 2005 - 2007
- Authorized for construction WRDA, November 2007
  - Post-Katrina costs: 3000M cost (2007 dollars). No construction funds appropriated
- PAC Report initiated December 2008



We started with the Reconnaissance Study, true or false, the Morganza has taken 20 year so far? Sadly, it's true. In 1992, we got a resolution by a house committee saying there may be a federal interest out there and go take a look. Corps of Engineers Reconnaissance Study is something the federal government funds 100% of. It's suppose to be a quick check, we don't do a lot of investigations as we use mostly existing information to determine whether or not it's worth it to go a little bit further. So we completed our recon study in 1994, it was favorable and showed there was a federal interest here in a federal project. Then we moved on to the feasibility study. The feasibility study had to be authorized by Congress and

they wanted it so badly they didn't do it in a WRDA bill, which is typical, they did it in an appropriations bill back in 1995. We worked on that feasibility study for awhile as it's a very long alignment. The original authorized project that was based on a 2002 feasibility report and it was 72 miles long. It takes a long time and a lot of money to investigate the soil properties and the feasibility of building a project this large. So we started that back in 1995. The feasibility study is a higher level that costs more money, it's cost-shared 50-50 with a local sponsor. At that time, it was the Department of Transportation and Development for the State of Louisiana. It's a much more in-depth study where you get to a certain point where you look at the cost of the project versus the benefits of the project. This is your "go, no-go." That feasibility that we did, recommended a 100-year plan and we had a draft report ready in 2000. At that same time, Congress came through and provided a conditional authorization for a number of projects, but they said for Morganza to the Gulf, if you can get a signed sheets report up by the end of this year, your project is authorized. At that time we were at a draft stage, just like we are now with the post-authorization change report, but we didn't get it in by the end of 2000; we didn't get our final report up until 2002. It's very hard to predict from tonight how quickly we will move to the final report on the pact because we don't know the level of comments and input that we are going to get that may impact the future designs of the project. Anyway, we completed that feasibility study in 2002 and the chief's report went up recommending the project and we went to the waiting place, waiting for authorization. While we were in the waiting place, Hurricane Katrina and especially you all here, Rita, came through in 2005 and that was a game-changer for everyone, not just the people who lived in New Orleans. As a result of what happened in Katrina and Rita down here, there was a big study done, it was the Inter-Agency Performance Evaluation Task Force, IPET. This is a group of academics, industry leader and Corps and local and state government who came together and tried to put together a report on the lessons that we learned from those storms. Two of the big things that came out of that is that number one, we can't predict how deep storm surge is going to get based on the wind speed of a storm. If it's a Category 3 you get this much...that doesn't really apply. The other thing it said is that you can't look at historic storm as an indication of how deep the water will get from a future storm. Back in 2002 when we did this feasibility study, we modeled, we anticipated, we predicted how deep flooding would be, how wide-spread that flooding would be, based on 11 historic storms. The 2002 Feasibility Report recommended a 1% plan, as the colonel said that in any given year there is a 1% chance that those designs will be exceeded, which is pretty low, but the levee elevations were only from nine feet

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to 15 feet. The highest structure in that project was 15-feet high, based on the way we used to do the modeling. After we did the IPET Report, the Corps revised the way they were going to design the projects in the future and we published our design guidelines in October of 2007 and boom, in 2007 we also get a WRDA Bill that authorized the Morganza to the Gulf project based on the old report, based on the 2002 report, 11 historic storms with elevation from nine to 15 feet and at the time we projected the cost of that project to be \$886 million dollars, but there were no construction fund appropriated. I know you all were frustrated that we were authorized in '07 and we haven't built anything, but we don't have the kind of money we need to go to construction; we still don't have it. It wasn't given to us in '07, '08 or '09 or '10, so I know you are frustrated that we've done another study, but the fact of the matter is we can't go build it the way it is and it doesn't appear that Congress is going to come through with those construction funds, but we actually think it was a pro-active thing to move forward and do another post-authorization change report to bring this project up to the standards it needs to be and try to get it reauthorized.

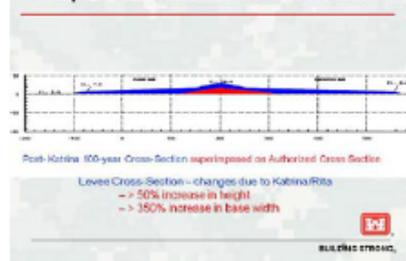
### Impact of HSDRRS Guidelines

- New Storm Surge Modeling
- Relative Sea Level Rise (RSLR): Increases area and depth of flooding
- Structural Superiority: Increases design elevations
- Higher Factors of Safety: Increases levee width / footprint

So, we talked about the changes in the guidelines; that fancy acronym at the top, it's the Hurricane Storm Damage Risk Reduction System, the HSDRRS Guidelines. The biggest change for you all down here and for every coastal project in Louisiana, was the new way we did the storm surge modeling. We used to look at 11 historic storms but they said that wasn't good enough, so now we look at those 11 historic storms, included in there is Katrina, Rita, Gustav, Ike, but we also look at the theoretical chance of what might happen. It's a suite of 152 storms with all different wind speeds, all different tracts and all different central pressures because we know the depth of the surge is not solely dependent on wind

speed. It's all these things go together and there is this big, fancy statistical thing that happens as we come out with a new way of designing the levees. Some other things that the HSDRRS Guidelines did, they had us consider more thoughtfully the relative sea level rise. We looked at what happens if we get the same level we've had historically, what if we get a little bit or a lot more; three levels of sea level rise because we realize that just looking back at 11 historic storms isn't going to help us 50 years into the future. We also looked at a things called Structural Superiority, that increases the height of your structures. The theory is if you have a levee, you can always add more dirt, but if you have concrete it's pretty hard to add something to the top, especially if that concrete is a gate that opens and closes. We also increased our factors of safety and those moved to increase the width of the levee and the elevation of the levee.

