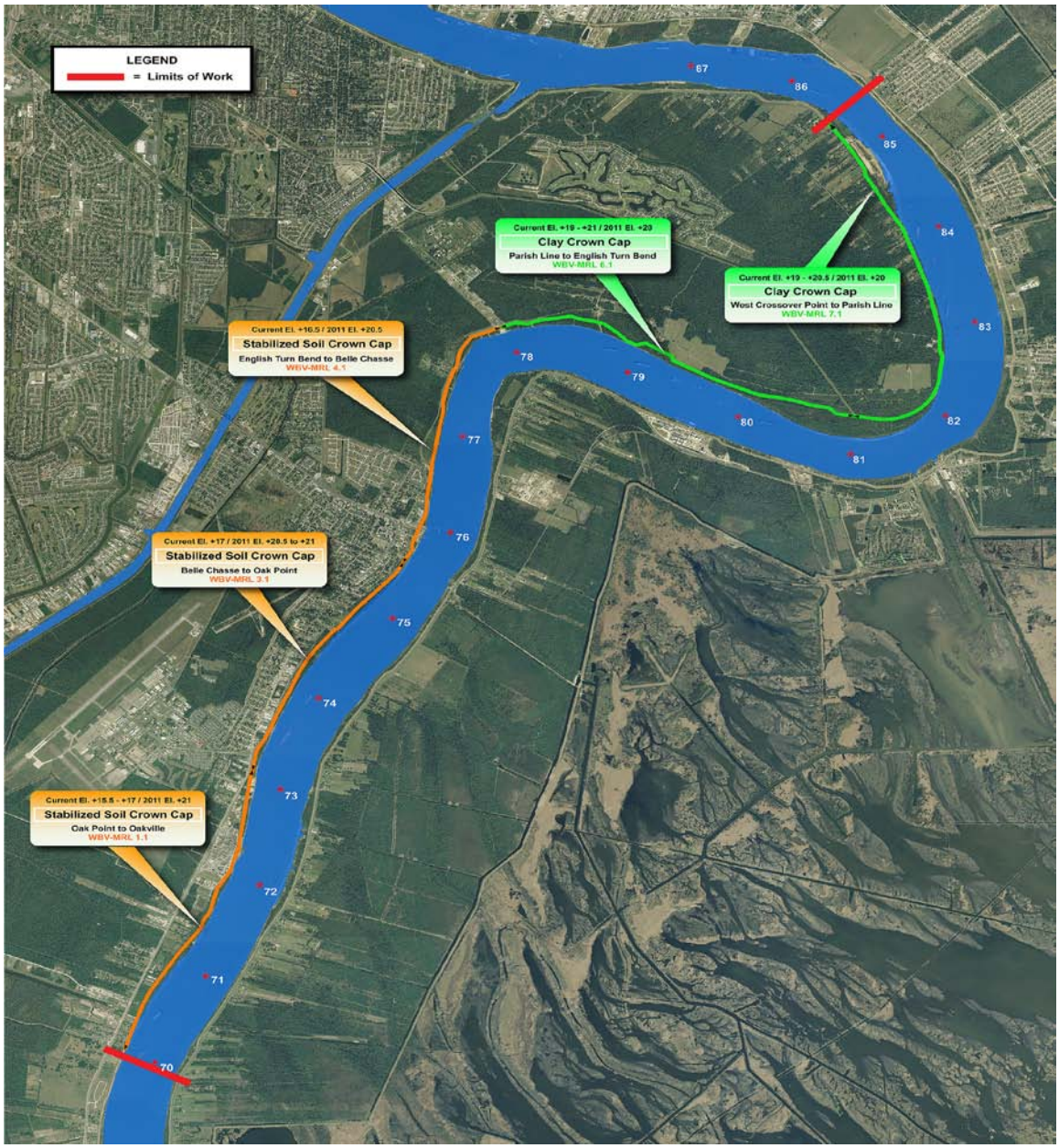
DRAFT INDIVIDUAL ENVIRONMENTAL REPORT

WEST BANK AND VICINITY AND MISSISSIPPI RIVER CO-LOCATED LEVEES

PLAQUEMINES PARISH AND ORLEANS PARISH, LOUISIANA
IER # 33



NOVEMBER 2010

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1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Individual Environmental Report # 33 (IER # 33) to evaluate the potential impacts associated with the proposed construction and maintenance of the 100-year level of hurricane damage risk reduction along the West Bank and Vicinity – Mississippi River Levee (WBV-MRL) Co-Located Project. The MRL on the west bank of the Mississippi River, from the Eastern Tie-in of the West Bank and Vicinity (WBV) project with the MRL at Oakville in Plaquemines Parish to a point approximately 15.5 miles upriver southeast of the Algiers Lock in Orleans Parish, is not of sufficient height to provide 1 percent hurricane and storm damage risk reduction. The term "100-year level of risk reduction," as it is used throughout this document, refers to a level of risk reduction that reduces the risk of hurricane surge and wave-driven flooding that the New Orleans metropolitan area experiences to a 1 percent chance each year. The WBV-MRL Co-Located Project is designed to reduce risk to residents along the west bank of the MRL from hurricane-driven storm surges traveling either up or across the Mississippi River.

The proposed action is located in Plaquemines and Orleans Parishes on the west bank of the Mississippi River and is part of the West Bank and Vicinity (WBV) Belle Chasse Polder, New Orleans, Louisiana. The project area extends from river mile 85.5 to 70 Above Head of Passes (AHP). The northern end (river mile 85.5) is situated near the intersection of Patterson Road and Delacroix Road in English Turn and the southern end (river mile 70) is approximately 525 feet south of the intersection of East St. Peter Street and the Mississippi River Levee at Oakville (see figure 1). The existing MRL levee alignment has been divided into five contract reaches of varying lengths; figure 2 illustrates the locations of the five contract reaches and table 1 identifies their lengths and average deficiencies. Note that the project originally was divided into seven reaches, but reaches 2.1 and 5.1 were combined into reaches 1.1 and 4.1, respectively.

IER # 33 has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 CFR §1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2. The execution of an IER, in lieu of a traditional Environmental Assessment (EA) or Environmental Impact Statement (EIS), is provided for in ER 200-2-2, Environmental Quality (33 CFR §230) Procedures for Implementing the NEPA and pursuant to the Council on Environmental Quality (CEQ) NEPA Implementation Regulations (40 CFR §1506.11). The Alternative Arrangements can be found at www.nolaenvironmental.gov, and are herein incorporated by reference.

The CEMVN implemented Alternative Arrangements on March 13, 2007 under the provisions of the CEQ Regulations for Implementing the NEPA (40 CFR §1506.11). This process was implemented in order to expeditiously complete environmental analysis for any changes to the authorized system and the 100-year level of the Hurricane and Storm Damage Risk Reduction System (HSDRRS), formerly known as the Hurricane Protection System (HPS) authorized and funded by Congress and the Administration. The proposed actions are located in southeastern Louisiana and are part of the Federal effort to rebuild and complete construction of the WBV HSDRRS in the New Orleans Metropolitan area as a result of Hurricanes Katrina and Rita.

Figure 1. IER #33 WBV-MRL Co-Located Project Area

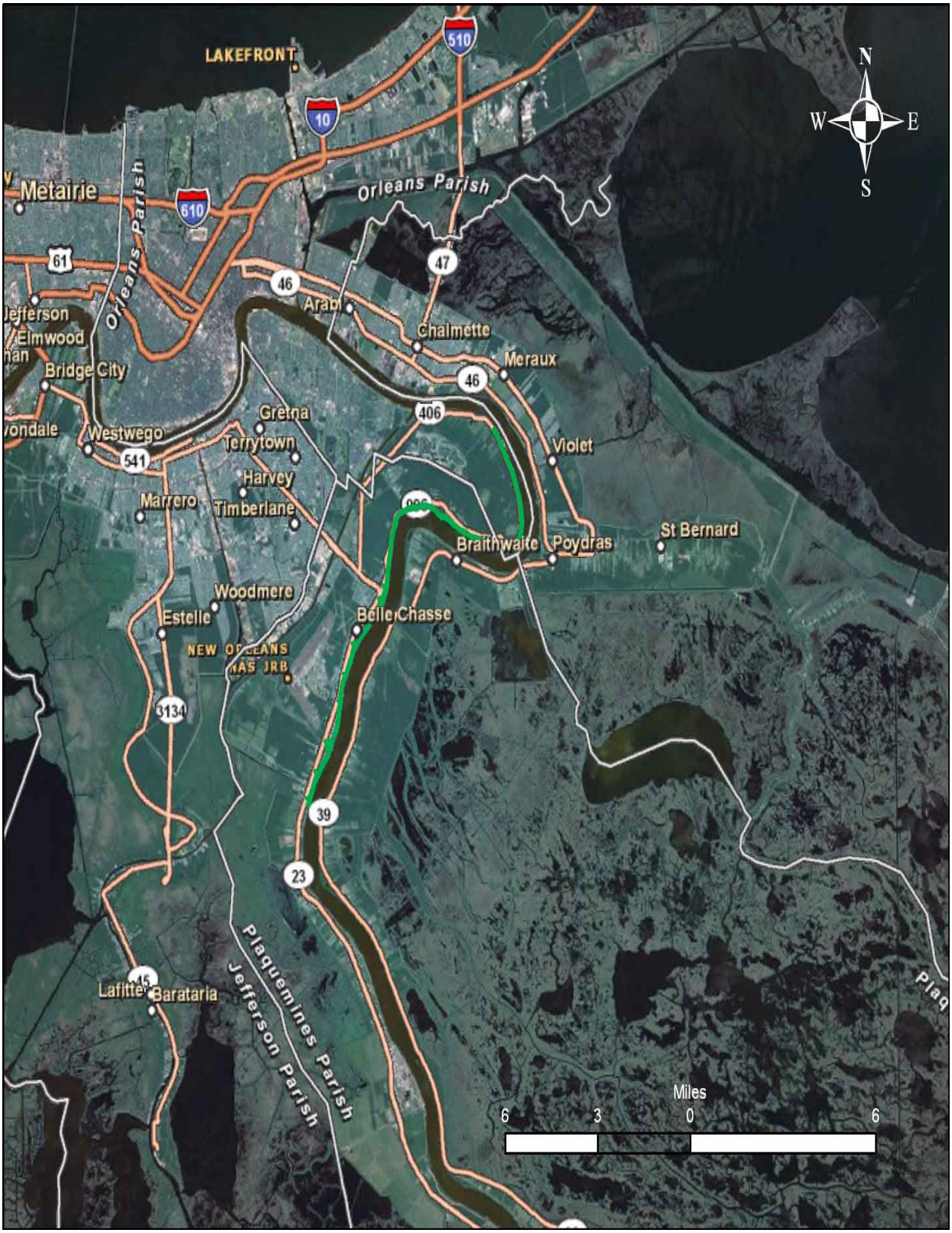


Figure 2. IER #33 WBV-MRL Contract Reach Segments

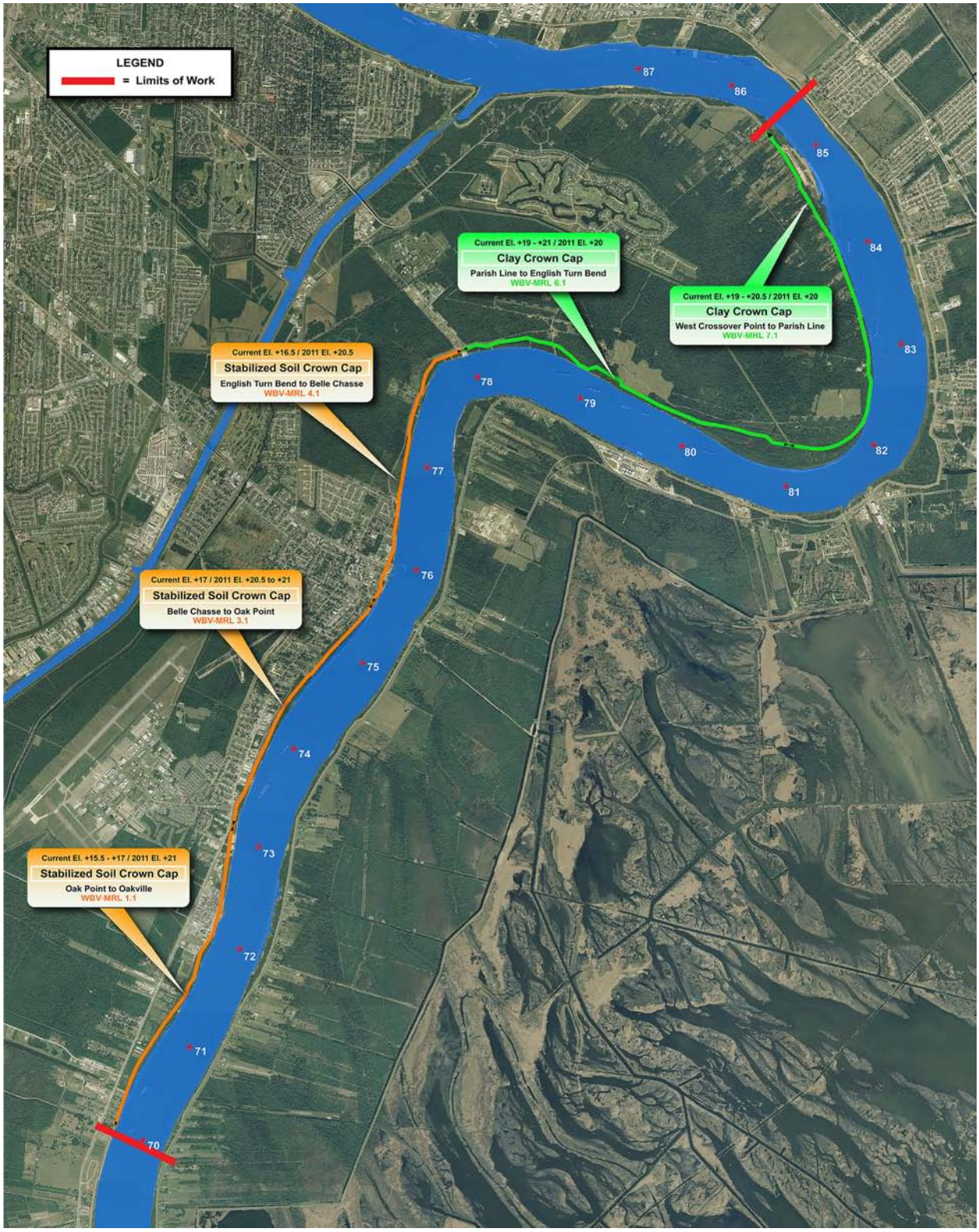


Table 1
Contract Reaches in the WBV-MRL Co-Located Project

Contract Reach	Length (linear feet)	Average Deficiency (feet)	Maximum Deficiency (feet)
WBV-MRL 1.1	16,600	4.5	5.0
WBV-MRL 3.1	13,100	3.5	4.0
WBV-MRL 4.1	13,900	2.6	3.5
WBV-MRL 6.1	17,400	0.6	3.0
WBV-MRL 7.1	20,205	0.5	2.0

Work to raise portions of the MRL, above the Mississippi River and Tributaries (MR&T) authorized design elevations, to the 1 percent HSDRRS elevations is anticipated to be accomplished using Engineered Alternative Measures (EAMs). The EAMs would consist mainly of an all-earthen clay cap in the northern two contract reaches and a stabilized soil clay cap in the southern three reaches, both of which fit within the existing levee footprint, thereby reducing potential environmental and cultural resources impacts and minimizing the requirement to obtain additional rights-of-way. EAMs would be constructed to provide the 1 percent elevation for the entire Co-Located Project and are the focus of this IER.

The EAMs would be completed within current authorizations and currently requested reprogramming actions for the West Bank and Vicinity Project (WBV) established through the authority of the 4th Supplemental Appropriation, as well as through project funds from the MR&T program. The MR&T program would provide the funds that are necessary to raise the levees from existing grade to the MR&T authorized grade for any deficiencies that may exist. As part of the MR&T program's cost share agreement, construction and design for the MR&T work would be 100 percent Federally funded, with the non-Federal sponsors required to provide all land, easements, relocations, rights-of-way, and disposal areas (LERRDs). The requested reprogramming action to the WBV project would provide funding for the incremental raise from the MR&T grade to the required HSDRRS grade. The WBV portion of the work would be subject to the current WBV Project Partnership Agreement and cost share of 35 percent by non-Federal sponsors.

EAMs would be constructed to provide risk reduction from the effects of a hurricane event that produces a surge that has a 1 percent chance of being equaled or exceeded in any given year. By designing and constructing EAMs that stay within the MRL footprint, the work would remain within the currently requested reprogramming action and the typical project schedule could be expedited by minimizing the environmental effects and real estate requirements. EAMs would allow construction within the existing foot print to the required HSDRRS elevation, while still meeting the requirements of the HSDRRS design guidelines.

The MRL are continually evaluated and analyzed to ensure that proper factors of safety and design grades are sufficient to provide authorized risk reduction. Similarly, the performance and sustainability of the EAMs would be closely monitored and evaluated. Potentially, additional enhancements, called Resilient Features, could be added later to these sections of the MRL, if determined appropriate, and if authorized and funded in the future (possibly through a reprogramming action). Examples of such Resilient Features include more gradual levee slopes, berms and possibly armoring to reduce the damages to levees from large storm events. Construction of Resilient Features would require a larger levee footprint and the acquisition of additional rights-of-way and potential relocation of residential and commercial facilities and utilities. The best engineering solutions would be applied to minimize these impacts.

Resilient Features could include an earthen levee with river-side, straddle or land-side enlargement, and a floodwall (T-wall) that would follow the existing MRL alignment. An

earthen levee alternative, with river-side, straddle, or land-side enlargements, could potentially be incorporated into either of the proposed EAM features (e.g., clay crown cap and stabilized soil crown cap).

For the Resilient Features, the earthen levee alignment alternative for each contract reach or sub-reach would be based on the availability of right-of-way and the geotechnical stability of each possible alignment. In locations where geotechnical stability is determined to not be sufficient for a shift in the levee centerline, a setback would be evaluated as an additional alternative alignment.

Over time, the HSDRRS design grade requirements for 1 percent hurricane surge risk reduction would be higher in elevation due to the effects of land subsidence and sea level rise. In order to ensure that the levees are up to a sufficient grade to provide the 1 percent level of risk reduction in the future, the need for additional MRL enhancements would be expected to move further upriver. The Corps will continue to monitor subsidence and sea level rise as well as MRL elevations.

NEPA compliance for the Engineered Alternative Measures (EAMs) would be achieved through the signing of a Decision Record for this IER by the New Orleans District Commander. Resilient Features, if and when ripe for evaluation in detail, would be evaluated in subsequent NEPA documentation. This document only evaluates the effects of the design and construction of the EAMs.

This draft IER will be distributed for a 30-day public review and comment period. A public meeting specific to the proposed action will be held on Monday, December 6, 2010 at the Bayou Barriere Golf Clubhouse, 7427 Highway 23, Belle Chasse, Louisiana. An open house to view project details will begin at 6:00pm, and the meeting will begin at 6:30pm. Any comments received during this public meeting will be considered part of the official record. After the 30-day comment period, the CEMVN District Commander will review all comments received during the review period and make a determination if they rise to the level of being substantive in nature. If comments are not considered to be substantive, the District Commander will make a decision on the proposed action. This decision will be documented in an IER Decision Record. If a comment(s) is determined to be substantive in nature and require substantial changes to the IER, an addendum to the IER would be prepared and published for an additional 30-day public review and comment period. After the expiration of the public comment period on the addendum, the District Commander would make a decision on the proposed action, documented in an IER Decision Record.

1.1. Purpose and Need for the Proposed Action

On August 29, 2005, Hurricane Katrina caused major damage to the Federal and non-Federal flood control projects in southeast Louisiana. Hurricane Rita followed this storm on September 24, 2005, and made landfall on the Louisiana-Texas state border, causing additional damage to the flood control projects in southern Louisiana. Since the storms, the USACE has been working with state and local officials to restore and improve the Federal and non-Federal flood control and HSDRRS projects and related works in the affected area.

The HSDRRS was funded in a series of appropriations by Congress after Hurricanes Katrina and Rita and consists of levees and floodwalls and related features that provide risk reduction from a hurricane event that has a 1-percent chance of being exceeded in any given year. On the West Bank of the Mississippi River, the WBV project consists of perimeter levees and floodwalls that are currently being designed and/or constructed to the required 1-percent design elevation. In order to make a complete and closed system, the WBV Project ties into the west bank Mississippi River Levee at river miles 70 and 118.5. Therefore, the MRL serves as an integral part of the HSDRRS, reducing the risk to communities from a storm surge propagating upstream

from the mouth of the Mississippi River or from unprotected reaches along the east bank of the river.

Recent hydraulic analysis has indicated the levees along the west bank of the Mississippi River need to be raised to meet the 1-percent HSDRRS requirements (USACE, 2010f). On the west bank it is anticipated that the levees would need to be raised in elevation between river miles 70 and 85.5. River mile 85.5 has been identified as the design grade crossover point. This is the point where the Mississippi River and Tributaries (MR&T) authorized design grade equals the 1-percent HSDRRS design grade for the year 2011. Analyses indicate that upstream of river mile 85.5, the MRL authorized design grade is greater than that needed for the 1-percent HSDRRS. Thus, river mile 85.5 is the upstream terminus of the need to raise the elevation of the MRL to complete the 1-percent HSDRRS for the West Bank.

To date, approximately 70-percent of the New Orleans population has returned to the area. Many residences and businesses are waiting to see positive improvements in the level of risk reduction before returning to the area. June 2011 has been set by the Corps as an operation goal to raise the level of risk reduction in the New Orleans area to a new standard and provide a level of security to residents and businesses that would allow and encourage them to return to the area.

The purpose of the proposed action is to provide a critical component of 1-percent flood risk reduction for the residents and businesses within the West Bank and Vicinity Project area. The need for the action is to provide the authorized level of hurricane risk reduction for all aspects of the risk reduction system, including segments of the MRL that are not currently at the 1-percent elevations.

1.2. Authority for the Proposed Action

The authority for the proposed action was provided as part of a number of hurricane and storm damage risk reduction projects spanning southeastern Louisiana, including the Lake Pontchartrain and Vicinity (LPV) Hurricane Protection Project and the WBV Hurricane Protection Project. Congress and the Administration approved a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade the project systems damaged by the storms, providing additional authority to the USACE to construct 100-year HSDRRS projects.

The West Bank and Vicinity, Westwego to Harvey Canal Hurricane Protection Project was authorized by the Water Resources Development Act (WRDA) of 1986 (P.L. [Public Law] 99-662, Section 401(b)). The WRDA of 1996 modified the project and added the Lake Cataouatche Project and the East of Harvey Canal Project (P.L. 104-303, Section 101(a)(17) & P.L. 104-303, 101(b)(11)). The WRDA 1999 (P.L. 106-53, Section 328) combined the three projects into one project as the West Bank and Vicinity Hurricane Protection Project.

Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - P.L. 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) appropriated funds to accelerate the completion of the previously authorized project and to restore and repair the project at full Federal expense. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) appropriated funds and added authority to raise levee heights where necessary, reinforce and replace floodwalls, and otherwise enhance the project to provide the levels of protection necessary to achieve the certification required for participation in the National Flood Insurance Program. Additional Supplemental Appropriations include the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (P.L. 110-28) Title IV, Chapter 3, Flood Control and Coastal Emergencies, Section 4302 (5th Supplemental), and the 6th Supplemental (P.L. 110-252), Title III, Chapter 3, Construction.

The Congressional authority for the construction of the Flood Control, Mississippi River and Tributaries (MR&T) project is contained in the Flood Control Acts of 1928, as amended, 1936, 1938, 1941, 1946, 1950, 1954, 1962, 1965 and 1968 and the Water Resources Development Act (WRDA) of 1986. The Flood Control Act of 1928 committed the Federal government to a definite program of flood control and authorized general and progressive channel stabilization and river regulation from Cairo, Illinois to Head of Passes, Louisiana.

1.3. Prior Reports

A number of studies and reports on water resources development in the proposed project area have been prepared by the USACE, other Federal, state, and local agencies, research institutes, and individuals. Pertinent studies, reports and projects are discussed below:

West Bank and Vicinity Relevant Reports:

- On November 20, 2010, the CEMVN Commander signed a decision record on IER Supplemental #12 entitled, "GIWW, Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans, and Plaquemines Parishes Louisiana." IERS #12 addressed a proposal to utilize the West Bank Site N borrow area as an alternative disposal site for levee material removed during the construction of the West Closure Complex eastern floodwall and road realignment, as well as the Hero Canal Levee. IERS #12 also addressed anticipated impacts associated with the construction of floodwalls, in addition to the relocation of the Barriere Golf Course access road in the vicinity of the Belle Chasse Tunnel, and included temporary closures of the tunnel.
- On October 29, 2010, the CEMVN Commander signed a Decision Record on IER #31 entitled, "Contractor-Furnished Borrow Material #7, East Baton Rouge, Jefferson, Lafourche, Plaquemines, St. Bernard, and St. Tammany Parishes, Louisiana, and Hancock County, Mississippi." The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- On 24 August 2010, the CEMVN Commander signed a Decision Record on IER Supplemental #16.a entitled "Western Tie-In, Jefferson and St. Charles Parishes, Louisiana." The document evaluates the potential impacts associated with utility relocations, replacing the Highway 90 pump station, adding bank stabilization to some areas, retaining the detour roads as permanent access for Highway 90 and the construction of a ramp at Highway 18 instead of a floodgate.
- On February 9, 2010, the CEMVN District Commander signed a Decision Record on IER Supplemental #14.a entitled "Westwego to Harvey Levee, Jefferson Parish, Louisiana." The document evaluates the potential impacts associated with constructing a larger levee footprint for the WBV-14.c.2 reach and revisions to fronting protection and floodwall construction at the Ames and Mt. Kennedy Pump Stations.
- On January 22, 2010, the CEMVN District Commander signed a Decision Record on IER #32 entitled "Contractor-Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana." The document evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating contractor-furnished borrow areas for use in construction of the HSDRRS.
- On December 4, 2009, the CEMVN District Commander signed a Decision Record on IER #13 entitled "Hero Canal Levee and Eastern Tie-In, Plaquemines Parish, Louisiana." IER #13 evaluates the potential impacts associated with raising and/or constructing levees, and other structures to meet the 100-year level of risk reduction for Belle Chasse, Oakville and other unincorporated areas of Plaquemines Parish.

- On September 28, 2009, the CEMVN District Commander signed a Decision Record on IER #30 entitled, "Contractor-Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana and Hancock County, Mississippi." The document evaluates the potential impacts associated with the action taken by commercial contractors as a result of excavating contractor furnished borrow areas for use in construction for HSDRRS.
- On September 20, 2009, the CEMVN Commander signed a Decision Record on IER #29 entitled "Pre-Approved Contractor-Furnished Borrow Material #4, Orleans, St. John the Baptist, and St. Tammany Parishes, Louisiana." The document evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating contractor-furnished borrow areas for use in construction of the HSDRRS.
- On July 31, 2009 the CEMVN District Commander signed a Decision Record on IER #28 entitled "Government-Furnished Borrow Material #4, Plaquemine, St. Bernard and Jefferson Parishes, Louisiana." The document evaluates the potential impacts associated with approving government-furnished borrow areas and an access route for use in construction of the HSDRRS.
- On June 12, 2009, the CEMVN Commander signed a Decision Record on IER #16, entitled "Western Tie-In, Jefferson and St. Charles Parishes, Louisiana." The document describes the potential impacts associated with constructing a new levee to provide 100-year level of risk reduction for the project vicinity.
- On February 18, 2009, the CEMVN Commander signed a Decision Record on IER #12, entitled "Gulf Intracoastal Waterway (GIWW), Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans, and Plaquemines Parishes, Louisiana." The document describes the potential impacts associated with enlarging levees and floodwalls along the GIWW(Algiers and Harvey Canals) and construction of the Gulf Intracoastal Waterway West Closure Complex (WCC). Construction of these features would alter the original system alignment and construct a streamlined surge barrier, floodwall, and levee alignment.
- On February 3, 2009, the CEMVN District Commander signed a Decision Record on IER # 25 entitled "Government Furnished Borrow Material, Orleans, Plaquemines and Jefferson Parishes, Louisiana." The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of excavating borrow areas for use in construction of the HSDRRS.
- On January 21, 2009, the CEMVN District Commander signed a Decision Record on IER # 17 entitled "Company Canal Floodwall, Jefferson Parish, Louisiana." The document was prepared to evaluate the proposed construction and maintenance of the 100-year level of hurricane and storm damage risk reduction along the Company Canal from the Bayou Segnette State Park to the New Westwego Pumping Station.
- On October 20, 2008, the CEMVN District Commander signed a Decision Record on IER # 26 entitled "Pre-Approved Contractor Furnished Borrow Material # 3, Jefferson, Plaquemines, and St. John the Baptist Parishes, Louisiana, and Hancock County, Mississippi." The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- On August 26, 2008, the CEMVN District Commander signed a Decision Record on IER # 14, entitled "Westwego to Harvey, Levee Jefferson Parish, Louisiana." The document was prepared to examine the potential environmental impacts associated with the proposed construction and maintenance of 100-year level of hurricane and storm damage risk reduction along the WBV, Westwego to Harvey Levee project area.

- On June 12, 2008, the CEMVN District Commander signed a Decision Record on IER # 15, entitled "Lake Cataouatche Levee, Jefferson Parish, Louisiana." The proposed action includes constructing a 100-year level of risk reduction in the project area.
- On May 30, 2008, the CEMVN District Commander signed a Decision Record on IER # 22 entitled "Government Furnished Borrow Material, Plaquemines and Jefferson Parishes, Louisiana." The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of excavating borrow areas for use in construction of the HSDRRS.
- On May 6, 2008, the CEMVN District Commander signed a Decision Record on IER # 23 entitled "Pre-Approved Contractor Furnished Borrow Material # 2, St. Bernard, St. Charles, Plaquemines Parishes, Louisiana, and Hancock County, Mississippi." The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- On February 21, 2008, the CEMVN District Commander signed a Decision Record on IER # 18 entitled "Government Furnished Borrow Material, Jefferson, Orleans, Plaquemines, St. Charles, and St. Bernard Parishes, Louisiana." The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of excavating borrow areas for use in construction of the HSDRRS.
- On February 14, 2008, the CEMVN District Commander signed a Decision Record on IER # 19 titled "Pre-Approved Contractor Furnished Borrow Material, Jefferson, Orleans, St. Bernard, Iberville, and Plaquemines Parishes, Louisiana, and Hancock County, Mississippi." The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- In July 2006, the CEMVN District Commander signed a FONSI on an EA # 433 entitled, "USACE Response to Hurricanes Katrina & Rita in Louisiana." The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of Hurricanes Katrina and Rita.
- On August 23, 2005, the CEMVN District Commander signed a FONSI on EA # 422 entitled "Mississippi River Levees – West Bank Gaps, Concrete Slope Pavement Borrow Area Designation, St. Charles and Jefferson Parishes, Louisiana." The report investigates the impacts of obtaining borrow material from various areas in Louisiana.
- On February 22, 2005, the CEMVN District Commander signed a FONSI on EA # 306A entitled "West Bank Hurricane Protection Project – East of the Harvey Canal, Floodwall Realignment and Change in Method of Sector Gate." The report discussed the impacts related to the relocation of a proposed floodwall moved because of the aforementioned sector gate, as authorized by the LPV Project.
- On May 5, 2003, the CEMVN District Commander signed a FONSI on EA # 337 entitled "Algiers Canal Alternative Borrow Site."
- On June 19, 2003, the CEMVN District Commander signed a FONSI on EA # 373 entitled "Lake Cataouatche Levee Enlargement." The report discusses the impacts related to improvements to a levee from Bayou Segnette State Park to Lake Cataouatche.
- On May 16, 2002, the CEMVN District Commander signed a FONSI on EA # 306 entitled "West Bank Hurricane Protection Project - Harvey Canal Sector Gate Site Relocation and Construction Method Change." The report discusses the impacts related to the relocation of a proposed sector gate within the Harvey Canal, as authorized by the LPV Project.

- On August 30, 2000, the CEMVN District Commander signed a FONSI on EA # 320 entitled "West Bank Hurricane Protection Features." The report evaluates the impacts associated with borrow sources and construction options to complete the Westwego to Harvey Canal Hurricane Protection Project.
- On August 18, 1998, the CEMVN District Commander signed a FONSI on EA # 258 entitled "Mississippi River Levee Maintenance - Plaquemines West Bank Second Lift, Fort Jackson Borrow Site."
- In July 1998, the USACE completed a Final EIS entitled, "Supplement No: 1 to the Final Environmental Impact Statement, Mississippi River and Tributaries Project, Mississippi River Levees and Channel Improvement." The record of decision was signed by the President of the Mississippi River Commission on October 5, 1998. Based on additional environmental laws and regulations enacted after 1976, information from other Federal agencies, and litigation by environmental groups, this EIS supplemented the 1976 Final EIS and addressed remaining construction of the mainline Mississippi River levees, including and seepage control features.
- In December 1996, the USACE completed a post-authorization change study entitled, "Westwego to Harvey Canal, Louisiana Hurricane Protection Project Lake Cataouatche Area." The study investigated the feasibility of providing hurricane and storm damage risk reduction to that portion of the west bank of the Mississippi River in Jefferson Parish between Bayou Segnette and the St. Charles Parish line and included an EIS. A Standard Project Hurricane (SPH) level of risk reduction was recommended along the alignment followed by the existing non-Federal levee. The project was authorized by Section 101 (b) of the WRDA of 1996, (P. L. 104-303) subject to the completion of a final report of the Chief of Engineers, which was signed on December 23, 1996. A record of decision for the EIS was signed by the Director of Civil Works on September 28, 1998.
- On January 12, 1994, the CEMVN District Commander signed a FONSI on an EA # 198 entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, LA, Hurricane Protection Project, Westwego to Harvey Canal, Jefferson Parish, Louisiana, Proposed Alternate Borrow Sources and Construction Options." The report evaluates the impacts associated with borrow sources and construction options to complete the Westwego to Harvey Canal Hurricane Protection Levee.
- In August 1994, the CEMVN completed a feasibility report entitled "WBV (East of the Harvey Canal)." The study investigated the feasibility of providing hurricane and storm damage risk reduction to that portion of the west bank of metropolitan New Orleans from the Harvey Canal eastwards to the Mississippi River, and included an EIS. The final report recommends that the existing West Bank Hurricane Project, Jefferson Parish, Louisiana, authorized by the WRDA of 1986 (P.L. 99-662), approved November 17, 1986, be modified to provide additional hurricane and storm damage risk reduction east of the Harvey Canal. The report also recommends that the level of risk reduction for the area east of the Algiers Canal deviate from the National Economic Development Plan's level of risk reduction and provide risk reduction for the SPH. The Division Engineer's Notice was issued on September 1, 1994. The Chief of Engineer's report was issued on May 1, 1995. The WRDA of 1996 authorized the project. The record of decision for the EIS was signed by the Director of Civil Works on September 28, 1998.
- On March 20, 1992, the CEMVN District Commander signed a FONSI on EA # 165 entitled "Westwego to Harvey Canal Disposal Site."
- On June 3, 1991, the CEMVN District Commander signed a FONSI on EA # 136 entitled "West Bank Additional Borrow Site between Hwy 45 and Estelle Pump Station."
- On March 15, 1990, CEMVN District Commander signed a FONSI on EA # 121 entitled "West Bank Westwego to Harvey, Changes to EIS." The report addresses the impacts

associated with the addition of the Westwego tie-in, replacing some levees with floodwalls, and expanding the width of some levees.

- In December 1986, the USACE completed a Feasibility Report and EIS entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, LA." The report investigated the feasibility of providing hurricane and storm damage risk reduction to that portion of the west bank of the Mississippi River in Jefferson Parish between the Harvey Canal and Westwego, and down to the vicinity of Crown Point, Louisiana. The report recommended implementing a plan that would provide standard project hurricane level of risk reduction to an area on the west bank between Westwego and the Harvey Canal north of Crown Point. The project was authorized by the WRDA of 1986 (P.L. 99-662). The record of decision for the EIS was signed by the Assistant Secretary of the Army, Civil Works on March 28, 1989. Construction of the project was initiated in early 1991.
- In February 1976, the USACE completed a Final EIS entitled, "Final Environmental Impact Statement, Mississippi River and Tributaries, Mississippi River Levees and Channel Improvement." The study evaluated alternatives for the Mississippi River and Channel Improvement Project and related projects on more than 900 miles of river between Cairo, Illinois and Venice, Louisiana. The projects were designed to make the Mississippi River more navigable and prevent flooding by utilizing channel training devices such as dikes and revetments, levees, and maintenance and construction dredging to maintain the existing project features and complete those previously authorized. The Statement of Findings for the EIS was signed by the Director of Civil Works on April 4, 1976.

1.4. Integration with other Individual Environmental Reports

In addition to this IER, the CEMVN is preparing a draft Comprehensive Environmental Document (CED) that will describe the work completed and the work remaining to be constructed for the entire HSDRRS. The purpose of the draft CED will be to document the work completed by the CEMVN on a system-wide scale. The draft CED will describe the integration of individual IERs into a systematic planning effort. Overall cumulative impacts and future operations and maintenance requirements will also be included. Additionally, the draft CED will contain updated information for any IER that had incomplete or unavailable data at the time it was released for public review.

The draft CED will be made available for a 60-day public review period. The document will be posted on www.nolaenvironmental.gov, or can be requested by contacting the CEMVN. A notice of availability will be mailed/e-mailed to interested parties advising them of the availability of the draft CED for review. Additionally, a notice of availability will be placed in national and local newspapers. Upon completion of the 60-day review period, all comments will be compiled and appropriately addressed. Upon resolution of any comments received, a final CED will be prepared, a Decision record will be signed by the District Commander, and both will be made available to any stakeholders requesting a copy.

Compensatory mitigation for unavoidable environmental impacts associated with all HSDRRS projects will be documented in forthcoming mitigation IERs. Eighteen IERs and several supplements to the 18 IERs, plus eleven IERs addressing clay material borrow sources, have been prepared to address various features of the HSDRRS. Figure 3 depicts the various reaches and their respective IERs.

1.5. Public Concerns

The foremost public concern is reducing the risk of hurricane, storm, and flood damage for businesses and residences, and enhancing public safety during major storm events in the Greater New Orleans metropolitan area.

The main concern identified so far for the features addressed in this IER is the potential for contaminants leaching from the stabilized soil proposed for use in the levee construction. This IER addresses that concern. Additional project- specific public concerns will be identified and addressed during and after public review and comment on the draft IER #33.

2. ALTERNATIVES

2.1. Alternatives Development and Preliminary Screening Criteria

NEPA requires that in analyzing alternatives to the proposed action, a Federal agency consider an alternative of "No Action." Likewise, Section 73 of the WRDA of 1974 (PL 93-251) requires Federal agencies to give consideration to non-structural measures to reduce or prevent flood damage. The CEMVN Project Delivery Team (PDT) considered a no action alternative and non-structural measures in this IER.

In addition to these mandated alternatives, a range of reasonable alternatives was formulated through input by the CEMVN PDT, Value Engineering Team, and engineering and design consultants for each of the contract reaches described in this IER (USACE, 2010f). As a result, the use of the described Engineered Alternative Measures (EAMs) has been proposed to meet the required 1-percent hurricane design elevation within the budgetary and June 2011-schedule requirements (USACE, 2010f).

Engineered alternative measures were examined in the Engineering Alternatives Report (USACE, 2010f) to allow the selection of the most effective and efficient method or methods. The Alternative Measures formulated included:

- Untreated clay crown cap,
- Treated clay crown cap (lime, fly-ash and/or bed-ash stabilized),
- Steel sheet pile,
- Membrane liners with frames,
- Earth or rock-filled bastions,
- Bladders,
- Concrete Structures, and
- Slope Roughening (USACE, 2010f)

In order to design and construct the EAM within the requested reprogramming budget, the EAM would be constructed within the existing MRL footprint, minimizing the environmental effects and eliminating the need for consideration of alignment alternatives in this IER. The EAM would meet the requirements, as defined in the HSDRRS design guidelines, and when completed, the EAM would provide the 1-percent risk reduction based on the 2011 HSDRRS design elevations.

The tentatively selected EAM for the entire alignment is a crown cap of either clay or stabilized soil. Other alternatives that were evaluated, but eliminated, are described in Section 2.3.

2.2. Description of the Alternatives

Although it is the CEMVN's intent to employ an integrated, comprehensive, and systems-based approach to hurricane and storm damage risk reduction in raising the HSDRRS to the 100-year level of risk reduction, each reach has its own range of alternatives. This approach allows for individual reach alternative decisions to be made in a manner cognizant of unique local circumstances. At the same time, the alternatives analysis and selection remain integrated and

comprehensive, considering reaches in relation to one another and other past, current, and reasonably foreseeable actions by the CEMVN and other entities within the project study area.

As such, the alternatives description that follows is organized by reach, noting those alternatives that are common among all reaches. The alternative description also states how each alternative relates to the range of alternatives for adjacent reaches, to insure awareness of the HSDRRS as a whole.

2.1. Alternative 1 (Proposed Action)

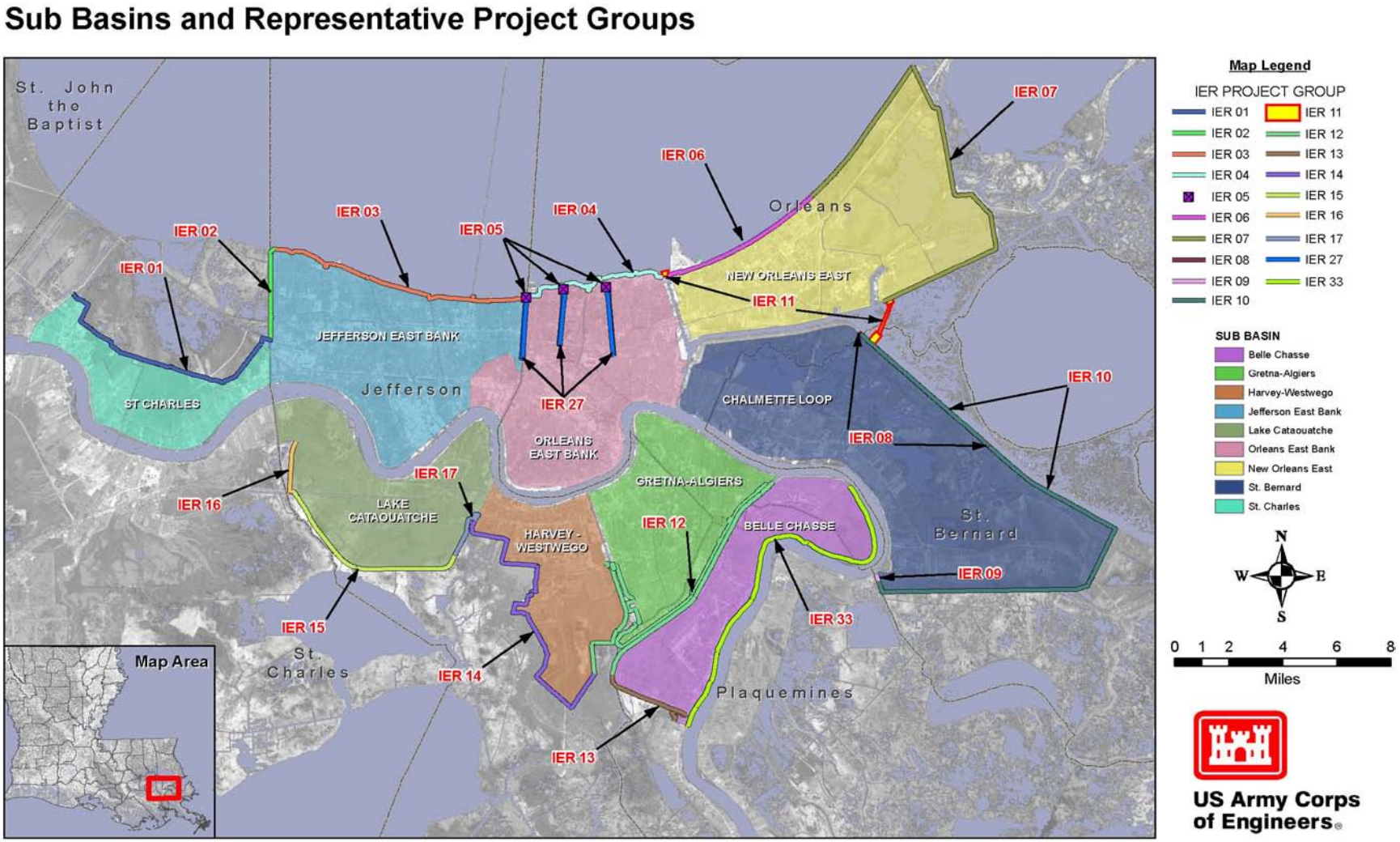
The current plan is to advertise as many as five contracts, but possibly less due to combining of levee reaches, for construction of the EAMs. One contract would be awarded to provide all of the clay material (borrow) needed to build the three reaches of the project requiring stabilized soil. All of the material would be delivered to multiple sites within the Walker Road borrow pit complex (described later in this IER). As many as three other contractors that are responsible for the levee construction, would mix the clay material with the stabilizing agent (either lime, fly-ash and/or bed-ash) and then place the mixed material on their respective reaches of the levee. Fly-ash and bed-ash are commercial available by-products of burning coal in powerplants, and are commonly used in the construction industry. Two additional contracts would be awarded to provide clay material from previously investigated borrow sites and construct the two upper reaches of the project, which do not require stabilized soil.