### Comparison of Similar Levee Cross-Sections



So here we have this cross-section, and I know there is board over to the side you can see. The red is Breach G, which runs south of Lake Boudreaux between Dulac and Lake Cocodrie, that's approximately what it looked under the 2002 Feasibility Report and then the blue shows more what we are proposing as a result of our new design criteria. We used to have elevations from nine feet to 15 feet, but our new levee elevations now start at 17 feet and they go all the way up to as high as 33. It's not the same project and should say we do look at optimizing these things. We can get out 100-year level of risk reduction by going high and steep or by going a little lower and more gradual to knock down the

waves. We run these model several different ways and we use the one that uses the least amount of materials, at least at this point, that's how we refined it.

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## PAC Report Alignment



So here is the alignment. Let me show you where we started and I'm going to step back and forth. Back in 2002 our levee alignment started over here, right here tied and into the Golden Meadow Levee and ended up here at Minors canal. The way we used to model storms is that we knew that 9-to-15 foot levees from here to here was going to give you the 1% plan for risk reduction. That was our 2002 report and while we were waiting on authorization of the project, we continued to refine our designs. You will see some of the yellow marks

here, those are the changes that we made from 2002 up until about 2007, 2009, all the way up until just recently, where we looked at ways to reduce the environmental impact. For example, over here, we used to come all the way here straight up and that created a big funnel so we looked at cutting that off. So what you see in yellow are some of the original project alignments that we refined in the orange. Now, because of the new model that we use, we are getting deeper flooding and it's much more wide spread so we are extending the levee alignment all the way up here across the Larose/Golden Meadow Levee and following that levee and then coming up here with a whole new reach from Lockport to Larose. That's about 21 miles that has been added to the eastern side of the alignment. On the western side, our old modeling showed now water coming over the Bayou Black ridge. Our new modeling shows that sure enough, it's deeper and will get over this ridge. So in order to protect the same project area, we also had to extend the alignment all the way out to Gibson and that added 15 more miles. So we started at 72 miles with the yellow in the 2002 report then we actually got it down to about 62 miles when we refined the designs, then we added 15 here, 21 there and now we are at 98 miles. If we don't add those pieces to it, we don't preserve the integrity of the 1% system.

## PAC Report Content

- Project Background / History
- Changes since 2002 Feasibility Report
- Feasibility-level (approximately 25%-30%) designs
- Feasibility-level cost estimate
- Levee alignment (plan & profile views)
- Identification of Tentatively Selected Plan (TSP)

### Economic Analysis

- Benefit to Cost Ratio = 1.3 for both the 1% and 3% plans
- Tentatively Selected Plan is 1% plan
  - Greater net annual benefits, less residual risk
  - Consistent with State Master Plan

So we have this new PAC Report out and you may ask what's in it. It has a much more detailed history than you are hearing from me today. It's got very specific changes that has come about since 2002; it's got every single one called out. It has new designs as there are about 25-30% level of design for every structure and reach of levee. There is a cost estimate based on the quantity take offs of those designs. For those of you who really want to know if this is going to go across my property, around my property, thru my property, it has a plan and profiled used of all the levee and then at the end we identify what we have selected as the tenant of plan.

This report, we looked at two plans; we looked at a 3% Plan and a 1% Plan. The reason for that is if we use some of the old modeling, the still waters from the old modeling, and then apply the new HSDRRS guidelines, we've got something that would be considered a 3% Plan. I know this is kind of crazy, but that is how we got to the 3% and then we have the whole new thing, just like it was done in New Orleans with all the new hurricane damage and risk reduction guidelines incorporated and that is your 1% Plan. We looked at both of those plans and both of them have a positive b/c ratio. People were pretty shocked to hear that we still had a positive b/c ratio, but it goes back to that storm surge modeling, the same thing that makes the levees higher and more expensive, increases the damages that the surge would cause. Our b/c ratio for both of those plans is very close to 1.3 and we have tentatively selected the 1% Plan because it has the highest amount of benefits and most

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importantly as the colonel was talking about, the least residual risk. You build the 1% Plan, there's fewer things that can occur at higher events. You build that 3% Plan, you are going to get more damages. Also, our 1% Plan is consistent with our state master plan that was published last year by the CPRA.

**Tentatively Selected Plan**

- 98-miles: Earthen levees; approximately 1-mile floodwall along Larose to Golden Meadow (LGM)
- Final levee elevations: 15 feet to 26.5 feet
- Final structure elevations: 17 feet to 33 feet
- Floodgates: 22 across navigable canals, 9 across roads
- Sluice Gates: 23 for water circulation / drainage
- Cost: \$10.5 Billion (FY 2014 price levels)



Our tentatively selected plan is 98 miles and all of it earthen levee, which if you are familiar with New Orleans, most of those levees along the Mississippi River are earthen levees, just dirt. There is a one-mile floodwall that is in the Golden Meadow to Larose project on the eastern side. Our levee elevations range 15 feet to 25.6 feet. Our structural elevations range from 17 to 33 feet and when I say final, we propose to have this project in place, funding and authorization going as best they can, by the year 2035. Then we need to maintain it for 50 years in the future. So when I say future levee elevations, I'm talking the year 2085 when our grandkids are out doing what they wanted to, that's when

we will have those final elevations. There are 22 floodgates across navigable bayous, nine across roads and we have 23 sluice gates built into the project. A sluice gate is an opening in the levee alignment that will let water cross back-and-forth and obviously close if a storm event occurs. The cost of the 1% Plan in the PAC report is \$10.5 billion, which is an extraordinary amount of money. It's a 98 mile system for 10 billion dollars. It is not that far off the Greater New Orleans system, which almost 14 billion dollars for 130 miles or so over an existing levee. It's a whole lot of money, but it's not out of line in what you would see as a result of similar design criteria.

**Cost Estimates**

- Base estimate: \$10.2B (October 2011 price levels)
- Program Year Estimate: \$10.5B (Oct 2013 price levels)
- Fully Funded Estimate: \$12.9B (Oct 2013 price levels)



So when this PAC Report came out it confused a lot of people because we have a couple of different costs in there. The first costs we have talks about a \$10.2 billion dollar cost. When we prepared these estimates they were done in October of 2011 price levels, we call it the fiscal year 2012 costs, but that number if only used in calculating the b/c ratio. When we get to the final report we are going to clean this up so it reads a little less confusing. We are not going to report that \$10.2 anymore because it's an old number already. That assumes that basically the whole project is built in that year, fiscal year 12. Then, we have to look at when do

we ask for this money? The soonest we can ask at this point is the 2014 budget because 2013 is already underway. So, we inflated out Oct. 2013, which would be the fiscal 2014 price level, so we said 10.5 was what it was going to cost then; if we built the whole project at 2014, it cost 10.5 billion – this is the number that goes into the budget request to Congress. That's the one that you when you read \$886 million back in the 2007 authorization, the authorization we would expect in 2014 would be \$10.5. There is another number in there. We are bound by our regulations to report what is called a Fully Funded Cost Estimate. Instead of assuming that the whole project is built in a year, which is not realistic, it looks at the mid-point of each feature's construction. We are going to have this in place by 2035, but with subsidence and sea level rise, we need to keep adding a lit bit to the levee elevation to keep it above the level it needs to be all the way out to 2085. So, there are some features that weigh out in the 2070s and the Fully Funded Estimate escalates the costs all the way out to the mid-point of each feature's construction. Sometimes, this is the

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number that local sponsors would use if they are looking for bonds. That's just another number for decision makers; 10.5 would go in the Congressional budget.

**Risk Assessment of Design Criteria**

- National-level: Ensure that Corps is applying risk consistently across the country
- Morganza Project Area: Examine potential for site-adapting specific design criteria
  - Potential to reduce costs 10% to 30%
  - If risk is acceptable, re-design would be accomplished during detailed design phase (not PAC Report)
  - Must maintain 1% level of risk reduction

11 BUILDING STRONG

We recognize that 10.5 is a lot of money. As the colonel said, we recognize that design standards that were published for Gulf Coast, particularly for New Orleans, may not all apply here. They may not apply where Hurricane Sandy struck in the Northeast so the Corps is undertaking two different risk assessments. One is a national level assessment. If we use our HSDRRS guidelines in the Gulf, is that appropriate for the North Atlantic? If not, what is? The Corps has to make sure we are applying standards consistently across the country. That is one thing that is going on. The second thing is another assessment of just the Morganza project area; the storage that we have in Lake Boudreaux, the storage that we have

over on the eastern side Pointe Aux Chenes, Ducks Unlimited Levee, maybe we can use slightly different criteria specially adapted for our project area. We think there is a potential there to reduce costs if the risks associated with those changes is acceptable, then we will redesign the project as we move forward. Once we get this PAC Report finalized and the chiefs writes his new report, we go to this Pre-Construction Engineering & Design and we continue to refine the designs and that is where we would incorporate the new design criteria. It's important to remember, we have this benefit-cost ratio of 1.3 to 1, but if we start toying too much with this criteria, say we decide you can take more overtopping, more water can come over the levee, well your levee elevation comes down and if more water comes over you are going to get more flooding, so it's not really straight forward. We need to maintain that 1% level of risk reduction. We can't lose any of our benefits when we reduce the levee elevations or otherwise site adapt the criteria.

**Eastern Tie-In**

- Seven miles of proposed Morganza levee overlays existing Larose to Golden Meadow (LGM) Federal Levee
  - LGM project authorized 1965; HSDRRS design criteria not incorporated
  - PAC Report being developed for LGM
- Larose to Lockport (14 miles)
  - Reduces risk of surge flanking from the eastern side (over Bayou Lafourche ridge)
  - Gheens not within Morganza authorized project area

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We talked a little bit about the eastern side where we tie in. We overlaid the Larose to Golden Meadow project by about seven miles. The Larose to Golden Meadow Project was authorized back in '65 and it doesn't have the HSDRRS criteria incorporated; either the Golden Meadow to Larose team is doing a post-authorization change on their project as well, but in case it's not in place by the time Morganza goes, we need to make sure that we protect the integrity of the 1% system so we have to build their levee. I mean it's all our levee... the other part on the eastern side is the Larose to Lockport. I talked about this already, but just as on the western side, we didn't think the water would come across the Bayou Black ridge, on the eastern side we didn't think the

water could come across the north over the Bayou Lafourche Bridge. Our new modeling shows that h it wills o we extended that project as far we need to keep the water out of the Morganza project area. It doesn't extend to Gheens; Gheens is sitting on some high grounds. The modeling that we have for Morganza's project area, and our project area is shown on the very first slide, does not contain Gheens. We don't need a levee around Gheens to keep the water out of the Morganza project area.