A 700-foot long demonstration section of stabilized soil cap is being constructed on top of the existing Mississippi River Levee (MRL) near Belle Chasse, Louisiana to achieve the 1 percent HSDRRS elevation (USACE, 2010a). Approximately 350 feet of the MRL is being raised with soil stabilized by the addition of about 8 percent lime. About 350 feet of the levee is being raised with soil stabilized by the addition of about 15 percent mixture of 50 percent fly-ash and 50 percent bed-ash. Transition sections of stabilized soil extend approximately 40 feet long on each end of the stabilized sections of levee and tie into the existing levee slope and elevation. This demonstration project will allow field-testing and evaluation of an engineering technique using stabilizing agents mixed with local soils and also provided the local sponsor and the Corps the opportunity to evaluate maintenance issues and options. A decision on which mixture of materials would be used to construct the EAMs has not been made, but one of the major criteria would be the degree of ductility, which is the ability of the stabilized material to flex over time without forming substantial cracks. The demo project, along with laboratory testing will be used to assess this factor. Other major considerations are how difficult is the material to mix into soil and its shelf life after mixing, but before placement on the levee. The toxicity of the mixed material and runoff from it are not expected to be major considerations due to literature and initial testing indicating minimal leaching of contaminants (removal of contaminants, mainly by water) from stabilized soil.

The proposed action is to apply this same measure (using either lime or fly-ash/bed-ash as the stabilizer) to the three lowermost construction reaches of the Co-Located Project (reaches 1.1, 3.1, and 4.1) comprising about 8 miles of levee, as shown in figure 2. The design, materials, and methods for construction would be substantially the same as were used for the demonstration project (USACE, 2010a). For the approximately 7 miles where the existing levee is 2 feet or less deficient (e.g., contract reach 6.1 and 7.1), the crown cap would be constructed of untreated clay. A photograph of the existing MRL taken during high water on the Mississippi River, looking down river, is provided as figure 4.

Figure 5, illustrates what a typical cross section of the proposed action would look like when construction is completed in the three contract reaches where stabilized soil would be used. Because of the variability in conditions along the alignment, the new centerline of the levee could be shifted slightly toward the river or land-side, but construction activities would remain within the existing right-of-way and would not adversely affect adjacent habitat. Construction

Figure 3. Sub Basins and Representative IERs



activities on the river-side would be within the existing levee slope and the first 15-feet of the existing 40-foot maintenance corridor. The maintenance corridor was established and is maintained as part of the existing MRL and parallels the toe of the existing levee. Construction activities on the landside would be within the existing levee right-of-way, consisting of the levee slope and an additional five feet from the existing landside toe.

Within the soil-stabilized reaches the levee would have a variable 11- to 18-foot crown[1] width and slopes of 1 vertical on 2 horizontal (1V:2H) on the river-side and 1V:2-2.5H land-side slopes. The existing side slopes vary somewhat and the new side slopes may vary as well, but will not be steeper than 1V:2H. The finished levee crown would be paved with either asphalt or a similar material known as chip-seal and would have concrete side curbs placed at the crown edge. Additionally, due to Operation and Maintenance concerns posed with cutting grass on a 1V:2H slope, the stabilized soil reaches will not be grassed when construction is complete. Also, due to the stiffness and relatively high pH of the material it has been determined that a grass covering would not be applicable. Figure 6 shows a typical section and profile for a detention berm that would be constructed at the toe of the land-side slope adjacent to stabilized soil.

As previously stated, the upper two contract reaches of the proposed project (Reaches 6.1 and 7.1) will be elevated to the 1% HSDRRS design grade through construction of a traditional clay soil cap. Reaches 6.1 and 7.1 are located within Plaquemines and Orleans Parishes, respectively. The construction limits are identical to those previously described under reaches 1.1, 3.1 and 4.1, and it is anticipated that construction methods will be similar to the stabilized soil cap with the only exception being that no stabilization application will be required. The levee will consist of 1V:3H slopes for both the river and landside of the levee and will be grassed. For those reaches the levee crown would have a consistent 10-foot width, and will be surfaced with crushed limestone aggregate. Figure 7 shows what a typical cross section of the proposed clay soil cap would look like when construction is complete for reaches 6.1 and 7.1.

In order to construct the proposed action, four major steps would be required:

1) Preparing the existing levee for the placement of the material. This would include removing the existing crushed limestone levee crown and concrete slope pavement in some segments, as well as clearing and grubbing the areas to receive the clay or stabilized soil cap within the limits of work.
2) Preparing the access roads and staging areas. In order to gain access from Highway 23 or other highways or roads to the levee site, acquisition of construction easements for access roads will be required. These access roads will be established along existing roads or cleared areas. In some locations, improvements to the access roads such as widening and placement of gravel may be required. Once construction is complete, the access roads will be restored to pre-project conditions. Staging areas will be located within the existing levee right-of-way or within the limits of the access roads construction easements.
3) Constructing the new stabilized soil or clay crown cap. For the stabilized soil contract reaches this would include excavation at the material borrow site, transporting material to the soil mixing area (i.e. Walker Road borrow complex), mixing the stabilizers into the soil (i.e. lime, fly-ash and/or bed-ash), loading the stabilized soil onto dump trucks, transportation to the construction site and placing and compacting the material. For the untreated clay contract reaches, this work would include excavation of the material at the borrow site and transporting the material to the construction site for placement and compaction.
4) Upon completion of construction, fertilizing, seeding and mulching of disturbed areas would be completed where appropriate. There would be no fertilizing, seeding, and

[1] Maximum 18-foot crown width only for turnout areas located within stabilized soil reaches.

mulching the stabilized soil areas because these areas would not support plant growth due to its hardness and high pH (USACE, 2010a).

The project is designed to remain primarily within existing rights-of-way and for the ground-disturbing actions to remain within an area extending 5 feet from the landside toe of the levee and 15 feet from the floodside toe. The design, construction, and maintenance of the proposed action would be similar to that for the demonstration section within this alignment. Where needed, utilities would be relocated to cross the project in accordance with HSDRRS standards and the disruptions to existing facilities would be kept to a minimum. Waivers may be requested by facility owners and would be coordinated with CEMVN prior to or during construction of the EAMs.

In Belle Chasse there is a ramp along Avenue G that provides vehicle access across the MRL to and from the Belle Chasse Ferry Landing. The proposed action at this location would be a stabilized soil lift placed atop the MRL levee crown (Figure 8). Construction would be planned to allow one lane to operate while the other lane is being raised. The existing westbound lane of Avenue G, which is used by vehicles exiting the ferry would be re-routed through a portion of the parking lot for the Plaquemines Parish Sheriff's Office located immediately adjacent to Avenue G. Existing curbs, landscaping and paving would be removed and replaced with new curbs and paving to provide a smooth transition for traffic flow. Utilizing the parking lot for westbound traffic would allow for three lanes of vehicles arranged side-by-side to wait for boarding the ferry. This stacking of vehicles 3-wide is necessary to prevent vehicles from blocking adjacent side streets, or worse, backing up onto Louisiana Highway 23 (Belle Chasse Highway). Flagmen with radios would be provided during peak traffic times if determined necessary by local authorities. Additionally, per the American Association of State Highway and Transportation Officials, construction of safety guardrails and sidewalks parallel to Avenue G along the newly constructed ramp will be required. By constructing this section of the contract reach in this fashion, the Belle Chasse Ferry operation would not be interrupted.

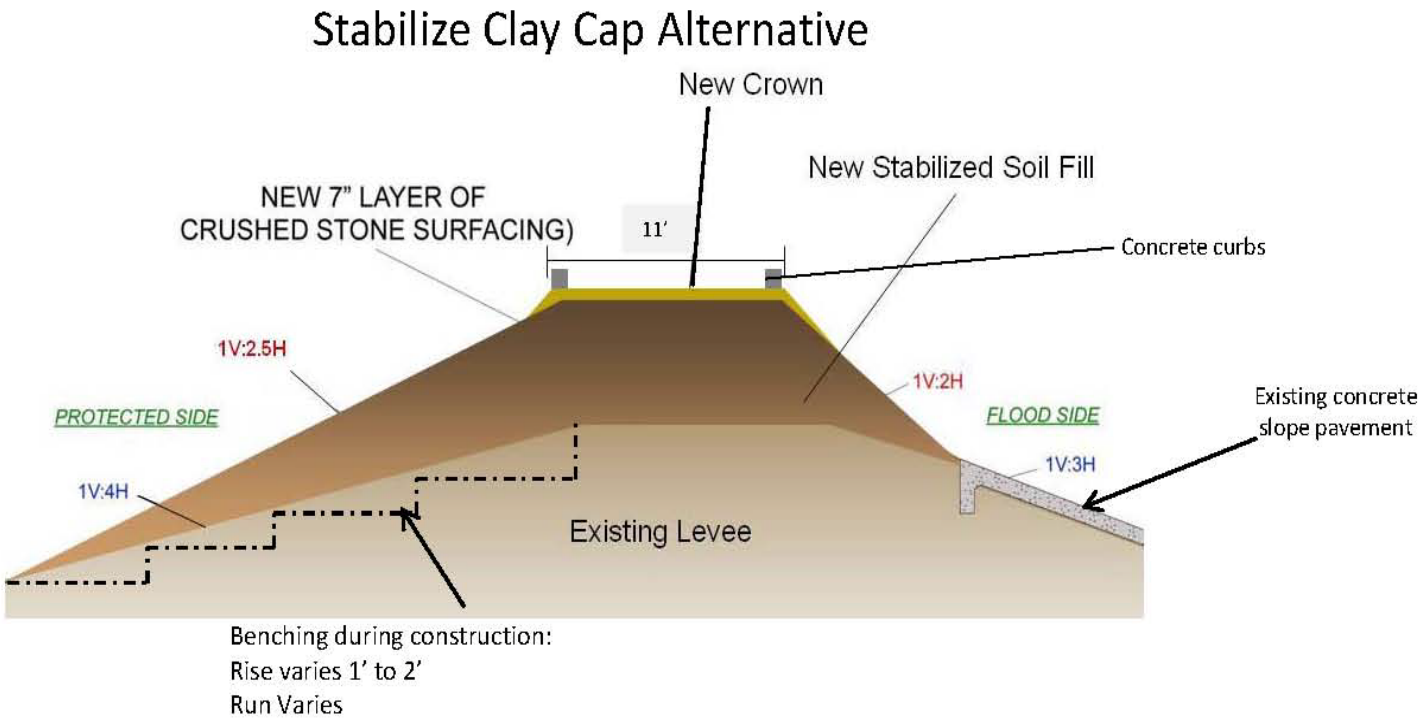
Within IER #13, contract reach West Bank and Vicinity-09a (WBV-09a), the CEMVN has evaluated the proposed construction of an emergency bypass road that would allow for authorized vehicles to bypass the Louisiana Highway 23 floodgates when closed during major storm events. The emergency bypass roadway would begin just south of the proposed vehicular gate location, proceed east along an existing private road and ramp up onto the Mississippi River Levee. The proposed emergency bypass road would continue north on top of the Mississippi River Levee for approximately 915 linear feet and ramp down onto existing East Oakville Street and then continue out to Louisiana Highway 23. Due to potential construction sequencing conflicts for work being completed under IER #33 contract reach WBV-MRL 1.1 and IER #13 contract reach WBV-09a, there may exist a need to complete the previously described emergency bypass roadway under IER #33 contract reach WBV-MRL 1.1. As the previously described emergency bypass roadway would not be expected to result in any additional impacts to those previously covered under IER #13, all prior impacts analyses, with respect to the emergency bypass roadway, contained within IER #13 are incorporated herein by reference.

2.1.1. Site Preparation

In order to prepare the MRL for construction, erosion protection would be installed and surficial materials from the existing levee would need to be removed. A silt fence would be constructed along the existing levee right-of-way, which is typically 5 feet from the land-side toe of the levee to minimize erosion and sediment runoff. The silt fence would be designed to retain sediment from runoff during clearing and grubbing, excavation, embankment placement, and final grading. Final removal of silt fence barriers would be after construction is complete and the soil is stable.

Figure 4. Existing MRL Within the Project Area

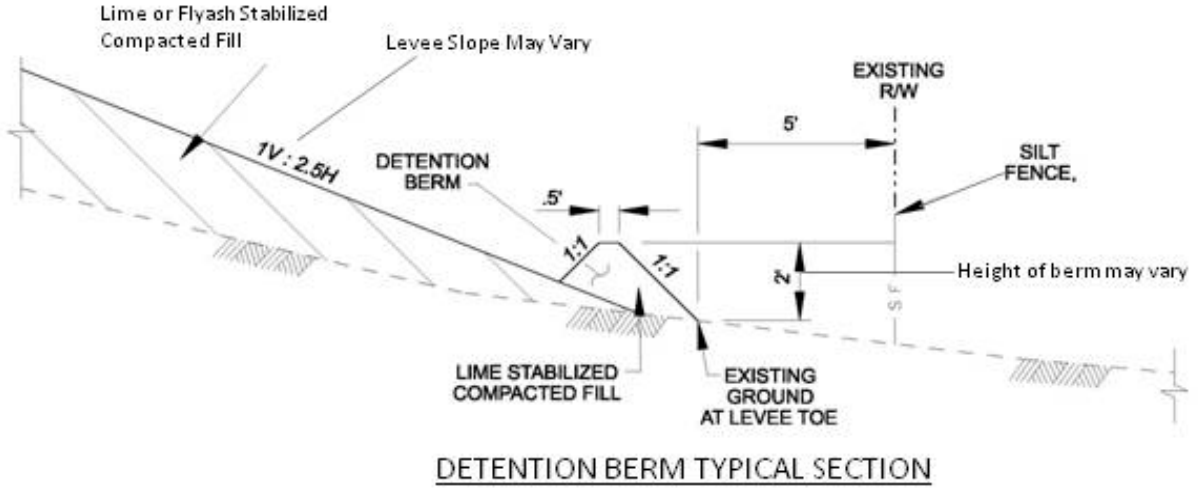
Figure 5. Stabilized Soil Cap Typical Cross Section (Not to Scale)



Notes:

1. Crown width varies 11'-18'
2. New centerline of levee may be shifted either side.
3. Any shift in levee would not be so great as to exceed existing right-of-way either side.
4. Existing side slopes shown are approximate.
5. Side slopes of new fill added (either lime stabilized soil, fly-ash and/or bed-ash stabilized soil) may vary from those shown.

Figure 6. Detention Berm Typical Section and Profile



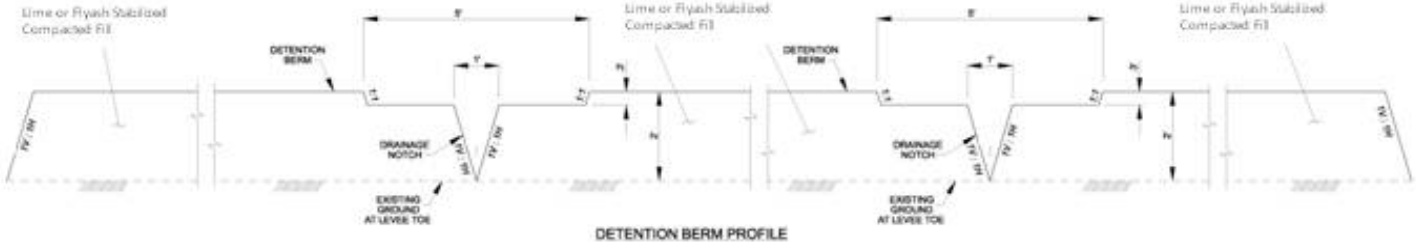
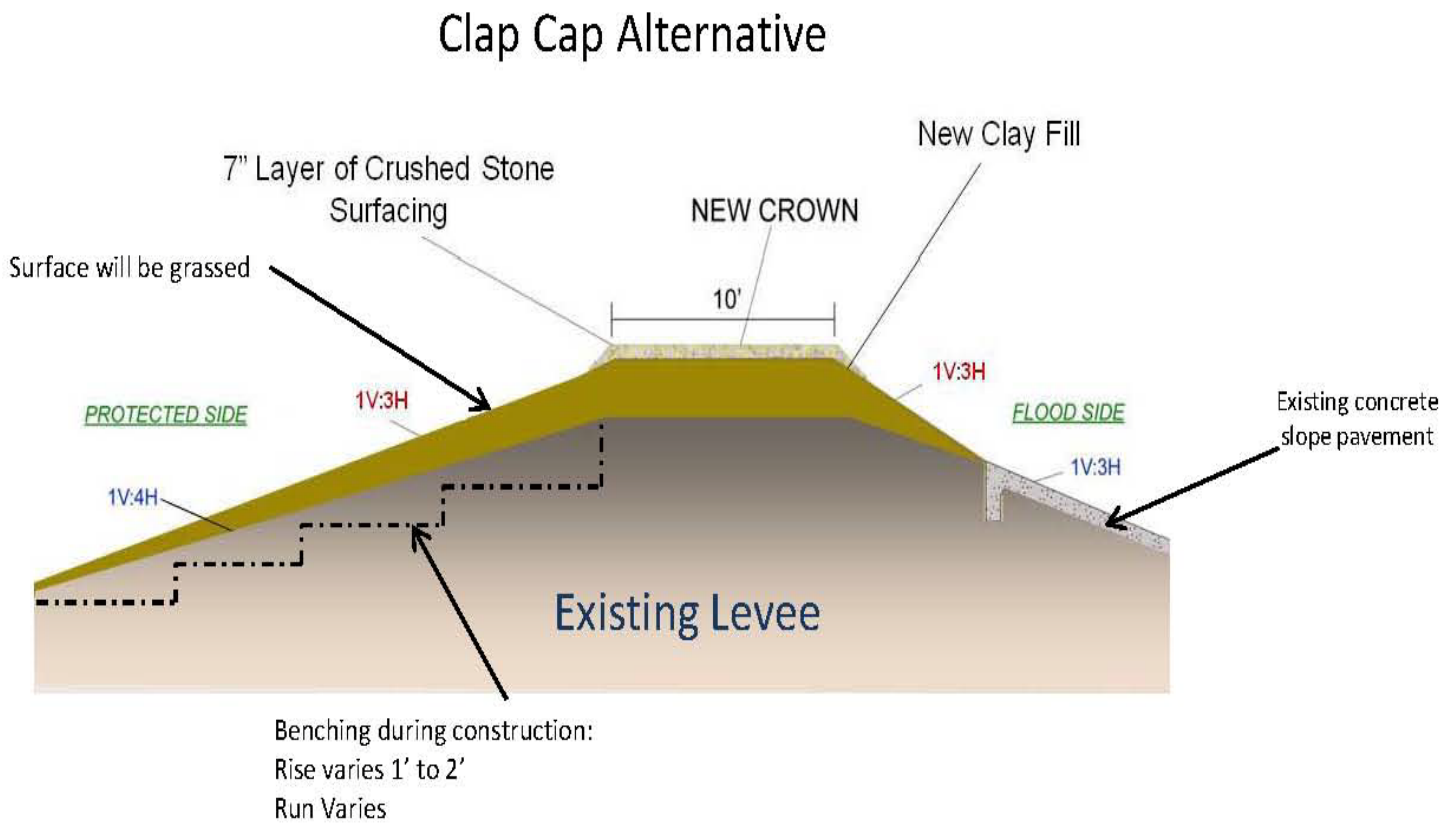


Figure 7. Traditional Clay Cap Typical Cross Section (Not to Scale)



Notes:

1. Crown width varies 11'-18'
2. New centerline of levee may be shifted either side.
3. Any shift in levee would not be so great as to exceed existing right-of-way either side.
4. Existing side slopes shown are approximate.
5. Side slopes of new fill added (all-clay) may vary from those shown.

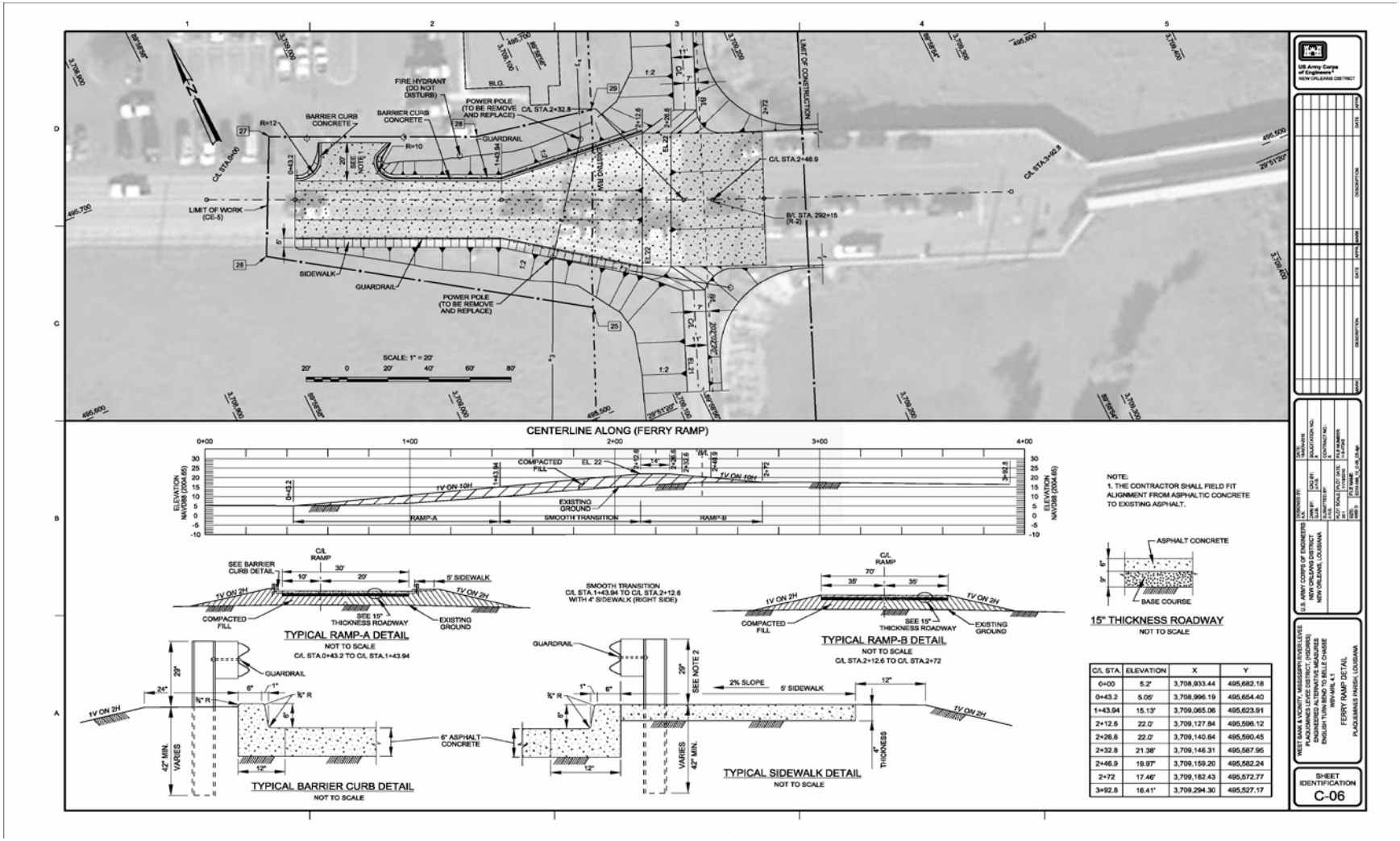
The existing crushed limestone levee crown would be excavated from the levee surface and removed from the work site. The ultimate fate of this removed limestone cannot be described at this time. It may be reused for the Co-Located Project, used elsewhere for levee crown or levee ramp surfacing, stockpiled or buried at the Walker Road borrow pit complex (described later in this IER), disposed in a landfill, or become property of the construction contractor who may dispose of it, sell it, or utilize it as he determines appropriate. The final decision cannot be made until the plans and specifications for each construction contract are prepared, reviewed, and approved. After removal of the crushed limestone surface, the site preparation would require stripping vegetation and topsoil from areas that will receive clay or stabilized soil. In reaches where a clay cap is proposed, this vegetation and topsoil will be stockpiled within the levee right-of-way and later replaced on the levee to spur the growth of new vegetation. Any excess material that cannot be reused will be disposed as described below for the soil stabilized reaches. In reaches where stabilized soil will be used, very little, if any of this vegetation and soil can be replaced on the levee. Contract specifications may provide that this material will become property of the construction contractor who may dispose of the material in any legal manner. Conversely, the construction contract may require this material be hauled away, probably, but not necessarily to the Walker Road borrow pit complex for disposal into an existing borrow pit or stockpiled for later use elsewhere. Some of this material may be hauled to a Plaquemines Parish property on F. Edward Hebert Boulevard for the Parish's use in filling low spots at publically-owned facilities. A large amount of material will be generated and there may be proposals for other uses of this by-product of the levee construction. Any proposals for additional uses will be evaluated for potential environmental impacts by CEMVN before approval for the proposed use is granted, although such approval may not require preparation of a supplemental IER if the environmental effects are determined to be minimal.