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## Mitigation for Induced Flooding

- Potential for higher water stages outside of proposed levee system
- Mitigation measures, such as structure raising, other floodproofing, flowage easements or buyouts / relocations may be required
- Additional hydraulic modeling required to determine the most appropriate mitigation method
- The worst case assumption, buyout of 100 percent of the affected structures, is reflected in the cost estimate for the PAC Report.

11

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We know that there is some potential for higher water stages outside of the levee. Everyone says if you put the levee in the water has to go somewhere, it's going to get a little higher against the levee than it would if there was no levee. If that's the case, then we will have to propose some mitigation measures as part of our report. The mitigation measures include raising the structures. Other flood proofing or flow easements or buyouts. Right now, we don't have the hydraulic modeling that tells us this structure is going to get this much additional flooding or this structure is going to get this much. There are detailed types of modeling but we haven't gone through the expense or the time to do that yet.

We need to tell you that it's a very real possibility that if we get down the line and do our modeling, we are going to select one of those measures that is most appropriate for the structures that are lined outside of the levee. In this report, we assume the worst case. The most expensive thing we can do would be to buy out every structure that is not within the levee alignment. There's a very low possibility that that would every happen, but we need to disclose it as part of our National Environmental Policy Act, that there is potential for that and we need to let you know that it exists.

## Next Steps

- Complete Public, Policy, IEPR Reviews
- Finalize PAC Report
- Civil Works Review Board
- 30-day Public / State and Agency Review
- Chief's report or equivalent
- Coordination with Administration / OMB
- Congressional Re-authorization / appropriation

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The next steps; right now we are doing this public review and meeting and at the same time we have our policy folks up at headquarters and in our division completing policy review and they are going to get us their comments on Monday. We also have an external peer review team, this is another thing that come out of the WRDA 2007, the Louisiana Water Resources Council is taking a very detailed technical look at the report. Their comments come in on Monday and we incorporate all those and see if we have the right plan and report and we go forward and finalize the PAC Report. The colonel said he goes up to Washington D.C. to Civil Works Review Board to

present his case. If all goes well there, the next step is to sign the chief's report, then you get to see it again. You have the draft report now and any changes we make we will do another round of public review and then we will get the chief's report. Once that chief's report is signed, it goes out the Corp's hands. It's up to the point where we coordinate with the Administration and move toward Congressional appropriation and authorization. The Corps's buck is going to stop right after the chief's report, although we are still very involved in the coordination.

## Opportunities for Public Input

- Public meetings throughout the southeast Louisiana area
- Sign in tonight to be added to our meeting notification mailing list!
- Comments can be submitted at any time via e-mail at:

[mcrganza.comments@usace.army.mil](mailto:mcrganza.comments@usace.army.mil)

Please mail comments regarding the EIS to:  
 Nathan Dupuy  
 CDW/WH-PCW-C-EP  
 P.O. Box 66267  
 New Orleans, LA 70166-0267  
 Telephone: 504-885-2339  
 Fax: 504-862-0568

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Ken Holder: This gives you an idea of where you can send your information if you want to fill out one of the cards and you don't want to talk in front of a group. The address is here.

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There's some other ways to keep up with what we are doing. You can find pictures and other things on social media. With that, we are going to open this up for questions. The first thing we have to do is raise your hand. We will start first with some of our non-governmental organizations, the Morganza Action Coalition is first.

**Female Speaker:** Thank you so much colonel for being here and Elaine for being here. As you know I am a [Inaudible], a citizen of Terrebonne Parish by choice and an advocate of this community and what it means to this nation and to me personally. I was curious and one of the things I would like to point out, the list of things that you are talking about in terms of risk reduction, as far as I can tell we are doing every single one of those, including raising houses, doing mitigation and building wetlands, as part of our state plan. I do think we understand risks. One of the things I am despondent about, very frankly, is the idea that you have to get the 10.5 billion dollars authorization from the beginning. That number is staggering to me that I can't even envision how long it would take us to get to that point, much less to get that included in an authorization immediately. I was also looking at the point that when you submit the chief's report and once it's signed, I guess we step in. I would be curious...you know we are very stubborn...we were told by the general, by department administrations that we would never build a levee system and that was in a couple of meetings and so we have been fighting this battle and we don't give up and we just keep coming back. I would be interested in any comments that you can give that would give us some guidance about how to begin robbing as we are well aware that getting authorization doesn't give us money. What is our role at that point?

**Col. Fleming:** Once the chief of engineer's signs the chief's report and it gets presented to Congress, if you so choose, just like any other issue that you like to advocate for, you can call your congressman or senator, go visit them, and they would probably be interested in hearing your concerns or support for any particular project. I think that's probably the best way of going about doing it, that is close coordination, not only with their local staff here in the state, but also their staff in Washington.