There will also be a significant amount of material generated from the benching process (described further in this section), and it is anticipated that this material would be hauled to the Walker Road borrow pit complex to be mixed with the soil stabilizer (e.g., lime, fly-ash and/or bed-ash). Depending on how the construction contracts are awarded, the contractors may haul material removed during the benching process from the stabilized soil reaches to the upper traditional clay crown cap reaches and place it directly upon the levee.

Within the downstream-most 5.5 miles of the project, the concrete slope paving closest to the crown of the levee will likely need to be removed so that stabilized soil can be placed and compacted. The slope paving would be replaced once the soil is stabilized. Some additional slope paving may be removed along other sections of the levee within the project limits to place clay or stabilized soil, or due to cracking or damage from the construction of this project. Demolition and replacement of the existing concrete slope pavement and existing crushed limestone cap would generate concrete rubble that the construction contractor would remove from the construction site and could retain for reuse, sell, or otherwise dispose of the material after removal. In total, approximately 10,000 truck trips would be needed to remove materials generated during the site preparation for re-use or disposal. Any disposal would comply with applicable Federal, state, and local laws.

The final results of the 700-foot long levee demonstration section using lime, fly-ash and bed-ash treated material are not known. It is possible that some or all of the stabilized soil placed in the demonstration section may need to be removed and disposed elsewhere if one or more of the techniques used for the demonstration section are not acceptable. The same locations discussed above for the cleared and grubbed vegetation and topsoil may be used for disposal of any stabilized soil that may need to be removed from the demonstration section of levee.

Figure 8. Belle Chasse Ferry Ramp Design



C/L STA.	ELEVATION	X	Y
0+00	5.2'	3,708,933.44	495,682.18
0+43.2	5.05'	3,708,996.19	495,654.40
1+43.94	15.13'	3,709,065.06	495,623.91
2+12.6	22.0'	3,709,127.84	495,596.12
2+26.6	22.0'	3,709,140.64	495,590.45
2+32.8	21.38'	3,709,146.31	495,587.95
2+46.9	19.97'	3,709,159.20	495,582.24
2+72	17.46'	3,709,182.43	495,572.77
3+92.8	16.41'	3,709,294.30	495,527.17

Actions to replace intermittent portions of the concrete slope pavement within the five reaches could temporarily disturb up to approximately 27 acres of wetlands (15 foot width for construction corridor x 78,830 linear feet of the alignment) immediately adjacent to the floodside of the levee and within the levee maintenance corridor. In addition, vehicular use of the 15-foot wide corridor along the total length of the project could also temporarily affect the previously mentioned 27 acres of wetland vegetation. Throughout the entire 15.5 miles of the project it may be necessary to install geotextile fabric and crushed limestone and/or other surfacing material such as a board road or timber mats from the flood-side levee toe out 15-feet into the levee maintenance corridor to allow trucks to haul material without getting stuck or to protect buried known or suspected cultural resource sites from disturbance. Construction contracts will require the removal of all material placed within this maintenance corridor, so impacts to this area will be temporary. Since it is expected that the environmental conditions within the maintenance corridor will fully recover from construction activities within one growing season, no mitigation is warranted or proposed, beyond returning the area to pre-project conditions as part of the construction contracts.

Table 2 summarizes the contract-reach specific quantities that would be generated during site preparation (e.g., cubic yards of material removed from work areas) and the areal extent of disturbance expected to prepare the area for construction. Not included in this table is the part of the levee which must be "benched" in order to install the stabilized soil or clay material. Benching is the process of removing material in a stair-step manner so that new material can be placed in incremental lifts along the levee. Since right-of-way is limited, benching also allows delivery trucks to drive on a flat section of levee to drop off the stabilized soil.

Within IER #12 and IER Supplement (IERs) #12, the CEMVN has evaluated the potential environmental consequences associated with utilizing the Walker Road borrow pit complex and Westbank Site "N" as alternative disposal sites for earthen material that had been removed during the construction of the West Closure Complex eastern floodwall and road realignment as well as the Hero Canal Levee (USACE, 2010c). These sites could be also used for disposal of cleared and grubbed grass and topsoil and earthen material removed from the MRL during construction of this Co-Located Project. As the previously mentioned vegetation and earthen materials would not be expected to result in any additional impacts to those covered under IER #12 and IERs #12, all prior impacts analyses, with respect to disposal of this material, contained within IER #12 and IERs #12 are incorporated herein by reference.

Table 2.
Site Preparation Estimates

Contract Reach	Length of Segment (Feet)	Area of Disturbance (Acres)	Cubic Yards of Existing Crown to be Removed	Cubic Yards of Material Grubbed from Work Areas	Cubic Yards of Rubble from Concrete Slope Pavement Removal	Truck Trips for Material Disposal
1.1	16,600	24.2	4,472	17,889	23,255	3,041
3.1	13,100	19.7	3,639	14,556	18,922	2,474
4.1	13,900	20.9	3,861	15,445	-	1,287
6.1	17,400	26.1	4,583	19,333	-	1,594
7.1	20,205	27.5	2,896	20,367	-	1,551
TOTALS	81,205	118.4	19,451	87,589	42,177	9,948

For each contract reach, no more than 5,000 linear feet of levee would be under embankment construction at any time between the limits of the approved levee cross section and the farthest extent of levee clearing ahead of the embankment work. If embankment work is performed in multiple locations within the total contract length, the sum of the lengths of the multiple embankment construction locations allowed would not exceed the total length of 5,000 linear feet.

The area of bare soil exposed at any one time by construction operations would not exceed that necessary to perform the work. Temporary fills or waste areas would be constructed by selective placement to eliminate silts or clays on the surface that could erode and runoff into adjacent waterbodies.

To reduce the risk to the construction area as well as occupational risks during the core hurricane season (1 Aug – 31 Oct) and high river season (March – May), all above-mentioned embankment work limits would be reduced to 2,000 linear feet. At such time that the river is at or above elevation +15.0 feet (North American Vertical Datum 1988 - NAVD 88) at the Carrollton gage (New Orleans District), all construction work would cease until such time as the elevation subsides below +15.0 feet.

2.1.1.1. Access Road and Staging Area Preparation

Construction equipment access ramps (to get onto the levee to conduct the work) would be constructed at a number of locations within the existing levee right-of-way, and access roads to the Walker Road soil-mixing area may need to be improved. Ramps would typically have a 14-foot crown width, 1V:10H crown slope, and 1V:3H side slopes, and be constructed by adding material to the levee crown and slopes. The ramps would typically be constructed with a topping of crushed stone; however, there may be instances where the ramp would be constructed with a topping of concrete or asphalt. For example, at the Belle Chasse Ferry Landing, existing concrete sections of the ramp would be replaced with concrete. In order to gain access from Highway 23 or other highways or roads to the levee site, acquisition of construction easements for access roads will be required. These access roads will be established along existing roads or cleared areas. In some locations improvements to the access roads such as widening and placement of gravel may be required. Once construction is complete, the access roads will be restored to their original condition.

2.1.2. Provision of Acceptable Borrow

The earthen material for constructing the project will be obtained from either Government or contractor-furnished borrow areas that have been previously investigated for use in other IERs. Table 3 presents the contract-reach specific material quantities for the clay cap and stabilized soil cap reaches as well as the materials necessary to replace the concrete slope pavement and finish the crown cap. All fill material used for the construction would be free from masses of organic matter, sticks, branches, roots, and other debris including hazardous and regulated solid wastes. Not more than 1 percent (by volume) of objectionable material would be allowed in the earthen material placed in the levee section.

Table 3.
Construction Material Estimates

Contract Reach	Length of Segment (Feet)	Clay/Stabilized Soil To Construct (Cubic Yards)	Crushed Limestone for New Crown (Cubic Yards)	Asphalt for New Crown (Cubic Yards)	Concrete to Replace Concrete Slope Pavement (Cubic Yards)	Fertilize, Seeding and Mulching (Acres)	Construction Duration[2] (Calendar Days)
1.1	16,600	106,000	N/A	4,472	17,889	N/A	408
3.1	13,100	39,300	N/A	3,639	14,556	N/A	140
4.1	13,900	104,000	N/A	18,900	N/A	N/A	205
6.1	17,400	87,000	4,900	N/A	N/A	35	90
7.1	20,205	61,000	5,800	N/A	N/A	28	90
TOTALS	81,205	397,300	10,700	27,011	32,444	63	933

2.1.2.1. Soil Stabilizer Application

For the contract reaches that require the use of stabilized soils,[3] borrow would be obtained from any previously investigated borrow area and transported to soil mixing and treating areas within the existing Walker Road borrow pit complex. The Walker Road borrow pit complex was selected as the soil mixing site because of the ongoing actions (e.g., borrow excavation activities and disposal of excavated materials) at this location that have been previously evaluated in the West Bank and Vicinity, East of Harvey Canal Final EIS, Environmental Assessment #433 (USACE, 2006), and IER#12. Under this IER, the effects of stabilized soil mixing at the Walker Road borrow pit complex, which were not previously evaluated in the previously mentioned EIS and EA, will be evaluated. Note the excavators and other heavy equipment in figure 11 actively working Site C in this October 2010 aerial photograph (see figures 9, 10, 11 & 12).

In order to prepare stabilized soil, the borrow material would be spread approximately eight to 14 inches thick. After the soil is spread, the moisture content of the soil would be measured and, if necessary, the material will be allowed to dry further or fresh water would be applied from a water truck to achieve the desired moisture content (see figure 13). Once the soil is at the appropriate moisture content, the additive (lime, fly-ash and/or bed-ash) would be spread over the soil in a single application. The lime, fly-ash and/or bed-ash would be delivered to the work sites in fully enclosed, dust-proofed, and self-unloading bulk trucks (see figure 14). At no time would the lime, fly-ash and/or bed-ash be dumped or stockpiled on the ground or otherwise left exposed to ambient conditions. Stabilizing the soil with lime, fly-ash and/or bed-ash would require different mixtures to achieve the same soil properties. Approximately 6 to 8% lime by dry weight would be needed to stabilize the soil while 10 to 15% fly-ash or bed-ash by wet weight would be needed to stabilize the soil. (USACE, 2010d).

The lime or fly-ash would be spread upon the untreated soil in such a manner as to ensure even distribution over the width of the spreading equipment and caution would be used to reduce dust created by the spreading. End dumping, bottom dumping, tailgate spreading, or the use of aggregate type spreaders for spreading the material would be prohibited. Cyclone spreaders, multi-spout spreader bars on hopper trucks, mechanical spreaders or other types of spreaders would be required as shown in figure 15. Soil processing would not be conducted during periods of high winds and heavy rain.

[2] Overall construction duration may be less as multiple areas could be constructed simultaneously.
[3] Soils would be stabilized by the addition of lime or fly-ash.

After the lime, fly-ash and/or bed-ash is applied to the treatment area, a high-speed rotary pulverizer would be driven over the treatment area several times to completely mix the material (see figures 16 and 17). Once thoroughly mixed, the material would be left in place to cure for 12 to 24 hours for lime or seven days for the fly-ash and/or bed-ash.

At the end of the required waiting period, a trackhoe or similar heavy equipment would be used to pick up the stabilized material and load it into dump trucks for transport to the levee construction site. When removing the treated material, contractors would be required to avoid including unmixed material from below. Multiple areas or "cells" would be used at a time at multiple sites within the Walker Road borrow pit complex.

2.1.2.2. Material Transportation

All materials to be hauled from the borrow sources or soil mixing areas, or to be removed from the site, including debris, would be hauled in trucks with secured binders on tailgates to the place of destination. The route for trucks carrying material to and from the job site, and to and from the borrow area would use public roads only and be approved by the CEMVN prior to use. During construction, equipment (i.e., front-end loaders and street sweepers) would be used to keep public streets used for the transport of material or for access and egress from the construction site free and clean of mud and other debris resulting from hauling operations.

The contractor would be required to provide a hard-surfaced truck wash-down rack (e.g., steel grated structure, wooden timber crane mats, or equivalent) located at a point of egress from the construction site during hauling operations to minimize mud and debris transported onto public roads. All trucks utilized for hauling would be pressure washed on the wash-down rack before departing the construction site and the truck wash-down rack would be sized and located within the rights-of-way.

Operation of truck wash down racks would not include use of detergents and rinse water generated would be intercepted before draining offsite. The sediments resulting from operation of truck wash down racks would be utilized in the job or disposed of as construction debris.

2.1.3. Embankment Construction

2.1.3.1. Material Placement

The existing levee would be scarified (i.e. the surface would be roughened) before placement of the new embankment material so that newly added material would bind to the clay material of the existing levee. Both the stabilized and un-stabilized soil embankment material would be placed and spread in approximately one-foot lifts (before compaction). Layers would be started full, out to the slope stakes and would be carried substantially horizontal and parallel to the levee centerline with sufficient crown or slope to provide drainage during construction.

Benching into the slope of the existing levee embankments would be required in order to place and compact the material in horizontal layers. Fill would not be placed upon frozen ground and the land-side side slope of the levee would be left rough or scarified to reduce the velocity of water runoff during and after construction.

2.1.3.2. Detention Berm

Because stabilized soil is substantially impervious and does not support a growth of grass, rainfall flows off stabilized soil in a higher volume and at a higher velocity than a similar grassed levee section. In order to account for the additional runoff volume and reduce the discharge velocity, all areas where stabilized soil is proposed would include the construction of a detention berm at the toe of the levee. The detention berm would be designed based on the expected runoff during a 10-year non-tropical rainfall event; this design storm is used parish-wide within

Plaquemines Parish. As illustrated in figure 6, the berm would be constructed of stabilized soil, and would vary in size based on the amount of runoff that needs to be contained at a particular location. At appropriate intervals, drainage notches would be cut into the berm allowing the accumulated water to drain from behind the berm. This drainage rate would be equivalent to the current rate and volume of runoff from the existing grassed levee sections.

2.1.4. Fertilizing, Seeding and Mulching

The land resources within the project boundaries and outside the limits of permanent work performed under this project would be preserved in their present condition or be restored to a condition that would appear to be natural and not detract from the appearance of the project. The contractor would obliterate all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, and stockpiles of excess or waste materials upon completion of construction. The contractor would be required to restore the construction area to near natural conditions that would permit the re-growth of vegetation.

Fertilizing, seeding, and mulching would be performed on all disturbed areas within the construction limits that were not made of a stabilized soil. Fertilizing and seeding operations would begin immediately after the completion of embankment construction.

Typically, levees treated with lime are covered with a layer of untreated clay and seeded and fertilized and maintained the same as normal levee. However, because the side slopes for the stabilized soil cap would be as steep as 1V:2H, the non-federal sponsor cannot safely mow with their equipment. As a result, the levee would be left bare and may be treated with herbicide to prevent vegetation.

2.1.4.1. Application of Fertilizer

In disturbed areas that are not treated with stabilized soil, fertilizer would be distributed uniformly over areas to be seeded and would be incorporated into the soil to a depth of at least two inches by disking, harrowing, or other acceptable methods.

2.1.4.2. Seeding

After fertilizer had been applied, seed would be sown using approved mechanical power-drawn seeders, mechanical hand-seeders, broadcast-seeders, or other approved methods. When delays in operations extend the work beyond the most favorable planting season for the species designated, or when conditions are unfavorable (e.g., drought, high winds, excessive moisture), seeding would be halted and resumed only when conditions are favorable.

2.1.4.3. Relocations

Along the existing Mississippi River Levee, Department of the Army permits, where applicable, and local levee board permits grant access for facility and utility owners to locate pipelines, electrical cables, power lines, and other types of utilities to cross the levee. Due to the fact that the MRL pre-dated nearly all types of utilities, it is assumed that all facility relocations will be non-compensable and the owners will be responsible for all utility relocations. Table 4 identifies all facilities requiring relocation within the co-located area. During construction of the contract reaches, these areas will initially be identified as "no work" areas. Once the facility relocations are completed the construction contracts will be modified as needed to include raising these locations to the required elevation.

Figure 9. Location of Walker Road Soil Mixing Area

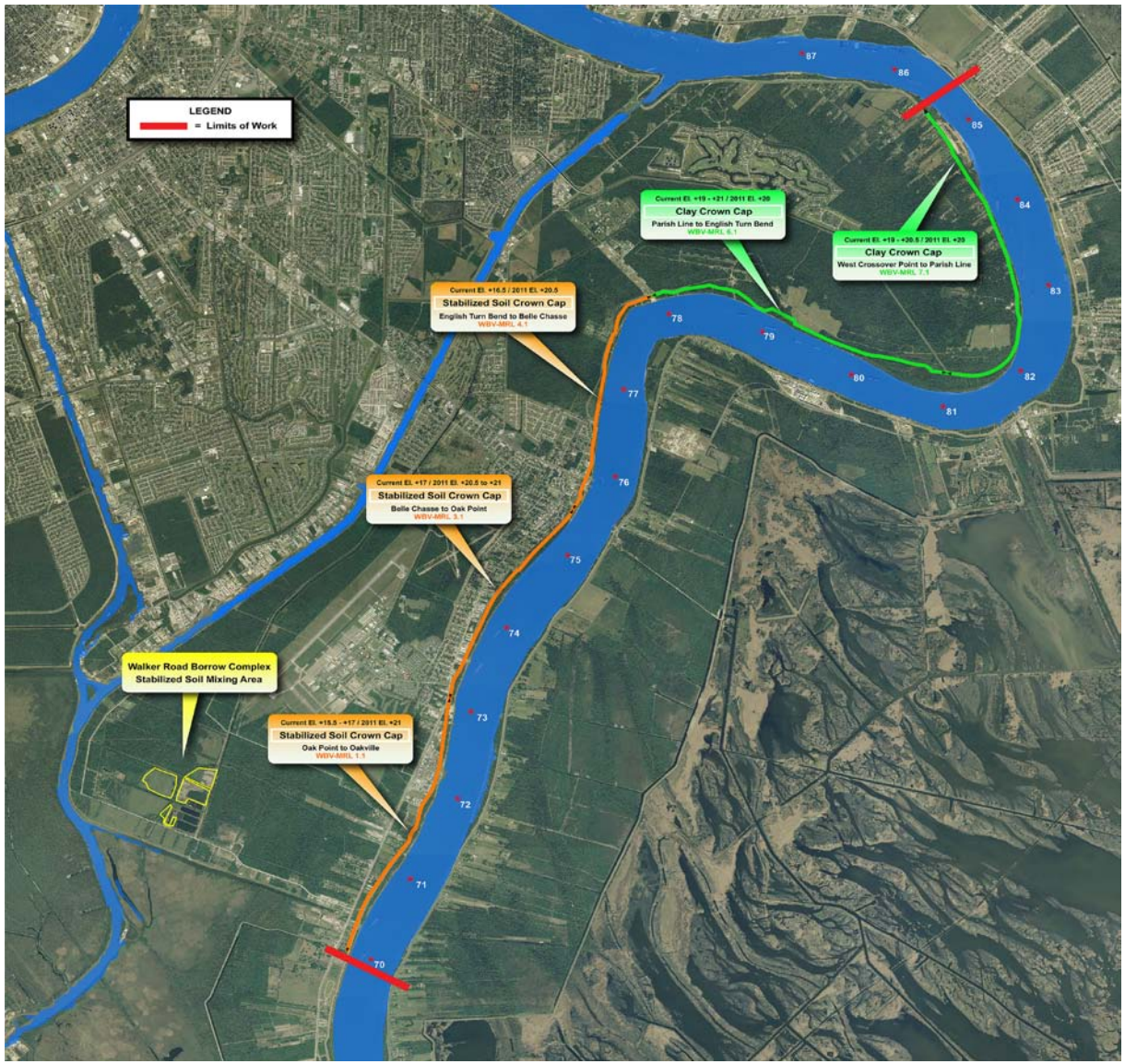
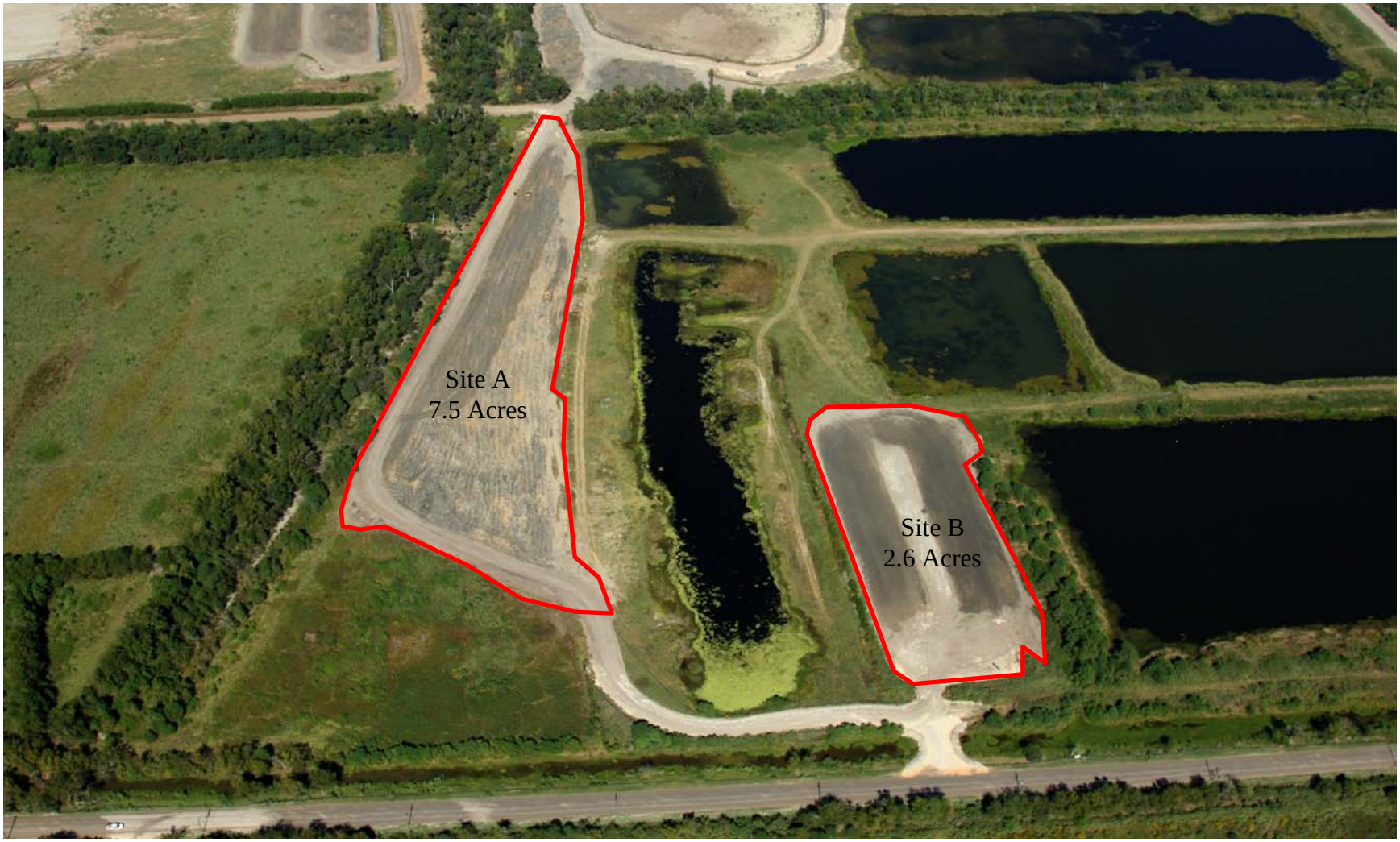


Figure 10. Aerial View of Sites A and B at Walker Road Soil Mixing Area



Note: Site A is 7.5 acres and Site B is 2.6 acres. Both are actively used for borrow-supply activities. Excavators, bulldozers, and dump trucks can be seen in this October 2010 photograph.