**Female Speaker:** [Inaudible]

**Col. Fleming:** Yes, that's a little bit tougher. I'm pretty sure that the folks who are familiar going back-and-forth to Washington, I know Reggie and you have made plenty of trips, there are folks who have made phone calls to OMB and just kind of cold called them by looking up their phone number on the website and said I want to come talk to you. They are federal employees just like the Corps of Engineers folks are federal employees. The one difference is that they don't have a local office here in Louisiana. That's not unheard of, that on your trip to Washington when you go see your congressman or senator, is you make a stop at Corps of Engineer Headquarters and you make a stop at OMB.

**Ken Holder:** Of course, the Congressional Delegation needs to get you that appointment obviously. We now have a representative from Bayou Grace.

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**Rebecca Templeton:** I am with Bayou Grace Community Services. We are focused on the bayou communities in lower Terrebonne Parish. In our work, we know that it's viable for our stakeholders to be engaged, to have input and have that input respected throughout the process like this one. My hope is that by having these public meetings that are mandated that you are not only following the letter of the law, but that you are effectively reaching out to people in our community and asking for their input. I would request in the future when there's more meetings that more notice be given and more outreach be done so that citizens who I know who are very concerned about Morganza to the Gulf and want to be engaged in the system have the opportunity by knowing about these meeting.

TEMP1

**Ken Holder:** That is an excellent point. We ran it in the three local newspapers as a notice and we do have it on our social media; I'm not making any excuses. I think so to and if you have other ideas we will certainly do that. Also, it's a critical things with all of you in here, if you sign in you will go onto our mailing and we also send out a notice for these meetings. You are absolutely right that it's multi-level when you reach out and talk to these communities. If there are any communities, where you need us to put a door hanger out to get people to attend, just let us know and we can do that. It's critical that people come out and hear about it.

**Nathan Dayan:** Just on other thing, the environmental organization at the Corps also maintains a mailing list. If you are interested to be put on all the mailings, let us know and you will get mailings and notices on anything we do in the parish for those environmental documents. It's a standard mailing list and we print it out and send out notices to everyone on it. So that's another way of getting information.

TEMP2

**Rebecca Templeton:** I do have a follow-up question. You spoke emphatically that the 1% plan is the only plan that you are considering. Was there any public input into that decision? I know that people in our communities want any kind of protection at this point, so I'm wondering if the public had any input into that decision.

**Col. Fleming:** Yes, are you saying there should be more than 1% or less than 1%?

**Rebecca Templeton:** I would be interested in seeing how the public answers that question.

**Col. Fleming:** I will take a swing at it and then have Elaine come back up and backstop me because I will probably swing and miss. Forums like this are ways to go about getting input from the public. There have been countless forums likes this since 1992 on this particular project. The FEMA standard for the federal flood insurance program is the 1% system. So if you own property behind a 1% system, then you are part of the federal flood insurance program, which obviously has an impact on your rates. A 3% system, although you say three is higher than one, some people think that a 3% system is better than a 1% system, which is not the case. A 3% system will only defend against the impact of a 33-year storm, a chance of a storm occurring once every 33 years. The 1% system protects against a storm that has a chance of occurring once in every 100 years. So, if you had a chance of living behind a 1% or 3%, you want to be on the 1% side.

**Elaine Stark:** Sir, I would also say that both the 3% and the 1% plans are in the report, you can look at them, but from the Corps perspective, we have guidelines that we have to follow and what plan we have to recommend. We have to leave the least risk on the table. Now Congress can take this report, since it's a favorable report since we have positive b/c ratio, they can authorize that 3% plan, they could authorize a 10% plan or something that we haven't even come up with. Now we only looked at these two bookends...I'll tell you this, we could have started over with feasibility, we could have gone back to a 50/50 cost-share and started with a blank slate and looked at different alignments and all kinds of things like that. We got permission to stay in our current cost-share situation, which is a 75 federal/25% non-

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federal, and do a limited re-evaluation, which meant we stayed on the authorized alignment. Normally when we do a feasibility study, we would look at three or four levels of risk reduction and we would have a number of points on a curve and we would say, "This one reduces risk the greatest for the benefit for the cost." We only have two points; we don't know the exact shape of our curve, but to go back and get it is a 'be careful for what you wish for' situation because it will take a lot more time and a lot more money.

Rebecca Templeton: Col. Fleming people obviously want to be behind that 1% protection given the choice, but given the choice between 1% and 3%, I think you would have [Inaudible].

Col. Fleming: You are absolutely right. I will reiterate and as you all know, this has been a 20-year process and we've gone through fits and spurts of input from folks of what we should and shouldn't build and what the alignment should and shouldn't be. We take all that into consideration and I appreciate your input and I thank you.

Ken Holder: Do we have someone here from the Houma Indian Nation?

Thomas Dardar Jr. – I am the principal chief of the Houma Nation representing over 17,000 citizens and our tribal offices along the coast. For tonight's discussion, I'll just talk about Terrebonne Parish. I will just echo what everyone is saying that some protection is better than none, but the demographics involved and communities, we are being left out no matter which way you cut it. When you talk about cost-benefit ratio, we've come to learn these words and realize that when you talk about trade off and you talk about buyout, that's selling out our culture and our area where we live. Through history, we understand hurricanes and survived them, but the onslaught with the oil companies and disturbing our estuaries, the erosion, tidal rise and everything else that comes along, is the first battle ground for all these efforts. When you look at Superstorm Sandy and you talk about 10.5 billion dollars and these people in less than three months has gone through that much money and just got 50 billion again to repair and rebuild their areas. How do you view cost-benefit ratio... you use them. Our culture doesn't matter, that it's not worth saving but yet there is another culture where they have a beach and Ferris Wheel and all those things and over here and this is worth saving for 50 billion dollar but yet, 10.5 billion we can't even think about that, we can't do it. It can be done. It's always been said that if the will is there, we can do it. Well, our areas that I'm talking about is [Inaudible], Lower DuLarge. We have a floodgate at Lower DuLarge already, but yet, the Corps says we need to move it up in another alignment. Why not use what is already there and protect the people with what's already there because there are levee already in position. If you are going to redo and realign it, push it further up, but yet our people are going to be left again on the outside of this protection. We asked to be at the table and maybe I should clarify that, not as a [Inaudible] but as a voice to be heard at the table. When we talk and people take what we say and listen because it's like she said, we give the input and then after you take it, what do you do with it? We never hear what you do. Like you said, you make your report and goes up the channel and it stays there; it doesn't filter back down to us here who live in the communities where we can find out what is said and done. The master plan, we've held community meetings in our communities and brought people out and they say this is what we are going to do, and then after they leave you're not sure what they are going to do, if they change it or what they are going to do with it. We just want to be kept informed. I will fill out your paperwork so you can email me. I found out today that this was going on. I called our representative Joe Harrison and I asked him if he was going to be here and he said no because [Inaudible]. You know it takes time for these guys because they are busy just like all of y'all are and we need a little bit more advance notice. I understand you put it in the paper but some of don't get the paper. Some of us don't go on the internet, we are getting there and trying to move up to that age, but it's going to take some of us time to get there. We would like the information and when it becomes available, we would like to get it in our procession.

DARD1

DARD2

DARD3

DARD4

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HALE2

**Robert Hale** I'm a real estate developer and we are proposing a development at the Falgout Canal marina sight and we are in the permit process and we found out in that process, that the levee is going to cut through our project and we will have a negative impact between \$800,000 and one-million dollars depending on what kind of numbers you use on the site bags. What we are going to build is an upscale yachting and racing camp development with a canal to handle the bigger boats. I guess my main question is, is that levee alignment set in stone?

**Col. Fleming:** It's a draft format right now and this is part of the process so again, we will accept your feedback and put it into the mix with the rest of the feedback.

**Robert:** I have a letter and a map showing the proposal alignment and I have a modification showing what we would hope will happen and what it really is, and you may not be familiar where the [Inaudible] floodgates are suppose to be, but the levee that runs northward and ends up tying in to the Lower DuLarge and the pump station...the east-west run of that levee where it begins to turn, if east-west runs a couple hundred feet further with the same radius, it would not miss us, but it wouldn't impact us so much that we might not be able to do the development. Or if the radius turn wasn't so tight, it would miss us, so that 's what we are hoping can happen because it's very possible if the levee stays where it is, we won't be able to do our development because when you do the development, you have X-number of lots, if you lose 30 or 40% of those lots, the development is not feasible because of the costs of dredging.

**Elaine Stark:** If I can just say too that the designs now are the 25-30% design, we saw them and I showed you the yellow lines on the map, things that we have refined since the first feasibility report, as we go out to get the plans and specifications and move out to construction, we will take very detailed surveys, very detailed borings and if we can find ways that are less impact to the environment, we would choose to slightly alter it. We have to maintain the project area. We would have the flexibility to make subtle changes in the alignment especially if it would reduce cost or environmental impact. There is potential for those kind of small refinements even after authorization.

PITR1

**Rickie Pitre:** I am a citizen of Terrebonne. Three years ago, I lost my home and had it demolished and I had to move up the bayou. I moved from Cocodrie up to Gray to avoid the destruction; a home of 30 years where I raised by family. As we talk about the extended and limits of the levee alignment on the east and on the west, my first question is what is the perimeter of the limit line? Are you planning to consider the entire project area when we speak about project area? I'm think about how far to the north, is it in between those two limits.

**Ken Holder:** How about when we wrap up we go over the board and show you exactly.

**Rickie Pitre:** I have a copy of the map and I would like that answered before to see on the northern part...

**Elaine Stark:** It's Bayou Lafourche.

**Rickie Pitre:** It's Bayou Lafourche?

**Elaine Stark:** Yes sir.

**Rickie Pitre:** So all of northern Terrebonne is within the limits...

**Elaine Stark:** Yes sir and it's marked in red on the....

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**Rickie Pitre:** That answers my question and my point being that in order to redirect some issues and resolve some of the Terrebonne Parish issues, you can maybe look at breaking the northern perimeter or limit of that further south than just Bayou Lafourche. If that's the case, all of Terrebonne Parish is south of Bayou Lafourche and I would suggest you look at the U.S. Highway 90 future I-49 corridor, not only as a straight perimeter line, but also a good natural barrier, because it is a barrier. The other question I have is on the pipeline and the cost, is that included in this overall project cost, realizing in Terrebonne Parish how many pipelines intersect this proposed alignment as compared in what they did in the New Orleans project.