Figure 11. Aerial View of Site C at Walker Road Soil Mixing Area

Note: Site C is 45.9 acres and actively used for borrow-supply activities. Excavators, bulldozers, and dump trucks can be seen in this October 2010 photograph.

Figure 12. Aerial View of Sites D and E at Walker Road Soil Mixing Area

Note: Site D is 21.3 acres and Site E is 20.0 acres. Both sites are actively used for borrow-supply activities. Excavators, bulldozers, and dump trucks can be seen in this October 2010 photograph.

Figure 13. Water Truck

Figure 14. Material Loading onto Spreader

Figure 15. Lime Spreader Depositing Material

Figure 16. High Speed Pulverizer

Figure 17. Lime and Soil Mixture

2.1.5. Operation Maintenance, Repair, Replacement, and Rehabilitation

In addition to the activities necessary to construct the EAM, this proposed action includes all maintenance (e.g., mowing, inspections, re-paving, repairs to structures, and in-kind replacements) for both the local sponsor Operation Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) and USACE-related activities necessary to maintain the safety or integrity of the HSDRRS. All of these actions, including transportation and disposal of materials generated during operation maintenance, repair, replacement and rehabilitation, are included in the proposed action.

OMRR&R of the HSDRRS would have minimal impact on the significant resources of the area. The levees would be mowed where appropriate and herbicides may be used on the EAM. The levees would be subject to annual inspection and repair as necessary up to and including in-kind replacement as well as the possibility of adding of subsequent lifts of earthen material to levees to address subsidence. Activities would be conducted within the existing rights-of-way and would be within previously disturbed areas. Temporary and localized construction-related effects (e.g., noise, emissions-air quality, temporary increase in traffic, etc.) would occur during OMRR&R.

Table 4.
Project Relocations by Contract Reach

Contract Reach	Utility Type	Owner	Orientation	Latitude	Longitude
1.1	Communications	AT&T/Bellsouth	Aerial	29°46'57.195"N	90°1'27.56"W
	Communications	AT&T/Bellsouth	Aerial	29°46'58.515"N	90°1'31.371"W
	Pipeline	To be determined	Buried	29°47'3.522"N	90°1'23.433"W
	Pole	Entergy		29°47'22.257"N	90°1'14.226"W
	Powerline OH	Entergy	Aerial	29°47'22.291"N	90°1'13.901"W
	Powerline OH	Entergy	Aerial	29°47'25.532"N	90°1'11.407"W
	Pole	To be determined		29°47'31.137"N	90°1'7.872"W
	Pipeline	To be determined	Buried	29°47'45.591"N	90°0'55.61"W
	Pipeline	Enterprise/Evangeline/Acadian	Buried	29°47'46.806"N	90°0'54.589"W
	Communications	AT&T/Bellsouth	Aerial	29°48'6.697"N	90°0'42.966"W
	Pipeline	ChevronTexaco	Buried	29°48'12.672"N	90°0'41.145"W
	Powerline OH	Entergy	Aerial	29°49'2.01"N	90°0'24.859"W
	Communications	AT&T/Bellsouth	Aerial	29°49'1.998"N	90°0'24.857"W
	Powerline OH	Entergy	Aerial	29°49'35.267"N	90°0'13.564"W
	Communications	AT&T/Bellsouth	Aerial	29°49'35.97"N	90°0'13.191"W
3.1	Communications	AT&T/Bellsouth	Aerial	29°50'14.679"N	89°59'55.48"W
	Powerline OH	Entergy	Aerial	29°50'14.663"N	89°59'55.496"W
	Communications	AT&T/Bellsouth	Aerial	29°50'14.933"N	89°59'56.888"W
	Powerline OH	Entergy	Aerial	29°50'14.938"N	89°59'56.854"W
	Communications	AT&T/Bellsouth	Aerial	29°50'14.952"N	89°59'57.021"W
	Powerline OH	Entergy	Aerial	29°50'14.996"N	89°59'57"W
	Communications	AT&T/Bellsouth	Aerial	29°50'15.198"N	89°59'58.015"W
	Powerline OH	Entergy	Aerial	29°50'15.192"N	89°59'58.017"W
	Communications	AT&T/Bellsouth	Aerial	29°50'15.235"N	89°59'58.22"W
	Communications	AT&T/Bellsouth	Aerial	29°50'15.58"N	89°59'59.991"W
	Powerline OH	Entergy	Aerial	29°50'15.566"N	90°0'0.02"W

	Communications	AT&T/Bellsouth	Aerial	29°50'15.593"N	90°0'0.196"W
	Powerline OH	Entergy	Aerial	29°50'15.592"N	90°0'0.399"W
	Powerline OH	Entergy	Aerial	29°50'15.635"N	90°0'0.479"W
4.1	Pipeline	To be determined	Buried	29°51'7.16"N	89°59'0.993"W
	Structure	To be determined		29°51'7.136"N	89°59'0.99"W
	Pipeline	To be determined	Buried	29°51'13.731"N	89°58'58.877"W
	Water	To be determined	Buried	29°51'15.661"N	89°58'58.013"W
	Other	Entergy	Aerial	29°51'15.968"N	89°58'57.86"W
	Powerline OH	Entergy	Aerial	29°51'16.609"N	89°58'57.584"W
	Powerline OH	Entergy	Aerial	29°51'19.814"N	89°58'55.725"W
	Pole	Entergy		29°51'20.445"N	89°58'55.566"W
	Communications	AT&T/Bellsouth	Aerial	29°51'20.52"N	89°58'55.652"W
	Powerline OH	Entergy	Aerial	29°51'20.72"N	89°58'55.601"W
	Pipeline	To be determined	Buried	29°51'31.439"N	89°58'51.978"W
	Communications	AT&T/Bellsouth	Aerial	29°51'39.83"N	89°58'51.077"W
	Powerline OH	Entergy	Aerial	29°51'39.843"N	89°58'51.075"W
	Other	Entergy		29°51'40.107"N	89°58'50.933"W
	Powerline OH	Entergy	Aerial	29°51'40.223"N	89°58'50.975"W
	Other	Entergy		29°51'44.82"N	89°58'50.444"W
	Other	Entergy		29°51'44.834"N	89°58'50.651"W
	Other	Entergy		29°51'44.9"N	89°58'50.678"W
6.1	Other	Entergy		29°53'1.358"N	89°57'48.357"W
7.1	Powerline OH	Belle Chasse Mar. Trans. Inc.	Aerial	29°52'3.601"N	89°53'46.88"W
	Structure	To be determined		29°53'52.384"N	89°54'47.422"W
	Structure	To be determined		29°53'52.544"N	89°54'46.922"W
	Powerline OH	Entergy	Aerial	29°53'52.609"N	89°54'47.164"W
	Communications	AT&T/Bellsouth	Aerial	29°54'39.635"N	89°55'16.528"W
	Powerline OH	Entergy	Aerial	29°54'39.619"N	89°55'16.558"W

2.1.6. Temporary Flood Risk Reduction Contractually Required During Construction

As part of the construction process, temporary flood risk reduction would be required if material has been removed from a reach of the existing levee and either high water on the Mississippi River is predicted or a tropical weather system is approaching. Typically, the contractor would provide temporary risk reduction by means of earthen fill, a cofferdam, Hesco® baskets, sheet pile, or other engineering methods that would in no way affect the stability of the existing flood risk reduction feature or flood risk reduction feature being constructed. All such temporary measures would be reviewed and approved by the CEMVN prior to placement. The type of measures proposed and implemented would be based on multiple considerations including the severity of the expected high water or storm, the degree to which the levee has been compromised, and the length of the levee needing additional measures.

The contractor would maintain all temporary flood control, including maintaining and operating drainage facilities, during the time they are required. It would be the responsibility of the contractor to provide, maintain, and operate pumps of adequate capacities, for the removal of the water that could accumulate in excavations within the construction area from whatever sources throughout the construction period. The contractor would remove all temporary flood control structures, and incidental features when no longer required. All materials used in providing temporary flood control

structures, and any debris generated during their removal would remain the property of the contractor and be removed from the job site before completion.

Before beginning work, the contractor would submit their proposed plan to accomplish the specified temporary flood risk reduction for CEMVN approval. The submittal would be in accordance with Section 01330, "Submittal Procedures" and would include, but not necessarily be limited to the following:

1. Design and layout of temporary flood risk reduction works,
2. Methods and duration of maintenance of temporary flood risk reduction,
3. Methods, sequence, and equipment and materials to be used for drainage of excavations, and
4. Method and sequence of removal, including disposal of materials.

These measures provide assurance that risk reduction would be maintained during the construction process even in the event of high water on the Mississippi River or the threat of a tropical weather system.

2.2. Alternatives Eliminated from Further Consideration

The criteria used to determine whether an alternative would be feasible included consideration of engineering effectiveness, economic efficiency, and environmental and social acceptability.

2.2.1. Non-Structural Risk Reduction Alternatives

The non-structural measures alternative includes options that might significantly reduce flood damage without the construction of major flood risk reduction structures. Such measures include raising residential and commercial structures in flood prone areas, structure relocation, and rezoning, among others. Generally, each of these potential options incurs high costs and could have high socioeconomic impacts, while providing limited and varying levels of flood damage relief.

Independently, non-structural measures cannot achieve the Federal statutory mandate of the 1 percent level of risk reduction in the project area. Non-structural measures reduce flood damages without significantly altering the nature and extent of flooding, so a gap would occur in the required 100-year level of risk reduction for the WBV if this option were pursued. Flood damage reduction is achieved from non-structural measures by changing the use of the floodplain, or by accommodating the uses there to the flood hazard. The typical non-structural measures employed to reduce flood damage risk include structure relocations, raising the elevation of structures, flood proofing, and regulation of the use of the floodplain. The screening of non-structural measures is summarized below.

2.2.1.1. Structure Relocations

One way to reduce damages from storms and hurricanes is a mandatory public acquisition of vulnerable properties in areas subject to flooding. Acquisitions would be accomplished pursuant to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, which mandates financial assistance or compensation to owners of properties affected by Federal actions. Accordingly, a non-structural program based on acquisition of commercial and residential properties in flood-prone areas would be subject to these guidelines, including payment of just compensation for the acquired properties and payment of Uniform Relocation Assistance Benefits under Title II of the Uniform Act for the displacement of individuals, families, businesses, farms, and non-profit organizations.

Two primary options exist under this alternative: (1) relocation of the structure to a comparable site outside of the area of flooding; and (2) acquisition of the structure and site by the local sponsor for demolition of the structure. Neither of these options is considered as viable under the existing circumstances. The entire Belle Chasse polder, town of Oakville, and industry along this section of the MRL (e.g., Chevron Oronite) would require relocation if excluded from the HSDRRS. Acquisition and relocation would be prohibitively expensive--approximately 1.5 billion dollars (USACE, 2009).

2.2.1.2. Acquisition of Flood Prone Structures

Permanent evacuation of the floodplain involves acquisition of land and structures by fee purchase or by exercising powers of eminent domain. Following acquisition, all structures and improvements are demolished or relocated. Buyout costs for approximately 1,275 residential structures in the immediate vicinity could exceed $180 million (1,275 x $144,000) and relocation costs under the Uniform Relocation Assistance Act could total an additional $20 million. The cost savings in annual flood insurance premiums, assuming 100 percent flood insurance participation by every property in the flood zone would equal roughly $240,000. This is the maximum value of the potential flood damage reduction benefits of relocation plans. Relocation of the Standard Project Hurricane floodplain structures would result in a maximum savings of $240,000 in average annual flood damage reduction benefits, compared to over $200 million in average flood damage reduction costs (the total cost of acquisition and relocation). Under this alternative, the affected property owners would relinquish title to their existing lot in exchange for ownership of the property to which they were relocated.

No new use value would be attributed to the vacated lands. No value would be associated with reduced damages to public property, such as roads and utilities. Minor reduction in emergency services costs would be gained. No reduction in administrative costs of the National Flood Insurance Program (NFIP) and disaster relief programs would be anticipated.

While environmental benefits of a buyout in the study area initially appear to be attractive, more detailed analyses of the potential benefits cannot support a positive recommendation for an acquisition/relocation plan. Restoring the ecosystem through the acquisition of flood-prone structures would generate benefits, but it is highly unlikely that these benefits would be sufficient to justify the approximate $200 million cost of the relocation of all structures in the SPH floodplain, or the scaled costs of smaller relocation efforts. Establishing Federal, state, or regional significance would be problematic because there are no designated habitats for Federal or state listed species within or near the study area. Regarding the Other Social Effects (OSE) and Regional Economic Development (RED) Accounts, the social and economic impacts resulting from the necessary displacement of 1,275 households, 20 businesses and public buildings, the demolition of an equivalent number of buildings of all types, and the removal of tens of millions of dollars in property value and tax base would have significant negative effects on the local economy. The plan would also generate significant local controversy, disrupt community cohesion, and place economic burdens on relocated families, relatives, and neighbors.

For the reasons cited previously, it is unlikely that a floodplain buyout plan would meet P&G guidelines (Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies). Additionally, the buyout plan would not provide significant offsetting environmental or economic benefits, and would have negative effects on the RED and OSE Accounts. Therefore, acquisition of flood-prone structures was eliminated from consideration as a stand-alone alternative.

2.2.1.3. Floodplain Zoning

Through proper land use regulation, floodplains can be managed to ensure that their use is compatible with the severity of a flood hazard. Several means of regulation are available, including zoning ordinances, subdivision regulations, and building and housing codes. Their purpose is to reduce losses by controlling the future use of floodplain lands. Plaquemines Parish and Orleans Parish already participate in the National Flood Insurance Program (NFIP) and manage floodplain land uses consistent with the program. However, a majority of the buildings in the study area floodplain were built before the adoption of NFIP zoning standards and are not subject to current floodplain zoning regulations unless they were substantially improved. Therefore, zoning cannot be considered independently as a long-term mitigation solution for flood damage reduction to existing structures.

2.2.1.4. Floodproofing

Floodproofing reduces flood damages through modifications to structures and relocation of building contents. Floodproofing techniques involve keeping water out of the structure, as well as reducing the effects of inundation. Non-structural adjustments, such as the elevation of structures, can be applied by an individual or as part of a collective action either when flood-prone buildings are under construction or through retrofitting of an existing structure. Floodproofing alone was found to be prohibitively expensive, since a majority of structures would require costly raising at an average cost of $95 per square foot, (USACE, 2007). While eliminated as a major element in the formulation of alternative plans, selective floodproofing was retained as a flood damage reduction measure as a part of other comprehensive alternative plans.

2.2.1.5. Steel Sheet Pile

As an EAM steel sheet pile I-Walls, south of the design grade crossover point would be designed to the current HSDRRS design criteria, and will protrude (“stick up”) no more than 4 feet above the crown of the levee. The inclusion of wildlife passage corridors per USFWS stipulations would be considered.

Design of structures along navigable waterways must consider boat impact load. To prevent impact, two feet of fill would be placed on the flood side of the sheet pile.

The preliminary engineering analysis, assumed an I-Wall of PZ-18 Sheet pile, 45’ in length, with 4’ of stick up above the existing levee crown and 2’ stick up above the flood side fill. The use of composite sheet pile was also considered. Consideration was given to composite sheet pile I-wall, however it was determined that this option did not meet current USACE criteria. Section 5.3.2, “I-Wall Sheet Pile” under the HSDRRS design criteria only specifies steel sheet pile; therefore, composite sheet pile I-wall was eliminated from further consideration.

2.2.1.6. Membrane Liner with Frame

Several membrane liner-with-frame systems are commercially available. They typically consist of a frame that is anchored to concrete or asphalt and provides a platform angled at about 45 degrees to support a waterproof liner. Most systems also have anchoring methods available.

Two of these systems are the Aqua Barrier and the K-System. The primary difference between these two is that the Aqua Barrier utilizes pallets as a support for the liner while the K-System uses aluminum. The K-System can withstand flood heights up to 8 ft.

It was determined that these methods require a concrete base and would not withstand hurricane force winds. Given these limitations, no further examination was performed.

2.2.1.7. Earth or Rock Filled Bastions

Several different variations of bastions were considered. Although a cost effective method that could be rapidly deployed, it was determined that bastions did not meet the requirements to comply with National Flood Insurance Program certification, as defined in the guidance provided by USACE HQ. These options would likely incur wear and degradation when exposed to the natural elements for a long period of time. Therefore they would require an increased inspection frequency. Further they would require inspection and possible repairs in advance of a hurricane event. The increased inspection frequency in conjunction with the need for human intervention to ensure safe operation eliminates bastions from further consideration as a certification measure, they are more appropriately considered a flood fight measure. The following bastion configurations were considered:

HESCO

HESCO® baskets are light gauge wire metal cages lined with geotextile fabric and filled with soil that are used in conjunction with road building, and in military applications.

METALITH H2O

The Metalith H2O® is composed of prefabricated corrugated aluminum panels that when assembled, using stainless steel pins, provides a flood fighting barrier system that offers extremely fast installation, cost efficiency, solid facility or asset protection, easy disassembly and storage. The product comes standard in 3-foot high panels that make bins that are 3-feet deep and 8 feet long.

GABIONS

Gabions are heavy metal cages filled with rock that are used in civil engineering, road building, and military applications.

2.2.1.8. Bladders

Several different configurations of bladders, whether sand or water filled, were considered. However it was determined that these measures could be easily susceptible to vandalism, therefore requiring increased inspection, and possible repair or replacement in advance of a hurricane event. Further it was determined that most of these systems would not be able to withstand the surge elevations during a hurricane event. Therefore these alternatives were eliminated from further consideration. The following bladder configurations were considered:

SAND FILLED BLADDER

Several different types of water filled bladders are commercially available. They essentially consist of heavy duty tubes that are filled with water or sand slurry once placed. They are not typically anchored.

AQUA LEVEE

The Aqua Levee® flood control system consists of triangular cross-section tube-like structures that are filled with water on site to create an artificial levee. It can take the place of sand-bag walls, and is compact, light, and easy to use. The single unit design can retain over 1m of water, and the four unit design can retain over 1.5M of water. Anchors can be used to reduce sliding and impact loads. As with other water filled bladder methods, the Aqua Levee is vulnerable to vandalism.

TUBE WALL

An NOAQ® Tube Wall consists of air filled tubes of reinforced plastic, interconnected by ordinary zips to form a chain. Each tube has a "skirt" attached alongside the tube, on the flood side. When water starts rising the skirt is pressed firmly towards the ground, hereby anchoring the tube.

2.2.1.9. Concrete Structures

The following concrete structure configurations were considered:

STOP LOGS

Stop log structures consist of vertical supports with horizontal panels to restrain flood waters. Two structures were considered: a removable stop log structure and an H-pile concrete panel system.

The removable stop log structure is a 2-part flood control system. When a flood threatens, vertical columns are inserted into a pre-installed metal sill plate in a concrete base, and then interlocking horizontal planks are stacked between the columns.

However, the lead time required to put this system in place for an impending storm is greater than other methods and would place an additional burden on local levee districts, who would be responsible for its assembly.

H PILE AND CONCRETE WALL

The H-pile system is not commercially available and would be designed by the Corps. It consists of H piling driven into the levee with concrete panels between.

It was determined that this configuration would not meet barge impact criteria. Further there is potential for seepage to occur around the concrete panal, therefore this alternative was eliminated from further consideration.

L-WALL

The L-Wall system would also be designed by the Corps. It would incorporate many of the design features that are typical to L-Wall systems already employed in similar flood protection areas.

The configuration considered did not include batter piles to provide support against overturning. Without this additional support the L-Wall did not meet overturning or barge impact criteria and for these reasons it was eliminated from further consideration.

2.2.1.10. Slope Roughening

The MRL Detailed Assessment document (USACE, 2010f) indicates that the design height can be reduced by 1 ft through slope roughening. An analysis was performed to determine an appropriate design for slope roughening (Wave Break Alternative Analysis). Essentially slope roughening affects the energy of the wave column thereby reducing the height of the waves.

The results show that for all cases the required crest elevation for the wave break is approximately 2 feet below the mean still water elevation.

The Detailed Hydraulic Assessment MRL system report dated September 14, 2009 states: "Another option not to raise the flood defense system is considering roughening or flattening the slope to 1:4. These options can be applied to overcome 0.5– 1ft of elevation deficiency. Note that no rubble mound is necessary to gain this elevation reduction, simple small blocks over say 1/9 of the surface could be sufficient. However, roughening

should be viewed as an option of last resort or local measure since the system needs to be upgraded in the future which makes hardening of the outer slope a non-sustainable solution." However, the flood side slopes in the co-located work area are currently hardened. Thus the addition of slope roughening would only increase the difficulty of future work nominally. In addition, slope roughening would reduce the required design elevation by 0.5 to 1 foot. In most locations, this is not sufficient to address the required 1% design elevation therefore work would still be required to raise the levee section. Therefore this alternative does not adequately address the requirement to provide 1% risk reduction.

Floating breakwaters were also considered but their efficacy is unproven and therefore would require significant additional study and research, and thus they were eliminated from further consideration.

2.3. Summary

Table 5 summarizes the alternatives that were examined for IER #33.

Table 5.
Summary of Preliminary Alternative Screening Results

Alternative Alignments/Alternative Scales	Contract Reach Number				
	1.1	**3.1**	**4.1**	**6.1**	**7.1**
No-Action	✓	✓	✓	✓	✓
Non-Structural	X	X	X	X	X
Existing Alignment	✓	✓	✓	✓	✓
Engineered Alternative Measures					
• Clay Crown Cap	✓	✓	✓	✓	✓
• Stabilized Soil Clay Crown Cap	✓	✓	✓	✓	✓
• Steel Sheet Pile	X	X	X	X	X
• Membrane Liner with Frame	X	X	X	X	X
• Earth or Rock Filled Bastions	X	X	X	X	X
• Bladders	X	X	X	X	X
• Concrete Structures	X	X	X	X	X
• Slope Roughening	X	X	X	X	X
Resilient Features Alignment					
River-side Shift	+	+	+	+	+
Land-side Shift	+	+	+	+	+
Straddle Alignment	+	+	+	+	+
Levee Setback	+	+	+	+	+
Resilient Features Measures					

Earthen Levee	+	+	+	+	+
Floodwall	+	+	+	+	+

✓: Considered in detail.

X: Eliminated from further study.

+: Would be evaluated in a separate NEPA document for Resilient Features.

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1.1. Environmental Setting

The project area is located within the Mississippi River deltaic plain, with the Mississippi River acting as the primary influence on geomorphic processes in the delta region. The Mississippi River levees are designed to protect the alluvial valley against the project flood by confining flow between the levees with the exception of areas where it enters the natural backwater areas or is diverted purposely into floodway areas. The Mississippi River Mainline Levee System consists of levees and floodwalls along the river, floodways and control structures. The levee line on the west bank begins just south of Cape Girardeau, Missouri, and extends to Venice, Louisiana.

The Co-Located Project extends from the Eastern Tie-in of the West Bank and Vicinity project with the MRL at Oakville in Plaquemines Parish to a point approximately 15.5 miles north, as measured along the levee, to a point near the intersection of Patterson Road with Delacroix Road near English Turn, in Orleans Parish. In addition to the previously described MRL project area, the Walker Road borrow pit complex, located on Walker Road near Louisiana Highway 23 in Plaquemines Parish, would also be utilized for borrow processing and soil stabilization processing activities. Plaquemines Parish is located within the Central Gulf Coastal Plain in coastal southeastern Louisiana. The parish encompasses the current delta of the Mississippi River, which was built up from alluvial silt deposited over centuries when the river was levee-free and overflowed its banks. Elevations range from sea level along the gulf coast, to approximately +15 feet above sea level along natural levee ridges.

The study area is located in the northern portions of Plaquemines Parish and the southern portions of Orleans Parish within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem (USFWS, 2010). Higher elevations in the proposed project vicinity occur on the natural levees of the Mississippi River. Developed lands are primarily associated with those natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development (USFWS, 2010). Federal, state, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. The Mississippi River is the prominent landscape feature, though residential development and bottomland hardwood forests are present throughout the project area vicinity (USFWS, 2010). Habitat types proximate to the project area include bottomland hardwood wetlands, non-wetland bottomland hardwoods, and open water (USFWS, 2010).

3.1.2. Terrain

The area has little relief and is characteristic of an alluvial plain. Land elevations slope quickly from an average elevation of about 10 feet NAVD88 along the levee of the Mississippi River to about 1 foot to 3 feet below sea level through much of the project

area (USACE, 2010e). The Mississippi River levee system reduces the risk of flooding from the Mississippi River throughout the area.

3.1.3. Geology

The project area lies on Mississippi River levee (MRL), which is the land between the river and the land-side. Fluvial activity in river-side includes lateral migration and overbank deposition during flood stages. This activity is the dominant geologic process operating on the landscape in this region (USACE, 2010e).

Soils in the project vicinity typically vary from brown to grayish brown in color with textures ranging from sandy loam to silt loam. Soils on the natural levee in the vicinity of the project area consist of sediments belonging to a soil series that usually consists of dark brown to grayish brown silty loam. Sediments on the natural levee typically vary in texture between silt loams to silty clay loams and normally exhibit a dark grayish brown color. (USACE, 2010e).

Natural levee deposits are highest near the river, and they gradually diminish away from the river. These natural levee deposits consist of medium to stiff clays, silts and fine sands with low water and organic content; these deposits commonly are oxidized. Construction of artificial levees has altered the pattern of deposition and accretion. Fluvial activity now is concentrated within the river-side of the MRL. MRL river-side soils in the project area are frequently flooded, and are somewhat poorly drained silty loams and sandy loams that have developed on narrow floodplain ridges. The soils along the land-side of the levee are silt/loams, silty clay loams and clays (USACE, 2010e).

3.1.4. Climate

The study area has a subtropical marine climate. Located in a subtropical latitude, its climate is influenced by the many water surfaces of the lakes, streams, and the Gulf of Mexico. Throughout the year, these water bodies modify the relative humidity and temperature conditions decreasing the range between the extremes. When southern winds prevail, these effects are increased, thus imparting the characteristics of a marine climate.

The climate of Plaquemines and Orleans Parishes is humid subtropical. Warm, moist southeasterly winds from the Gulf of Mexico prevail throughout most of the year, with occasional cool, dry fronts dominated by northeast high pressure systems. The influx of cold air occurs less frequently in autumn and only rarely in summer. Tropical storms and hurricanes are likely to affect the parish three out of every ten years, with severe storm damage approximately once every two or three decades. The majority of these occur between early June and November. Summer thunderstorms are common, and tornadoes strike occasionally. Average annual temperature in the area is 67° (F), with monthly temperatures varying from the mid-90°'s (F) in July and August, to the mid-30°'s (F) in January and February (USACE, 2010e). Average annual precipitation is 57.0 inches, varying from a monthly average of 7.5 inches in July, to an average of 3.5 inches in October (USACE, 2010e).

3.1.5. Significant Resources

This section identifies the significant resources located near the proposed action, and describes in detail those resources that would be impacted, directly or indirectly, by the alternatives. Direct impacts are those that are caused by the action taken and occur at the same time and place (40 CFR §1508.8(a)). Indirect impacts are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8(b)). Cumulative impacts are discussed in section 4.

The resources described in this section are those recognized as significant by laws, executive orders, regulations, and other standards of Federal, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. Further detail on the significance of each of these resources can be found by contacting the CEMVN, or on www.nolaenvironmental.gov, which offers information on the ecological and human value of these resources, as well as the laws and regulations governing each resource. Search for "Significant Resources Background Material" in the website's digital library for additional information. Table 6 shows those significant resources found within the project area, and notes whether they would be impacted by the proposed action analyzed in this IER.

Table 6
Significant Resources in Project Study Area

Significant Resource	Impacted	Not Impacted
Air Quality	X	
Water Quality	X	
Terrestrial Habitat	X	
Aquatic Habitat	X	
Fish and Wildlife	X	
Wetlands	X	
Threatened and Endangered Species		X
Recreational Resources		X
Aesthetic Resources	X	
Cultural Resources		X
Farmland		X

3.1.6. Air Quality

3.1.6.1. Existing Conditions

The U.S. Environmental Protection Agency (USEPA) Office of Air Quality Planning and Standards has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants, called "criteria" pollutants. They are carbon monoxide, nitrogen dioxide, ozone, lead, particulates of 10 microns or less in size (PM-10 and PM-2.5), and sulfur dioxide. Ozone is the only parameter not directly emitted into the air but forms in the atmosphere when three atoms of oxygen (03) are combined by a chemical reaction between oxides of nitrogen (NOx) and volatile organic compounds (VOC) in the presence of sunlight. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents are some of the major sources of NOx and VOC, also known as ozone precursors. Strong sunlight and hot weather can cause ground-level ozone to form in harmful concentrations in the air.

The Clean Air Act General Conformity Rule (58 FR 63214, November 30, 1993, Final Rule, Determining Conformity of General Federal Actions to State or Federal Implementation Plans) dictates that a conformity review be performed when a Federal

action generates air pollutants in a region that has been designated a non-attainment or maintenance area for one or more NAAQS. A conformity assessment would require quantifying the direct and indirect emissions of criteria pollutants caused by the Federal action to determine whether the proposed action conforms to Clean Air Act requirements and any State Implementation Plan (SIP).

The general conformity rule was designed to ensure that Federal actions do not impede local efforts to control air pollution. It is called a conformity rule because Federal agencies are required to demonstrate that their actions "conform with" (i.e., do not undermine) the approved State Implementation Plan (SIP) for their geographic area. The purpose of conformity is to (1) ensure Federal activities do not interfere with the air quality budgets in the SIPs; (2) ensure actions do not cause or contribute to new violations, and (3) ensure attainment and maintenance of the NAAQS. Federal agencies make this demonstration by performing a conformity review when the actions they are planning to carry out would be conducted in an area designated as a non-attainment or maintenance area for one of the criteria pollutants.

Because Plaquemines Parish and Orleans Parish are designated as attainment areas for the designated priority pollutants, no detailed conformity is required and direct significant environmental effects to air quality are not likely.

If one or more of the priority pollutants was not in attainment, then the proposed action would be subject to detailed conformity determinations unless these actions are clearly de minimus emissions. Use of the de minimus levels assures that the conformity rule covers only major Federal actions (USEPA, 1993). A conformity review requires consideration of both direct and indirect air emissions associated with the proposed action. Sources that would contribute to direct emissions from this project would include demolition or construction activities associated with the proposed action and equipment used to facilitate the action (e.g., construction vehicles). To be counted as an indirect emission, the Federal proponent for the action must have continuing control over the source of the indirect emissions. Sources of indirect emissions include commuter activity to and from the construction site (e.g., employee vehicle emissions). Both stationary and mobile sources must be included when calculating the total of direct and indirect emissions, but this project would involve only mobile sources.

For all of Greater New Orleans, including Plaquemines Parish and Orleans Parish, all six parameters are in attainment of the air quality standards (USEPA, 2007). Because the project area is designated as an attainment area, no conformity review is required for the proposed action.

3.1.6.2. Discussion of Impacts

No Action
Direct and Indirect

Under the no action alternative, potential direct and indirect air quality impacts associated with the construction and operation of storm damage reduction measures in this reach would not occur. Air quality would not be predicted to change from existing conditions where periodic flooding can lead to temporary deterioration in air quality during and after flooding. Floods typically result in the contamination of surface waters with sewage and other contaminants that can contribute to poor air quality. In addition, the indirect effects to air quality from sediment clean up can lead to temporary increases in fugitive dust from street sweeping.

Cumulative

The transportation of debris and rubble from clean up of storm damages contribute to the cumulative effects from local emissions and decrease air quality.

Alternative 1 (Proposed Action)
Direct

Because design reports continue to be revised, detailed quantification of the direct emissions associated with construction of the proposed action cannot be completed. Probable direct impacts to air quality would include emissions from the operation of heavy construction equipment at the Walker Road soil mixing areas as well as at the EAM construction at the levee sites. Emissions would be earthen particles (i.e., fugitive dust) as well as dust particles from the soil stabilizer (lime, fly-ash and/or bed-ash). These direct impacts are anticipated to be localized and temporary and not result in any risk to humans outside of the immediate soil mixing area or levee construction area; wildlife would likely avoid construction areas and therefore no risk to wildlife would be anticipated. Construction workers at the soil mixing site would wear dust masks while in close proximity to soil mixing operations to eliminate potential adverse effects of exposure. Construction activities would cause emissions of dust and exhaust fumes from construction equipment. These impacts would be short term. Equipment operation, activities, or processes performed by the contractor would comply with all Federal and State air emission and performance laws and standards. Hydrocarbons and carbon monoxide emissions from equipment would be controlled to Federal, State, and/or local allowable limits at all times. Additionally, the stabilizer mixture (e.g., lime, fly-ash and/or bed-ash) would be contained until use within an enclosed truck, and from there would be transferred by hose into a mixing system (e.g., cyclone spreaders, multi-spout spreader bars on hopper trucks, mechanical spreaders or other types of spreaders (see Figure 14)) An air and water monitoring plan is being developed and will be implemented for all construction contracts. Details of the plan are still being developed but would include, at a minimum, air monitoring at the soil mixing site and water quality monitoring of runoff from the levee construction sites as well as ground water monitoring along the levee..

Exposure monitoring performed by Strategic Planning Associates, Material Management Group Joint Venture, LLC, during the mixing of fly-ash and bed-ash and soil at the Bonnet Carré Spillway Mixing Area for the demonstration section for fly-ash and bed-ash soil stabilization were below the analytical detection limit for respirable silica (quartz and cristobalite). Personal and area sample results for dust, calcium oxide, iron oxide, magnesium oxide and total dust were below the Occupational Safety and Health Administration Permissible Exposure Limits (OSHA PELs) and American Conference of Government Industrial Hygienists Threshold Limit Values (ACGIH TLVs). Exposure monitoring during levee lay-down of the fly-ash and bed-ash-soil mixed material at the 350-foot levee demonstration area in Plaquemines Parish is not complete, but based on the exposure monitoring at Bonnet Carré, it is expected that the results will be likewise below the OSHA PELs and ACGIH TLVs.

Exposure monitoring performed during the mixing of lime and soil at the Bonnet Carré Spillway Mixing Area for the demonstration project showed elevated exposures. Personal calcium oxide sample results range from 0.14 mg/m3 up to 2.91 mg/m3, 8-hr time weighted average, 7% up to 145% of the ACGIH TLV and 2.8% to 58.2% of the OSHA PEL. The reading of 145% for calcium oxide was the only testing result that exceeded established standards. Construction personnel would be required to wear appropriate respiratory protection during any lime, fly-ash and/or bed-ash stabilization activities to minimize the exposure risk. Exposure monitoring during levee lay-down of the lime-soil mixed material at the 700-foot long levee demonstration area in

Plaquemines Parish is not complete, but results would be expected to be similar to those in the Bonnet Carré and construction personnel would be required to wear appropriate respiratory protection during levee lay-down activities.

Indirect

The indirect effects to air quality of implementing the proposed action would be related to the emissions from transportation of personnel and equipment to and from the job site and the transportation of borrow, soil stabilizers and debris among source, project and disposal locations on a daily basis until the completion of construction. No indirect effects of the use of lime, fly-ash, or bed-ash would be expected, since dust and runoff would be localized at the mixing and construction sites.

Cumulative

The cumulative effects to air quality would be the combined emissions from the direct and indirect sources from constructing alternative 1, when added to other emissions sources within the region. These emissions and their cumulative effects are being considered separately in the CED.

3.1.7. Water Quality

3.1.7.1. Existing Conditions

Water quality in the project area is affected by both point source and non-point source discharges. Point sources include mainly industrial, municipal, and sewer discharges. Non-point sources include storm water runoff, industrial discharges, landscape maintenance activities, forestry, agriculture, and natural sources.

Section 303(d) of the Clean Water Act (CWA) requires states to identify waterbodies that are not meeting water quality standards and to develop total maximum daily loads (TMDLs) for those pollutants suspected of preventing the waterbodies from meeting their standards. TMDLs are the maximum amount of a given pollutant that can be discharged into a water body from all natural and anthropogenic sources including both point and non-point source discharges. In Louisiana, the Department of Environmental Quality (LDEQ) oversees the program.

The LDEQ surface water monitoring program is designed to measure progress towards achieving water quality goals at state and national levels, to gather baseline data used in establishing and reviewing the state water quality standards, and to provide a data base for use in determining the assimilative capacity of the waters of the state. Information is also used to establish permit limits for wastewater discharges. The program provides baseline data on a water body to monitor long-term trends in water quality.

The Louisiana Department of Environmental Quality (LDEQ) Section 305(b) and 303(d) Reports for 2006, included in the Water Quality Inventory Integrated Report, lists one waterbody adjacent to the project area. The waterbody is in Sub-segment Code LA070301 and is described as Mississippi River – from Monte Sano Bayou to Head of Passes. Available LDEQ records indicate that prior to the 2004 Water Quality Inventory Report, suspected causes of impairment to the listed waterbody consisted of: mercury; nitrate/nitrite (nitrite + nitrate as N); pesticides; phosphorous; priority organics (including dioxin); and total fecal coliform (USACE, 2010e).

In the 2004 report, testing of the aforementioned impairments indicated a status of attainment had been achieved for the listed waterbody. The status of attainment for the subject waterbody was reported to be the same following the completion of the 2006 report. The current water quality concerns associated with Sub segment Code LA070301

is "fully supporting all standards" (LDEQ 2006). The 2006 US Environmental Protection Agency integrated report methodology guidance categories--which are used to categorize a water body / pollutant combinations--listed the LA070301 segment as an Integrated Report Category (IRC) 1. The IRC 1 description is listed as any water body impairment that was cited on a previous §303(d) list that is now in attainment of all uses and standards and fully support all designated uses (USACE, 2010e).

The following summary of the effects to water quality from Hurricane Katrina is taken from the State of Louisiana's Water Quality Management Plan Water Quality Inventory Integrated Report (LDEQ, 2006). Most water quality sampling following Hurricane Katrina was conducted at existing ambient water quality monitoring sites throughout the impacted area. This was done in order to permit comparisons with historical data and criteria for each sampled water body. Sampling at ambient monitoring sites also allowed LDEQ to determine when these water bodies had returned to pre-storm conditions.

Results of LDEQ's testing largely agreed with what is commonly expected following a hurricane. Marshes to the south and east of New Orleans, while heavily impacted by wind and storm surge, suffered lesser long-term water quality impacts to dissolved oxygen and other parameters. This was because the area is primarily marsh as opposed to forestland, resulting in less debris being deposited into the water. However, the region did suffer from extensive marsh loss as vegetation and bottom sediments were torn up and washed away and re-deposited elsewhere. This has resulted in increased saltwater intrusion, further exacerbating the destruction of fresh and brackish marsh habitat. In some cases, areas formerly consisting of solid marsh have now become open water.

Due to the counter-clockwise winds of Hurricane Katrina, areas to the southwest, west, and northwest of New Orleans received less damage during the hurricane. Limited post-hurricane monitoring in these areas revealed relatively minor, short-term water quality impacts due to debris and storm surge.

The use of coal ash by the Army Corps of Engineers for levees has been ongoing for the last 20 years. Coal ash--comprised of both fly-ash and bottom, or bed, ash-is a byproduct of coal combustion, usually associated with coal-fired power plants. As coal is burned, non-combustible mineral impurities evaporate and condense into fine particles of glass that are spherical or angular in shape. Fly-ash comprises the finer particles that rise with the flue gases. The fly-ash particles are removed from the exhaust stream in bag houses or electrostatic precipitators. Those courser non-combustible particles not collected in the flue as fly-ash are known as bottom ash, which drops down to a water-filled hopper at the bottom of the boiler. Class C fly-ash (as opposed to Class F fly-ash) has cementing and plasticity qualities. Therefore the use of Class C fly-ash on U.S. Federally funded projects is encouraged by its classification as a "recovered" product under the Federal Resource Conservation and Recovery Act.

The chemical composition of fly-ash varies depending on the raw materials used and the processes used to combust the material and scrub and/or capture the residuals. In general, fly-ash is composed of about a third (by mass) of Silicon Oxide, a fourth of Calcium Oxide, and a fifth of Aluminum Oxide. Other metals in the ash also include, by approximate relative weight, Iron Oxide, Magnesium Oxide, and Sulfur Trioxide, among others. Coal bottom ash is composed of almost one half Silicon Oxide, a fifth of Aluminum Oxide, and a about a sixth of Iron Oxide. Coal ash may contain nearly all of the naturally-occurring chemical elements, most of them in trace quantities.

FLY-ASH - EXAMPLE COMPOSITION

Silicon Oxide (SiO2)	33.3%
Aluminum Oxide (Al2O3)	19.3%
Iron Oxide (Fe2O3(T))	5.8%
Sulfur Trioxide (SO3)	2.8 %

Calcium Oxide (CaO)	26.3%
Magnesium Oxide (MgO)	5.3%

BOTTOM ASH – EXAMPLE COMPOSITION

Silicon Oxide (SiO2)	47.72%
Aluminum Oxide (Al2O3)	19.77%
Iron Oxide (Fe2O3(T))	15.03%
Calcium Oxide (CaO)	5.81%
Magnesium Oxide (MgO)	1.99%

The specific composition of the coal ash to be utilized would be determined and considered in light of both performance and any safety concerns prior to selection and again in developing the mixing and placement details. It should be noted that the make-up of the ash is dependent in part on the pollution control equipment and processes at the coal-fired plants.

Numerous studies have been conducted on the leach-ability of metals from coal ash materials and the results of the studies are widely available in publications and via the internet (EPA, 2009; Daniels and Gautham, 2006; US Department of Energy website http://www.netl.doe.gov/technologies/coalpower/ewr/coal_utilization_byproducts/states/illinois.html). The bulk of the information suggests that that the concentration of elements leachable from coal ash is very low, especially when mixed with or in the environment of good fat clays, such as those that will be used for this project. Available research on the beneficial use of coal ash documents that commercially available coal ash is proven to meet the definition of non-hazardous material by characteristic through laboratory testing, including the USEPA Toxicity Leaching Procedures.

Lime is currently classified as an unregulated, non-hazardous material.

3.1.7.2. Discussion of Impacts

No Action
Direct

Implementing the no action alternative would not result in any temporary or permanent direct effects to water quality of the surface waters in the project area.

Indirect

There would not be any permanent indirect effects to water quality from changes to the existing system.

Cumulative

Failing to provide the Co-Located Project area with 100-year risk reduction measures would predictably, and regularly, contribute to the temporary deterioration of the surface water quality in the event of large-scale flooding. Flooding in residential and commercial areas frequently results in the mixing of surface waters with sewage, contamination of drinking water supplies, and potential mobilization of hazardous, toxic, and radioactive waste (HTRW). As floodwaters recede, these constituents all enter the surface waters causing temporary reductions in surface water quality.

Alternative 1 (Proposed Action)
Direct

The direct effects to water quality from the clearing, grubbing, preparation of stabilized soils, placement of materials, replacement of the concrete slope pavement, and re-grading

for the EAM would likely cause some temporary, construction-related decrease in the water quality from runoff of sediment during earth moving activities.

Construction of the proposed action would take place in areas of significant previous disturbance with ongoing, active, levee maintenance activities and would not be expected to result in direct effects to water quality. With best management practices (e.g., silt fence) in place during construction, the temporary effects to water quality should be isolated to the immediate footprint of construction. Earth-moving activities during construction disturb soils and can create indirect water quality effects (e.g., increased turbidity and suspended sediments) in the event of uncontrolled runoff or simply poor sediment control practices during construction.

Major impact to drinking groundwater aquifer is not anticipated as there are no groundwater aquifers underlying the Walker Road soil mixing area and the Mississippi River Levee construction sites in Plaquemines Parish that are classified as drinking water aquifers by the Louisiana Department of Environmental Quality or LDEQ (see http://www.deq.louisiana.gov/portal/Portals/0/evaluation/aeps/la_aqui.gif). Boring logs describe clay layers underneath the borrow-mixing pit and the MRL also contains clay layers, indicating minimal potential impact to any underlying non-drinking groundwater aquifer. Surface runoff from rain events during mixing should be contained within the limits of the borrow-mixing areas, and any leachate impact should be limited to the mixing area or adjacent collection ditches.