PITR2

**Ken Holder:** The answer is yes.

**Rickie Pitre:** In turn will the pipelines participate in a private fashion, I guess I could ask that of Reggie is to how all the pipelines we have and how they will effect wetlands and how they all intersect and how are they all participating in that cost-benefit analysis?

PITR3

**Col. Fleming:** Some utility relocations are what we call compensable and some are non-compensable so there is a process where we go through and the federal real government may pay for that relocation or a portion of it and in some cases, the utility companies will pay for it on their own dime. There is a process we go through to determine if it is compensable or not.

**Phillip Goaux:** I'm with the Lafourche Parish Council. Looking at the alignment, and I'm thrilled that it has moved east, one of the things that I would suggest is that we would look at the Gaines Ridge. You said that Gaines is on a Ridge and has experienced quite a bit of flooding in the past, especially form flood waters coming down and meeting the tidal surge in Bayou Des Allemands. I would hope that you would look at possibly, since you are starting at Highway 1 and end at I-49, one of things that drives me to say that is I-49, or the future I-49, is an evacuation route. In the past from storms, we had water that has overtopped those particular highways. Plus the fact that Gains, with 1600 residents and there's a new development that will be just north of where the system comes back to Bayou Lafourche and it's proposed for 500 homes. The impact by Des Allemands and the waters coming down from the north impacting that of a tidal surge it's created problems in the past and I would appreciate it if y'all would just look at it again and try to protect our evacuation route in Lafourche Parish and we are thrilled to death that you have extended into our parish.

LPC2

**Col. Fleming:** That's always one of the things you need to balance; when you put a levee up, yes you are blocking the surge that is coming from the south, but you are also blocking the drainage that comes from the north. Anyone who is in the Bayou Chene area in the spring of 2011 when we had the big flood coming down the river and we had to open the Morganza structure, we all know that we kind of dodged a bullet because we blocked Bayou Chene, but the lucky thing was we didn't have any rain. If we would have blocked Bayou Chene, like we did, which did in fact stop surge that came up from the south, be we didn't have any rain so there was no drainage issue but if we would have rain and we would have had some drainage coming down, it would have caused us some problems. That is always a balance you have to take into account.

**Alex Ostheimer:** My brothers and I [inaudible] that extend from 182 all the way to [inaudible]. When all this started years ago I went to the Levee Board and leave us in completely or take us out completely. Since Isaac, I want in because I think that is left out of the levee will be completely destroyed; I don't think the average citizen can afford to build a levee to protect them, particularly if it's like joining the levee where the little slosh comes in from the water running around. Having said that, your proposal right now run over our \$150,000 pumping station and cuts across about 1/3 of the way back, so it cuts about 2/3 of the property off. One of my brothers and my daughter lives within your proposal alignment and will be included in, others in the family live behind it. What I don't understand is why you

OSTH2

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have left the levee on the south bank of the Intracoastal until you get to our ridge and come up the western side of our property for the whole distance. The only explanation that I've been given is that it effects the water flow to the land south of that, but I know you have to have some Tulane and LSU engineers working for you somewhere, surely you can solve the problem of water flow. The last comprehensive plan this parish did, they determined only eight percent of our total land is developed and my brothers and I have 300 acres out there and you are fixing to cut off 150 or 200 acres or whatever it is. Now the developments from the [Inaudible] going west have been waterfront-type developments with a canal and all of that because we are pretty comfortable that we don't have the means to build a levee around it. Plus we don't understand why a mechanism for creating the water flow; there is a location canal just west on the Intracoastal from Hanson Canal that could be extended to [inaudible]. You can close Minors Canal or you could close the gate that right now is at our pump station in Minor and will hit on the south bank [Inaudible] and it doesn't look like your costs would be anything. You wouldn't too worried about in the original Morganza because it stopped at Minors Canal and didn't cross it. However, we don't want to be in and we would hope that some accommodation could be done. We don't mind working with your people and I think I've talked to you directly about it once before, but we would like to talk some more.

Col. Fleming: I appreciate your input and I'll make sure Elaine comes over and see you to make sure you get what you need.

Jennifer Armond: Thanks for being here. I am chairman of the Houma-Terrebonne Chamber of Commerce and I would like to share a few words with you from our membership. The Chamber, representing 800 businesses plus in this parish, is and has been an ardent support for the Morganza to the Gulf Project and strong believers in the system as a risk reducer for this very environmentally and economically significant part of the world. Clearly reducing the risk of losing all of this to hurricane storm surge is in the best interest of not only our local businesses, but all Americans and our federal economy and federal government as well. Despite 20 years of federal setbacks and delays, the Houma-Terrebonne Chamber of Commerce has support and Terrebonne Parish voters have approved to tax ourselves, not just once but twice, to build our locally and state funded lock and levee system along the federal Morganza alignment. Time and time again this region has withstood floods from hurricanes and storms that have simply glanced by our costs as well as direct hits and yet we have picked ourselves up and kept on working, feeding and fueling this nation. We never give up and won't ever give up and neither should the federal government especially now when we need you. On behalf of the Houma-Terrebonne Chamber of Commerce, we urge the Corps to continue to work more effectively and to sign the chief's and to the U.S. Congress to commit to protecting our valuable communities with federal authorization in the 2013 WRDA Bill and ultimately federal funding to construct the federal Morganza Project.