Undisturbed boring number BC-55U adjacent to the demonstration project shows clay layers underneath the 700-foot demonstration section of levee, likewise indicating minimal or no impact to any underlying groundwater aquifer. Since the area is adjacent to the Mississippi River, surface run-off from rain-events during levee construction may impact the Mississippi River. Adequate protection at the construction site shall be provided to prevent spills and excess run-off from entering any watercourses (such as the Mississippi River) and wooded areas.

As part of a demonstration project for appropriate application of soil stabilized material (i.e. fly-ash and bed-ash-soil mix and/or lime-soil mix) in levees, detail characterization of the soil stabilized material mixture is currently being undertaken. Samples of the soil stabilized material mixture at the Bonnet Carre Spillway mixing area are being collected and sent for testing including pH, leachate (i.e. Synthetic Precipitation Leaching Procedure or SPLP) and bulk analysis of metals or contaminants identified by Environmental Protection Agency (EPA) as of most environmental concern in Coal Combustion Residuals (CCRs) such as antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver and thallium. Background levee soil samples and groundwater samples at the 700-foot levee demonstration section or LDA will likewise be collected immediately after lay-down of the soil stabilized mixed material on the levee and sent for testing. Post-construction, groundwater samples will be collected from wells installed on the 700-foot demonstration levee section to monitor the leaching potential of the 85% soil-15% fly-ash/bed-ash mix for a period of 1 year to evaluate the impact of the fly-ash to groundwater and pre-existing levee soils in this specific type of engineered levee application. Concurrently, air impact of the fly-ash-soil mixture and lime mixture is being undertaken for the demonstration section project (See Air Quality).

Monitoring of the soil and groundwater at the demonstrations sites to evaluate the leach-ability of metals from the ash into the nearby soil and groundwater is being undertaken. Preliminary laboratory results from Synthetic Precipitation Leaching Procedures for Bonnet Carre soil/fly-ash/bed-ash mix samples (3 composite representative samples and 1 quality assurance sample) using west Mississippi River acidities (i.e. leaching solution)

show non-detect (not detectable) levels for the metals tested. This preliminary data suggests that contamination from runoff would not be an issue for the EAMs.

It is expected that there would be no permanent direct affects to water quality from the use of lime as a soil stabilizer at the Walker Road borrow complex or in construction of the EAMs. Should any potential leaching of lime occur, whether at the Walker Road borrow complex or EAM sites, temporary, short-term elevations in pH to any affected water resource would likely result. The temporary, short-term affects would likely remain localized and not pose any long-term adverse impacts to major water resources. Lime is currently classified as an unregulated, non-hazardous material.

If water quality monitoring of the demonstration section indicates that water quality criteria are being violated, construction of the EAMs will be delayed and corrective actions, such as modifying or changing the type of soil stabilizers being used, will be undertaken before construction of the EAMs is allowed to continue. Likewise, if monitoring during construction of the EAMS indicates water quality problems, construction will be halted until corrective action is implemented.

Indirect

The indirect effects to water quality from constructing the EAM would be expected to be minimal. Base discharge off of the project area would remain substantially unchanged and increases to the velocity of discharge as a result of steeper slopes would be moderated by detention dike adjacent to the landside toe of the levee (see figure 6). No indirect effects to water quality for the Walker Road borrow complex are expected due to the anticipated capture of any potential runoff by adjacent ditches where water would be confined on-site.

Cumulative

Should construction of the proposed action coincide with construction activities for IER # 13 (Hero Canal Levee and Eastern Terminus, Plaquemines Parish, Louisiana), there could be construction-related water quality degradation that could have a temporary cumulative effect. Adherence to best management practices and an approved sediment control plan by the construction contractor would minimize the risk of indirect water quality effects. There would be no anticipated permanent cumulative effects to water quality.

3.1.8. Terrestrial Habitat

3.1.8.1. Existing Conditions

Habitat types in the project area can be generally classified as forested (swamps and bottomland hardwoods), scrub/shrub (early successional bottomland hardwoods), open water, and developed. The surrounding levee and extensive forced-drainage systems have altered hydrology and the associated vegetation in all habitat types within the project area. Because of the drainage improvements and pumped drainage, few tracts of bottomland hardwood retain their natural characteristics.

Bottomland hardwood habitats include both wetlands and upland communities. The uplands developed in areas subject to intensive drainage. Dominant woody vegetation typically includes elder, bald cypress, and black willow. Shrubby and herbaceous vegetation typically includes elderberry, rattan vine, pepper vine, Virginia creeper, poison ivy, blackberry, and nutgrass (USACE, 1996). The majority of forested areas, although under pumped drainage, are classified as wetlands. However, providing the interior

drainage as part of the existing flood damage reduction has resulted in the loss of much of the wetland value and function (USACE, 1996).

Drained swamp sites in the project area typically exhibit an overstory dominated by bald cypress and red maple, with tupelo gum, pumpkin ash, black willow, and green ash. The shrub layer is lightly to moderately developed, and indicates a general invasion by some species adapted to drier sites. Elderberry, box elder, and red maple are dominant, with scattered sugarberry and Chinese tallow. Ground cover is generally sparse, and usually consists of smartweeds, nut grass, and pennyworts (USACE, 1996). The river-side side portion of the MRL typically includes sweetgum, green ash, cottonwood, American elm, water oak, hackberry, sycamore, black willow and Chinese tallow. Large amounts of sugarberry and various oak assemblages are also located throughout the surrounding area (USACE, 2010e).

Scrub/shrub habitats occur as wetlands and non-wetlands scattered throughout the area on the land-side of the MRL. Scrub/shrub communities support woody vegetation generally less than 20 feet in height and occur locally in partially drained fresh marshes where an invasion of species adapted to drier sites is occurring. The principal difference between wetland and non-wetland scrub/shrub habitats is the extent to which drainage has occurred. Typical scrub/shrub communities in the project area are vegetated with maiden cane, Chinese tallow, black willow, elderberry, blackberry, goldenrod, thistle, common reed, fall aster, and smartweed.

Developed habitats include residential, commercial, and industrial areas, as well as roads and maintained levees. These areas do not provide important wildlife habitat value. The downriver portions of the project area have been intensively developed for residential, commercial, and industrial purposes. Figure 18 is a photograph looking downstream showing a representative example of the river-side and land-side terrestrial habitat within a less developed portion of the project area.

3.1.8.2. Discussion of Impacts

No Action
Direct

Under the no action alternative, potential direct terrestrial habitat impacts associated with the construction and operation of the EAM would not occur.

Indirect

In the absence of constructing the EAM for the Co-Located project, terrestrial habitat within the footprint of disturbance would not be affected, but the habitat within the existing right-of-way is significantly disturbed, of low quality, and of little value to wildlife.

Cumulative

There would be no cumulative effects to terrestrial habitat if there were no action taken to construct the EAM on the Co-Located project.

Alternative 1 (Proposed Action)
Direct

The vast majority of the footprint of disturbance necessary to construct the proposed action (approximately 120 acres) is located within the existing right-of-way in areas of mowed grass or recently disturbed soil at the Walker Road soil treatment area where earth work has been ongoing. Where the mowed areas transition to woody vegetation (at the edge of the maintained corridor on the river-side and the toe of the levee slope on the

land-side) habitat would be left undisturbed. It is expected that there would be temporary direct effects to terrestrial habitat adjacent to the floodside toe of the levee specifically in areas where material would placed for either truck transportation or protection of cultural resources. The material will be removed upon completion of construction activities and the area would likely return to pre-project conditions within one growing season. Direct effects to terrestrial habitat as a result of constructing the proposed action would be consistent with the extent of previous disturbance and previous construction activities along this entire project.

Indirect

Indirect effects of construction (e.g., noise, fugitive dust, etc.) would have only temporary effects to the terrestrial habitat in close proximity to active construction areas.

Cumulative

Should construction of the proposed action coincide with construction activities for IER # 13 (Hero Canal Levee and Eastern Terminus, Plaquemines Parish, Louisiana), there could be construction-related disturbance to nearby terrestrial habitat that could have a temporary cumulative effect.

3.1.9. Aquatic Habitat

3.1.9.1. Existing Conditions

Aquatic habitat in the project vicinity is provided by the Mississippi River, adjacent borrow areas, and associated wetlands. The largest aquatic resource in proximity to project area is that portion of the main stem of the Mississippi River. This vast area is inherently low in primary productivity on a per acre basis because of high turbidity and has relatively poor benthic productivity because of shifting substrates and high current velocities in the area (USACE, 2010e). The deep main river channel is the habitat of large predaceous fishes, some plankton feeders and a group of omnivorous species (USACE, 2010e).

The aquatic habitat paralleling the right descending bank of the river that averages less than five feet in depth represents a limited percentage of the river's total aquatic habitat but is importantly productive for all trophic levels (USACE, 2010e). Factors that serve to increase the productivity include reduced current velocity, increased availability of cover, and shallow substrates allowing photosynthesis to support communities of submerged aquatic vegetation and algae growth (USACE, 2010e).

Additionally, borrow pits excavated on the river-side of the existing MRL provide additional complexity of aquatic habitat for various species of wildlife, finfish, and shellfish (USACE, 2010e). These relatively stable water bodies support large populations of aquatic plants and animals. The growth of higher plants around these waters may reduce phytoplankton growth near the edges. The higher plants around these water bodies are also important primary producers in that a significant amount of leaf litter, branches, and other organic matter may wash into these lakes and borrow pits during high water conditions becoming a source of detritus (USACE, 2010e).

Figure 18. Terrestrial Habitat Adjacent to the MRL

3.1.9.2. Discussion of Impacts

No Action

Direct, Indirect, and Cumulative

Under the no action alternative, no changes from the existing conditions and therefore no effects to aquatic habitat adjacent to the MRL and the footprint of disturbance would occur. During annual high river season, typically from March – May, riverine aquatic resources (fish, shellfish, etc) moved onto the flooded river bank to take forage on detritus (rotting vegetation), insects, insect larvae, worms and various other food items. Some species use this high water period to spawn in the flooding areas. These are reasons why overbank areas are so important to riverine fisheries resources. There would be no changes to the land-side or river-side runoff or at the Walker Road soil mixing area. In the absence of the Co-Located project, there would be no direct, indirect, or cumulative effects.

Alternative 1 (Proposed Action)
Direct

Clearing, grubbing, construction, placement of material for the floodside haul road and re-grading for all levee reaches could cause some temporary, construction-related degradation of aquatic habitat within the adjacent river because of runoff, but would have no long-term impacts. Very limited levee surfacing material would be expected to run off of the flood side of the levee and most work will occur on the protected side. The proposed construction would take place within the existing right-of-way and would not involve direct placement of materials into aquatic habitat.

Indirect

Indirect effects to water quality from construction (e.g., increased local turbidity, decreased dissolved oxygen, vibration, and subsurface noise) would be only temporary. With best management practices (e.g., silt fence) in place during construction, temporary indirect effects to water quality should be minimized and isolated to the immediate vicinity of active construction.

Cumulative

Potential cumulative impacts to the aquatic habitat adjacent to the MRL in the project area would be negligible because there would be no direct losses of aquatic habitat associated with the Proposed Action. Other HSDRRS projects have impacts on aquatic habitat. These habitats include estuarine and freshwater systems, but do not specifically include the Mississippi River.

3.1.10. Fish and Wildlife

3.1.10.1. Existing Conditions

Lakes and borrow pits in the project vicinity are relatively productive waters, but these water bodies typically do not contain as diverse amounts of fisheries as slack water areas that are situated off of the main navigational channel. Slack water sites behind the main navigational channel are characterized as slow-moving and shallow and provide important spawning, nursery sites and abundant food sources (in the form of benthos and plankton) for various fish species. As the water sites off of the main channel remain slack for various periods of time, they often provide valuable opportunities for both commercial and sport fishing. Prior excavated borrow pits both in and around the project area provide habitat for various species of wildlife, finfish and shellfish (USACE, 2010e).

Large predaceous fishes, plankton feeders and a group of omnivorous species inhabit the deep main river channel. Minnow, catfishes, carp, carpsuckers and sunfishes are some of the various types of fishes that may be found in the project area. Clams, dipterans and mayflies are some of the area's representative invertebrates (USACE, 2010e).

Mammals that adapt in varying degrees to periodically wet riparian or early successional hardwood habitats are likely to inhabit or frequent the project area. Beaver, raccoon, swamp rabbit, nutria, muskrat, gray squirrel, fox squirrel, opossum and white-tailed deer have been observed in the project vicinity (USACE, 2010e). Birds observed in the project area include cattle egret, great egret, great blue heron, little blue heron and various species of waterfowl and songbirds.

Various species of reptiles and amphibians that are known to occur within the project area include cottonmouth, rat snake, western and southern water snake, snapping turtle, eastern box turtle, eastern mud turtle, green frog, squirrel tree frog, and Gulf coast toad (USACE, 2010e).

The Gulf of Mexico Fishery Management Council lists the brown shrimp and white shrimp as being potentially found within the Mississippi River estuary downstream from, but not within the project area during their juvenile life stage (NOAA, 2009). Specific categories of Essential Fish Habitat (EFH) downstream from the project area include estuarine water column, non-vegetated, mud substrates, and intertidal wetlands.

3.1.10.2. Discussion of Impacts

No Action
Direct –

Under the no action alternative, there would be no direct impacts to the fisheries and wildlife adjacent to the project.

Indirect –

Failing to provide risk reduction for the IER #33 area would allow contamination of surface waters during flooding by floodwaters mobilizing contaminants from domestic, industrial/commercial, or municipal sources (e.g., sanitary sewage, chemicals from industrial facilities, etc.). Although diluted by the volume of water associated with flooding, these constituents enter the aquatic environment and food chain during floods.

Cumulative –

Under the no action alternative, there would be no cumulative changes to fish and wildlife abundance and diversity and the area would remain substantially unchanged.

Alternative 1 (Proposed Action)
Direct –

Clearing, grubbing, construction, and re-grading for all levee reaches could cause some temporary, construction-related degradation of fish and wildlife habitat within the adjacent river because of runoff, but would have no long-term impacts. Temporary direct effects to wildlife that may forage in areas where material would placed in the floodside maintenance corridor for either truck hauling or protection of cultural resources could occur. However, it is expected that there would be no long-term adverse impacts to wildlife since any material placed during construction will be removed upon completion of the project, and the area would be expected to return to pre-project conditions within one growing season. No direct impacts to fish and wildlife resources (including EFH resources) would be expected as a result of the activities at the Walker Road stabilized

soil mixing sites due to previous loss of fish and wildlife habitats there due to borrow pit excavation and deposition of material from other sites.

Indirect -

Indirect effects to fish and wildlife species due to construction activities (e.g., noise, vibration) within adjacent wetlands or aquatic habitat would be short term and temporary. However, the area of disturbance is a relatively small part of the local aquatic ecosystem and mobile species could find refuge in other areas until the construction disturbance is over. Adjacent fish and wildlife resources, including EFH adjacent to the existing MRL, could be temporarily indirectly affected as a result of the construction activities if sediment-laden runoff from active construction areas flowed into adjacent habitat. Additionally, there is a potential for long term adverse impacts to bird foraging and grazing for herbivorous mammals with the expected absence of grass in the stabilized soil reaches.

With best management practices (e.g., silt fencing) in place during construction, the indirect effects fish and wildlife should be isolated to the immediate vicinity of active construction and would be of short duration. No indirect impacts to EFH resources are expected as a result of the construction activities at the stabilized soil mixing sites.

Completed coordination and consultation with the U.S. Fish and Wildlife Service (USFWS) determined that no significant effects to fish or wildlife are expected to occur and that no fish and wildlife mitigation is warranted. The Corps has complied with executive order 13186 which establishes coordination requirements with the USFWS if an agency's actions are likely to have a measurable adverse effect on migratory bird populations. The USFWS has provided a Coordination Act Report, as required by the Fish and Wildlife Coordination Act, which is included as Appendix E. No coordination or consultation has been undertaken with the National Oceanographic and Atmospheric Administration, National Marine Fisheries Service (NMFS) prior to public distribution of this IER due to the lack of estuarine and marine habitats in the project area. No effects to NMFS trust resources are expected from construction of the EAMs.

Cumulative
Should construction of the proposed action coincide with construction activities for IER # 13 (Hero Canal Levee and Eastern Terminus, Plaquemines Parish, Louisiana), there could be construction-related disturbance to nearby terrestrial habitat that could have a temporary cumulative effect. The cumulative effects to fish and wildlife from all of the WBV and LPV projects will be fully characterized in the CED.

3.1.11. Wetlands

3.1.11.1. Existing Conditions

Nearly 25 percent (140,000 acres) of Barataria Basin wetlands have been lost over the past 30 years via conversion to open-water areas or uplands (USACE, 1996). Contributing factors responsible for those wetland losses include subsidence, saltwater intrusion, sea level rise, canal and levee construction, urban expansion, and navigation and flood-control projects. Such wetland losses have resulted in serious biological and socioeconomic impacts. Aquatic species, while gaining newly available open water habitat, are adversely affected by decreases in productivity, nursery habitat, and detrital export associated with wetland loss. All terrestrial or semi-aquatic animals are adversely affected by the loss of cover, nesting, and feeding habitat. Even relatively small or localized wetland losses can, when combined with other such events, have significant, long-term impacts to fish and wildlife resources on a regional scale.

Swamp habitat features semi-permanent inundation of large areas of land by shallow bodies of water, generally with a substantial number of dry-land protrusions. The vegetation composition of swamps typically includes bald cypress, tupelo, black willow, green ash, buttonbush, water lily (*Nymphaea odorata*), pickerelweed (*Pontederia cordata*), smartweed (*Polygonum punctatum*), alligator weed (*Alternanthera philoxeroides*), and duckweed (*Lemna minor*). Typical marsh species observed in the project area include soft rush (*Juncus effusus*), spikerush (*Eleochoris spp*.), sedges (*Cyperus spp*.), bulltongue (*Sagittaria falcata*), pickerelweed, smartweed, alligatorweed, water hyacinth (*Eichhornia crassipes*), and deer pea (*Vigna luteola*).

Bottomland forest habitat exists adjacent to, but not within the project area. In the bottomland hardwood forested potential wetlands, typical species include black willow, bald cypress (*Taxodium distichum*), green ash (*Fraxinus pennsylvanica*), tupelo (*Nyssa aquatica*), nuttall oak (*Quercus nuttallii*), water oak (*Quercus nigra*), American elm (*Ulmus americana*), red maple (*Acer rubrum*), elderberry (*Sambucus canadensis*), palmetto (*Sabal minor*), lizards tail (*Saururus cernuus*), trumpet creeper (*Campsis radicans*), cinnamon fern (*Osmunda cinnamomea*), poison ivy (*Toxicodendron radicans*), and sawgrass (*Cladium jamaicense*).

The adjacent marshlands, forested wetlands, and river-side wetlands provide feeding, resting, nesting, hunting, and escape habitat to numerous species of game and non-game mammals and commercially important furbearers, as well as songbirds, raptors, migratory and resident waterfowl, wading birds, woodpeckers, and many species of amphibians and reptiles.

3.1.11.2. Discussion of Impacts

No Action
Direct

There would be no direct impacts to wetlands under the no action alternative.

Indirect

In the absence of the Co-Located project, the wetlands adjacent to the project area would continue to be influenced by the changes in water surface elevation and sediment deposition associated with the flow regime of the Mississippi River. Taking no action to provide the 100-year project would likely not affect these.

Cumulative

Under the no action alternative, there would be no cumulative changes to wetlands and the area would remain substantially unchanged.

Alternative 1 (Proposed Action)

Direct

The stabilized soil mixing would occur within non-wetland, cleared areas (which had been previously used as borrow pits and processing sites) along Walker Road in Plaquemines Parish and would have no effect on wetlands. Approximately 27 acres of wetlands could be temporarily impacted by construction-related activities, including truck hauling and temporary placement of geotextile fabric and crushed stone and/or board road and/or timber mats, within the 15-foot maintenance corridor paralleling the river-side of the MRL. Impacts would include the temporary degradation of foraging habitat for wildlife and for fisheries, if the Mississippi River rises to the point where the area is inundated. Adverse effects of the construction activities are expected to last through one growing season. Although wetlands, these wetlands exist as regularly mowed grasses and other herbaceous vegetation within the

currently maintained levee maintenance corridor. For that reason, the USFWS asserted they would not pursue compensatory wetland mitigation for those temporary impacts in their Coordination Act Report which is provided as Appendix E. The USFWS also asserted, "the Service does not object to providing improved hurricane protection to the Greater New Orleans area through construction of the proposed levee upgrade assessed under IER 33."

Indirect

Indirect effects of implementing the proposed action on wetlands include the movement of motile organisms to the wooded and grassy areas between the 15-foot wise area that may be disturbed by construction activities and the Mississippi River. Localized noise, vibration, and very localized deterioration in water quality associated with construction may occur along the levee alignment.

Cumulative

Potential cumulative impacts on wetlands from construction of the proposed action would involve the combined effects from construction of the entire WBV and LPV projects as well as other CEMVN, federal, state, parish, and private citizen projects that effect wetlands in the greater New Orleans area. The cumulative effects to wetlands from all of the WBV and LPV projects will be fully characterized in the CED.

3.1.12. Threatened and Endangered Species

3.1.12.1. Existing Conditions

Five Federally threatened (T) or endangered (E) species are either known to or may possibly occur within the boundaries of Plaquemines and Orleans Parishes, Louisiana: West Indian manatee (*Trichechus manatus*) (E); pallid sturgeon (*Scaphirynchus albus*) (E); piping plover (*Charadrius melodus*) (T); Gulf sturgeon (*Acipenser oxyrhynchus desotoi*); and brown pelican (*Pelecanus occidentalis*).

In addition to the aforementioned listed species, five sea turtle species under the purview of the National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA NMFS), Protected Resources Division, are recorded in Louisiana (green sea turtle (*Chelonia mydas*) (T); hawksbill sea turtle (*Eretmochelys imbricata*) (E); Kemp's ridley sea turtle (*Lepidochelys kempii*) (E); leatherback sea turtle (*Dermochelys coriacea*) (E); and loggerhead sea turtle (*Caretta caretta*) (T)). However, CEMVN has concluded that no critical habitat for any of the listed sea turtle species are designated within the proposed project area and that the project would not adversely affect these species.

Except for the occasional transient species, no Federally listed endangered, threatened, or candidate species under USFWS jurisdiction are known to exist in the project area (USFWS, 2010a). However, the American alligator is common in canals. This species is listed as threatened under the Similarity of Appearance clause of the Endangered Species Act (Federal Register 1981, Vol. 46, pp. 40664-40669), but is not biologically threatened or endangered. Therefore, no Biological Assessment or further Section 7 consultation under the Endangered Species Act is required with the USFWS.

The USFWS also indicated that requirements under the Fish and Wildlife Coordination Act (FWCA) would be met upon completion of a final programmatic FWCA report and a project-specific FWCA report (USFWS, 2010). The Fish and Wildlife Coordination Act provides that whenever the waters or channel of a body of water are modified by a department or agency of the U.S., the department or agency first shall consult with the USFWS and with the head of the agency exercising administration over the wildlife

resources of the state where construction would occur, with a view to the conservation of wildlife resources.