ARMO1

Doug Rose: I just want to tell you over the years I studied the Corps of Engineers [Inaudible]. In other words, when you travel, how much of the Corps projects from Tennessee Valley to [Inaudible]... One part of the dam is \$680 million dollars and the other part is \$780 million, we have a [Inaudible] and we are asking for \$138 million dollars to do what we want to do. In other words, speaking in a broad general phase, these things are happening all over the country. Tonight we are local and using a metaphor, our backs are against the sea. Washington D.C. is long range. My question and I heard you say at the beginning that the levees you intend to do would trace our levees or be on top or make modifications and being that we have the tax...at any point where it stands, despite what we do and think we are doing, Corps of Engineers can step in for some technical reason or other reason and you have to stop right now and shut it down because it's not up to our standards. You know the Corps [Inaudible] and that's my concern is that we are doing...and it's pretty obvious that this thing is going to succeed and we need to get the money and the chances are slim to none. I would just like to tell you something I discovered; in 1974 and '75 there was a [Inaudible name] and he proposed to make a barrier across the Rigolets and believe it or not, if it had been there we wouldn't have had those levees fail in the canals, we would have saved New Orleans. I read the reports it the paper and it said we can either get the money or the only other thing we

ROSE1

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US Army Corps  
of Engineers  
New Orleans District

## Public Meeting Summary

could do is if there was a big storm, if we are washed out and everything is gone, where in the hell are we? When you give us the money it might not be too much. I'm going to live any of this, but I'm telling you it's a very close question to me and if there anything you can fix in your mind, one thing I know, I do know this you have to answer to Washington, D.C. When you wear that army uniform, they give you an order and you have to do it. At any rate, is there any way you can stop this or delay it or we can't do it, let's say for five years, and then in five years again we are back to another study. I think that is the perfect question.

Col. Fleming: It is and I am going to try to answer it and do my best. I can't stand here and tell you what someone is going to tell me five years from now or what they are going to tell the net colonel that comes thru. I can't tell you that; I would be lying if I stood here and told you, but this is what I can tell you. The Terrebonne Levee District is building a levee right now. They are building it along this alignment and they are building it to the Corps of Engineer standards and they are going to keep on building it and we are going to come on top of that and we are going to come and build our levee right on top of that. If things work out right, and we've worked with them very closely to tell them how they need they need to do it and how we can work together, not only are they going to continue to build that, but the money they are using that right now, may, maybe part of the cost-share of the federal project. So not only is it good that they are building it right now and I don't think we highlighted it enough early, it's a 10.5 billion dollar project that is cost-shared 65% federal, 35% local. So I'm not going to bring 10.5 billion, I'm going to bring 65% of that and between the state and Terrebonne Levee District, they are going to pay the 35% of that or roughly over three billion dollars. They may get credit for the work they are doing right now. Now as I said there will be a couple of things that will happen and Reggie knows all that needs to happen to make it work, but we need to make sure you get credit for the work you are doing right now as part of your cost-share for that larger federal project.

END OF MEETING

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Commander  
Eighth Coast Guard District

Hale Boggs Federal Building  
500 Poydras Street, Room 1230  
New Orleans, LA 70130-3396  
Staff Symbol: (dpw)  
Phone: (504) 671-2103  
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16630  
March 22, 2013

U.S. Army Corps of Engineers  
Attn: Ms. Sandra Stiles  
P.O. Box 60267  
New Orleans, LA 70160-0267

Dear Ms. Stiles:

This letter is in response to the proposed Morganza to the Gulf of Mexico Project and the associated Revised Programmatic Environmental Impact Statement summary. The Coast Guard is not opposed to this project; however, we have some areas of concern relating to navigational safety widths, defined criteria and proper notification for gate closures and subsequent operation of the gates once installed.

The current plans to construct navigation openings in the flood control system, specifically structures across the Gulf Intracoastal Waterway (GIWW) and Houma Navigation Canal (HNC), call for an opening of only 125 feet. Based on historical bridge and lock collision data along the GIWW, we believe that these gate openings are inevitably susceptible to damage from contact by vessel traffic. Further, we advocate consistency in gate openings crossing the GIWW system. For example, the nearby GIWW West Closure project maintains a 225 foot opening which we feel is appropriate to address navigational safety and accommodate the trend of larger towing vessels transiting the waterway.

USCG1

A second concern is the manner in which the flood protection walls are required to be shut during a flooding event. We request that a written plan be created to define specific criteria for closure to allow adequate planning for vessels entering or departing the area to seek refuge. Operation of the West Closure Complex gates will also need to be taken into consideration when closing the gates proposed by this project. The Coast Guard is not in a position to manage or enforce removal of vessels from the entire flood control project as is currently being done in the New Orleans hurricane and storm damage risk reduction system project.

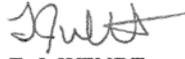
USCG2

Finally, the Coast Guard understands that the USACE position is that ownership and operation of the flood gates should remain in control of a federal agency. The Coast Guard supports this position. The Coast Guard also believes this is necessary to facilitate commerce and vessel movement until it becomes absolutely necessary to close the gates for their intended purpose.

USCG3

The Coast Guard looks forward to reviewing the revised PEIS when it becomes available for agency comments. If you have any further questions concerning this matter, please contact Lieutenant Commander Heather Stratton at (504) 671-2112.

Sincerely,



T. J. WENDT  
Captain, U.S. Coast Guard  
Chief, Waterways Management Branch  
By Direction

Copy: Coast Guard Sector New Orleans  
Coast Guard MSU Morgan City