The USFWS concurred with the USACE's determination that project implementation would not adversely affect any threatened or endangered species in their letter dated November 2, 2010 (USFWS, 2010a). The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) Protected Resources Division has previously provided a list of threatened and endangered species under their jurisdiction in Louisiana. Based on that information, the CEMVN made a determination of no effect for species under NMFS jurisdiction. Review of the Draft IER#33 by NMFS provides an additional opportunity to coordinate with the NMFS, Protected Resources Division.

In accordance with Section 7 of the Endangered Species Act, CEMVN examined the proposed action and determined that the proposed project is not likely to jeopardize the continued existence of any threatened or endangered species, or result in the destruction or adverse modification of critical habitat of such species in the project area. The USFWS affirmed that determination in their November 2, 2010 correspondence (USFWS, 2010a).

3.1.12.2. Discussion of Impacts

No Action

Direct, Indirect, and Cumulative

Taking no action would not have any effect on protected species as none have been identified proximate to the project area.

Alternative 1 (Proposed Action)

Direct, Indirect, and Cumulative

Consultation with appropriate resource agencies (USFWS, NMFS) indicates that no listed endangered, threatened, or candidate species are known to exist in the potential project impact areas. Therefore, no direct, indirect, or cumulative effects would be predicted to protected species as a result of implementing the proposed action.

3.1.13. Recreational Resources

3.1.13.1. Existing Conditions

Throughout the project, the existing MRL proceeds through residential, commercial, and industrial areas. Recreation is not expected within commercial or industrial areas, but within residential areas, residents may walk on the levee or bank fish along the Mississippi River. Within one mile of the project area are Plaquemines Parish Community Center and Cypress Park, Woodlands Trail and Park, and Belle Chasse High School Alwyn-Herbert Baseball Field. Cypress Park is a recreation complex with nine baseball fields. Woodlands Trail and Park is a nonprofit organization with the mission to establish and embellish an educational, historical and recreational greenway, designed as a nature trail; jogging, hiking and bicycle pathway; and equestrian trail. It would establish a natural area and park with amenities within the Lower Coast Algiers and Belle Chasse areas.[4] Currently, there are 13 miles of constructed greenways and trails and an interpretive center is planned for the future. Within construction reach 7 (upstream-most)

[4] www.woodlandtrail.bizland.com

there is no public access to the project area; the Coast Guard and the Audubon Center for Research control access.

Within the Walker Road stabilized soil mixing area, there is no recreation use occurring because of the ongoing use as a borrow site and soil mixing area. Approximately ½ mile east of the project site is an undeveloped all-terrain vehicle play area located on parish land.

3.1.13.2. Discussion of Impacts

No Action
Direct, Indirect, and Cumulative

Without implementation of the proposed action, the conditions within the recreational environment would continue as they have in the past and would be dictated by the natural land use patterns and processes that have dominated the area in the past. Direct and indirect impacts would be negligible.

Plaquemines Parish Government has expressed a desire to cost share with the USACE to construct a bicycle path from Belle Chasse to Venice, Louisiana. However, USACE does not currently have either authority or appropriations for a bicycle path. A portion of the proposed bike path would be located within Reach 4.1. The Plaquemines Parish Government desired bicycle path, if accomplished, would have a beneficial cumulative impact for recreation by providing additional bicycling/walking opportunities.

Plaquemines Parish Government has expressed interest in utilizing the ponds adjacent to the Stabilized Soil Mixing Areas for recreation use in the future. There are no plans or designs yet. The development of an additional recreation site would have a beneficial cumulative impact for recreation.

Alternative 1 (Proposed Action)
Direct

Residents that recreate (e.g., walk, bike, run) on the top of the levee or use the banks for access to the Mississippi River for fishing would be temporarily displaced during construction activities. This direct impact is expected to be temporary and minimal.

Indirect

The recreation facilities and infrastructure within the area would benefit from increased hurricane risk reduction. No impacts to the existing ponds that the Parish wants to use for recreation would occur.

Cumulative

Plaquemines Parish Government has expressed a desire to cost share with the USACE to construct a bicycle path from Belle Chasse to Venice, LA. However, USACE does not currently have either authority or appropriations for a bicycle path. A portion of the proposed bike path would be located within contract reach 4.1. If accomplished, construction of the bike path would occur following completion of construction associated with IER33. The PPG desired bicycle path, if accomplished, would have a beneficial cumulative impact for recreation by providing additional bicycling/walking opportunities.

The all-terrain vehicle play area in proximity to the Walker Road soil mixing area is far enough away that no impacts would be expected. Plaquemines Parish Government has expressed interest in utilizing the ponds adjacent to the Walker Road soil mixing area for recreation use in the future. However, there are no plans or designs yet. Those existing

ponds (borrow pits) that the Parish wants to develop for recreation are sufficiently isolated from the soil mixing area that no adverse effects would occur.

3.1.14. Aesthetic (Visual) Resources

3.1.14.1. Existing Conditions

Based on available aerial photography (namely, comparisons between 2008 photography and 1992 photography), the visual conditions of the MRL Co-Located Work Study Area (found in Orleans, St. Bernard, and Plaquemines Parishes) have seen little in the way of change over the past sixteen years as it pertains to aesthetic (visual) resources. The levees that are present today were present sixteen years ago. Urban development on the protected side of the levee has grown denser and viewsheds across the protected side have changed with the times. Viewsheds of the river have remained primarily unchanged.

Comparisons between the two sets of photography show that the same public thoroughfares that are in place today were in place then; however, the scenery has changed from a natural to a more developed state with residential, commercial and industrial. Primary view sheds then, as they are today, were best taken from the local road system, and, in some instances, the Mississippi River Levee. Without older aerial photography, ground photographs of the site, or other visual data, further analysis of the historic aesthetic (visual) conditions will not be possible.

Water: The Louisiana Scenic Rivers Act of 1988 was established to preserve, protect, and enhance the wilderness qualities, scenic beauties, and ecological regimes of rivers and streams in the state. There are no designated Scenic Streams located either in or near the project study area. The nearest Scenic Streams are located on the east bank near the community of Violet and include Violet Canal and several other water bodies moving east toward Lake Borgne. These Scenic Streams will not be affected by any of the proposed work.

Other major water resources include the Mississippi River, located to the east (and on occasion, the south) of the project area, numerous canals, streams and creeks that crisscross the native habitat on the protected side of the Mississippi River Levee and the developed areas along the river.

Landform and Vegetation: The surrounding habitat is composed of deep, wooded areas, open crop fields, wetlands and marsh with Spanish moss draped bald cypress, oak and water tupelo being some of the more dominant plant species. The habitat exhibits moderate plant species diversity and moderately high animal diversity. Natural levees and spoil banks provide the only upland habitat available near the river.

Landform in the developed regions is somewhat similar to that in the undeveloped. However, loss of vegetation to urban development merely accentuates the flatness of the land. Any upland areas or small rolling hills are lost in the distant void that was once vegetated form, texture and color.

Vegetation in the project area is a mixture of native grasses, water tolerant trees (including Bald Cypress and Water Tupelo), and other water tolerant plants (that include a variety of scrub shrub such as Southern Wax Myrtle). The few ridges that stretch across the landscape offer places for different and more abundant species of large trees to grow which may include a variety of oaks and Bald Cypress. The existing Mississippi River Levees are currently stripped of tree-like vegetation and planted with Augustine,

Bermuda and other native grasses that are relatively easy to maintain and yet provide a carpet like texture to the landscape that contrasts with the darker tree and shrub-like vegetation.

Land Use: The dominant eco-region (according to the State of Louisiana Eco-Region Map, ref. "Louisiana Speaks") is "Coastal Marshes" which is a part of the Mississippi Alluvial Plain. The immediate project area is characteristic of the Coastal Marshes with relatively flat terrain mixed with a variety of water resources.

Land use in the area is an even mix of developed, rural and agricultural lands to the west of State Highway 23 and developed, urban lands to the east of and directly adjacent to State Highway 23 and the Mississippi River Levee.

Access: Access to the sites designated as reaches 5.1 through 1.1, are primarily taken from State Highway 23; however, there are other thoroughfares in abundance crisscrossing the entire project area along with local streets and neighborhoods. Visual access, to coin a phrase, is also in abundance and the potential areas for project implementation could quite literally be viewed from the kitchen windows and back patios of nearby residential areas.

Access to the northern portion of the study area (those areas designated as reaches 6.1 and 7.1) is practically non-existent. Much of this area is undeveloped and rural, and with the Coast Guard presence there, the area is not open to public access.

Other Factors that Affect Visual Resources: User activity is extremely high in this region, especially in terms of access to residential and industrial development, and recreational features. Average Daily Traffic Counts (ADTC) provided by the Louisiana Department of Transportation and Development (LDOTD) show an average daily traffic count in this region ranging from approximately 15,000 cars per day (Jesuit Bend) to almost 32,000 cars per day (Belle Chasse) along the Highway 23 corridor. Access to forested lands and water resources provide excellent opportunities for hunting, fishing and/ or boating (as a few examples). Litter appears to be minimal along the corridors that traverse the project area. Regular highway maintenance keeps this factor at a minimum. Noise consists of a standard, almost background hum, created from traffic and other sounds derived from an urban/ suburban environment. Foul odors were not persistent throughout the project area; however, could prove to be a problem depending on weather conditions and proximity to the variety of industrial projects throughout the region.

3.1.14.2. Discussion of Impacts

No Action

Direct

Under the no action alternative, no direct impacts to aesthetic (visual) resources would occur at the proposed project site(s). Aesthetic (visual) resources would most likely evolve from existing conditions in a natural process, or change as dictated by future land use maintenance practices.

Indirect

Under the no action alternative, no indirect impacts to aesthetic (visual) resources would occur at the proposed project site(s).

Cumulative

With the no action alternative, there are no foreseen cumulative impacts to aesthetic (visual) resources in the project area. View sheds from surrounding neighborhoods and from public thoroughfares would not be altered in any way. Existing built and natural levee systems would continue to provide protection and variety, as landscape features, to the region. These existing landscape features would not change. Any future changes or alterations to the project site(s) would evolve in a natural process over the course of time or by local land use patterns and maintenance practices.

Alternative 1 (Proposed Action)

Direct

The visual resources of the project corridor in reaches 6.1 and 7.1 would be temporarily impacted by construction activities related to implementing the proposed action and by transport activities needed to move equipment and materials to and from the site. However, since access to these two reaches is limited, this temporary impact would most likely affect visual resources from boating and other water traffic only.

The visual resources of the project corridor in reaches 1.1, 3.1 and 4.1 would be temporarily impacted by construction activities related to implementing the proposed action and by transport activities needed to move equipment and materials to and from the site. This temporary impact would most likely affect visual resources from both vehicular traffic and residential development (on the protected side) and boating and other water traffic (on the flood side).

The creation of artificial, manmade features could decrease the natural, scenic quality in the area. In the case of the proposed action, the "stabilized" clay crown cap is an un-natural element and will work to decrease the scenic quality in the area. Unlike the "standard" clay crown cap that is to be implemented on reaches 6.1 and 7.1, turf development will not be possible, and the exposed clay will be left open with an unfinished look for an indefinite period of time.

It could be argued that the potential benefits of improved hurricane and storm protection may outweigh the visual impacts of using this type of construction. But, in this case, with such a large area being affected, the impacts to residences and businesses may be high. Where once viewsheds encompassed a grassy vista that blended in with the natural vegetation and different hues of greens, blues and other soft, natural colors; now the view will be split by a brown line of lifelessness that will starkly contrast the natural terrain.

Indirect

With the implementation of the proposed action, there are no foreseeable indirect impacts to aesthetic (visual) resources for the previously mentioned contract reaches.

Cumulative

Long term negative impacts to the aesthetic (visual) resources are negligible. Landscapes converted or reorganized into natural or, in some cases, semi-natural visual conditions similar to the proposed project may be considered as visually superior in reaches 6.1 and 7.1. While landscapes converted or reorganized into un-natural, visual conditions similar to the proposed project may be considered as visually inferior in reaches 1.1, 3.1 and 4.1. The addition of levee height using the clay crown cap would allow for turf development and therefore aid in blending the levee reaches into the background as a part of the scenery. As a cumulative impact, the proposed scenario in reaches 6.1 and 7.1 is desirable, while in reaches 1.1, 3.1 and 4.1 it could be considered undesirable throughout the hydrologic basin, Louisiana, and the US for maintaining river levee systems.

3.1.15. Cultural Resources

3.1.15.1. Existing Conditions

Cultural resources investigations were conducted for the IER #33 study area encompassing approximately 15.5 miles of Mississippi River Levee system. The study area for cultural resources investigations was larger than the proposed action, the construction of which has been designed to remain within 5 feet of the land-side toe of the levee and 15 feet of the river-side toe. The CEMVN contracted R. Christopher Goodwin and Associates to conduct a cultural resources reconnaissance survey of the study area and Phase I cultural resources survey of the area of potential effects (APE) to identify and assess (preliminarily) any significant or potentially significant National Register of Historic Places (NRHP) properties that might lie within or adjacent to the project area for the construction of the WBV-MRL HSDRRS Co-located EAMs. Phase II testing and evaluation was performed at selected archaeological sites to assess whether or not the sites possess qualities of significance as defined by the NRHP Criteria for Evaluation (36 CFR 60.4 [a-d]). The following discussion is based in part on the management summary submitted by R. Christopher Goodwin and Associates to CEMVN in November 2010 (Heller et al. 2010). The APE for IER 33 includes the WBV-MRL corridor, proposed access road and levee access ramp locations, borrow areas, the Walker Road borrow pit complex, and stockpile locations on Plaquemines Parish property along F. Edward Hebert Boulevard. The Phase I cultural resources survey of the WBV-MRL corridor examined an area 30 feet from the existing levee toe on both the land- and river-sides from approximate river mile 85.5 to mile 70 above Head of Passes, in Orleans and Plaquemines Parishes, Louisiana.

Extensive research, including reviews of previous cultural resources investigations and previously recorded archeological sites, historic standing structures, and NRHP properties and districts; examination of historic maps, aerial photography and geomorphologic studies; and intensive field reconnaissance of the IER 33 study area was completed in 2009 to identify high and low probability areas for containing significant cultural resources.

The results of this research effort were presented to the Louisiana Division of Archaeology on December 9, 2009, and informed field investigations within the WBV-MRL corridor. The study recognized that there is little documented evidence for the presence of prehistoric or historic Native American settlements within the immediate project area; furthermore, the study elaborated on extensive documentation for the presence of large numbers of plantations and other historic settlements situated along the current stretch of the Mississippi River during the eighteenth, nineteenth, and early twentieth centuries.

Historic research documented numerous historic plantations, as well as one historic fort, one historic river transportation facility, and small communities along the 15.5 mile reach of Mississippi River. Furthermore, it was recognized that most historic settlement of the area was situated in close proximity to the Mississippi River, which was the primary avenue for transportation and commerce throughout the historic period.

The study concluded that all areas adjacent to the extant WBV-MRL possessed high potential for the presence of significant cultural resources, with the exception of recently accreted or eroded banklines, or areas that have been disturbed by historic or modern development. Therefore, the portion of the APE located on the land-side side of the existing levee and not currently covered by modern buildings or roads was assessed as having a high probability for the presence of significant cultural resources. Additional segments on the river-side of the existing levee were identified as high probability areas

for the presence of significant cultural resources. High probability areas on the river-side represented areas that remained following the exclusion of batture that exhibited evidence for historic or modern borrow pits, or for containing previous levee alignments or other recent construction features, or that consisted of recently accreted land, or that have eroded to within 82 feet of the existing levee. All batture areas that met the preceding criteria for exclusion were assessed as having little or no potential for the presence of undisturbed cultural resources. The only exception to these criteria were locations where the batture measured 82 feet or less in width, but that were in the vicinity of previously reported archeological sites.

Researchers identified fifteen cultural resources investigations previously conducted in the vicinity of the APE. These investigations included eight completed on behalf of the CEMVN for the construction of levee projects. The seven remaining investigations were completed on behalf of various private and federal entities, including work performed for the United States Coast Guard for the installation of a communications tower, examination of a proposed solid waste landfill conducted for Chevron Chemical Company, a survey of a proposed road extension performed for Burk-Kleinpeter, Inc., compilation of an integrated cultural resources management plan for the Naval Facilities Engineering Command, examination of a proposed borrow site as a source of clay for use in levee improvement and coastal restoration efforts for White Oak Reality, and two surveys performed for The Audubon Institute Survival and Research Center and Wilderness Park.

Examination of the Louisiana Division of Archaeology site files identified 15 previously recorded archaeological sites within 0.5 mile of the APE. Nine of the previously recorded sites (16OR119, 16OR120, 16OR121, 16OR122, 16PL35, 16PL087, 16PL120, 16PL155, 16PL169) fall directly within the existing right-of-way, and one site (16OR090) is situated in close proximity. The remaining five sites (16PL115, 16PL119, 16PL161, 16PL168, 16PL170) are located outside the existing right-of-way. Research conducted in the historic standing structure files at the Louisiana State Library identified only a single historic standing structure (Structure 38-0008) located within 0.5 mile of the APE, but it is located outside of the existing right-of-way. This structure was previously assessed as eligible for listing on the NRHP. No NRHP historic districts or individually listed properties on the NRHP were identified within the APE.

Field investigation of the WBV-MRL corridor was completed between July 2 and November 12, 2010. High probability areas were surveyed to locate and define the boundaries of archaeological sites and to report standing structures within the project area. Phase 1 survey of high probability areas was conducted from approximate river mile 85.5 to mile 70 above Head of Passes, extending 30 feet from the existing levee toe on both the land- and river-sides. Proposed access roads, ramps and staging areas were also investigated. Additionally, mechanical trenching was conducted near the Rockville Cemetery.

As a result of this effort, 16 archeological sites and 12 non-site archeological loci were identified or relocated within the APE. The 28 archaeological sites and non-site archeological loci within the APE are presented in Table 7. Following the Phase 1 survey, Phase II testing and evaluation was conducted at six archeological sites (16OR122, 16PL155, 16PL169, 16PL196, 16PL198, 16PL202) to assess whether or not the sites possessed qualities of significance as defined by the NRHP Criteria for Evaluation (36 CFR 60.4 [a-d]).

Site 16OR122 (12 MIR No. 4) and Site 16PL196 (Belle Chasse Plantation) were evaluated and assessed as possessing those qualities of significance. Avoidance or further testing was recommended to evaluate the significance of two additional sites, Site 16PL155 (Rockville, Little Rock) and Site 16PL120 (Upper Magnolia Plantation). All

four sites (16OR122, 16PL196, 16PL155, and 16PL120) would be avoided during construction of the proposed undertaking. Site 16PL35 (Fort St. Leon) was previously assessed as eligible for listing on the NRHP, but the archaeological remains within the project right-of-way have been destroyed. Archeological remains within the right-of-way associated with Site 16PL87 (Seatrain Terminal) were evaluated and assessed as not significant, but the elevated railroad trestle and platforms located outside of the right-of-way may be significant.

The remaining archeological sites (16OR121, 16OR573, 16PL169, 16PL198, 16PL199, 16PL200, 16PL201, 16PL202, 16PL203, 16PL204) and non-site archeological loci (BWB-01-01, BWB-03-01, BWB-08A-01, BWB-08D-01, BWB-09-01, BWB-12-01, CG-01A-01, OAK-02A-01, OAK-02A-02, OAK-02A-04, OAK-02A-05, TUL-03A-01, TUL-03B-01) identified or relocated within the APE were assessed as not significant applying the NRHP Criteria for Evaluation (36 CFR 60.4 [a-d]). In addition, the mechanical trenching within the right-of-way in close proximity to the Rockville Cemetery failed to produce any evidence of human burials or other cultural resources within the APE. No additional work was recommended within the right-of-way at any of these sites, non-site loci, or cemetery.

An architectural survey also was completed, and no historic standing structures were identified within the APE. To assess potential adverse visual effects, attempts were made to identify historic properties with viewsheds that extend to the WBV-MRL. The viewshed analysis was limited to a distance of 1.6 km (1.0 mi). Both architectural survey efforts focused on the identification of listed or potentially eligible NRHP properties or districts. The visual impact assessment of the project area indicated that there will be no adverse visual effects to historic properties, whether on the east or west bank.

Any required cultural resource investigations for proposed relocations would be conducted prior to relocation activities.

The earthen material for constructing the WBV-MRL HSDDRS Co-located EAMs will be obtained from either government or contractor-furnished borrow areas that have been previously investigated for other IERs; therefore, no borrow areas were investigated for IER 33. Section 106 consultation for the proposed borrow areas has been concluded.

The Walker Road borrow pit complex was previously investigated for the 1994 Final EIS "West Bank of the Mississippi River in the Vicinity of New Orleans, La. (East of the Harvey Canal)" and the 2005 EA "U.S. Army Corps of Engineers Response to Hurricanes Katrina and Rita in Louisiana." The area was surveyed and the results presented in the 1991 report prepared by R. Christopher Goodwin and Associates (Hinks et al. 1991). This heavily disturbed complex has been in use since the 1980s, and the potential for historic properties is extremely low; therefore, no field investigations of the complex were conducted for IER 33. Section 106 consultation for the Walker Road borrow pit complex has been concluded.

If Plaquemines Parish Government takes possession of the topsoil removed from the stabilized soil reaches, it may stockpile the material on three concrete paved areas along F. Edward Hebert Boulevard. These three stockpile areas along F. Edward Hebert Boulevard are located on Plaquemines Parish property. These areas are previously disturbed, and the potential for historic properties is extremely low; therefore no field investigations of the stockpile areas were conducted for IER 33.

Section 106 consultation is ongoing and will be concluded prior to the execution of the decision record. The results of the cultural resource investigations will be submitted to the Louisiana State Historic Preservation Officer and Indian tribes for review and comment on our finding of "no adverse effect" pursuant to 36 CFR 800, of the

regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f).

3.1.15.2. Discussion of Impacts

No Action

Direct, Indirect, and Cumulative

Under the no action alternative, failing to provide flood protection for the IER 33 study area would have no direct impacts to cultural resources. Proposed action would not be built and cultural resources located within and adjacent to the right-of-way for the proposed action would not be directly impacted. However, ground surface erosion during flood events under the no action alternative could potentially have detrimental indirect and cumulative impacts on cultural resources that would have been protected by the proposed action. Erosion of ground deposits during flood events causes severe damage and destruction of cultural resources.

Alternative 1 (Proposed Action)

Direct

Activities associated with the construction of the Co-Located EAMs have the potential to impact areas within and adjacent to the existing right-of-way of the WBV-MRL. Although construction of the existing WBV-MRL has severely modified the existing right-of-way, cultural resource investigations indicate that there are significant archaeological sites within and adjacent to the existing right-of-way. Three potentially significant sites would be avoided during construction activities (16PL196, 16PL155, and 16OR122). Geotextile and appropriate material would be placed over the three buried sites within the existing right-of-way to ensure that project activities do not directly impact the sites. No staging areas would be allowed in the immediate vicinity of these three sites. An archaeological monitor would be present during work near 16PL196, 16PL155, and 16OR122 to ensure that project activities do not directly impact the sites.

Indirect

Construction of the proposed action would provide an added level of flood risk reduction to known and unknown cultural resources located on the land-side of the project area by reducing the risk of damage caused by flood events.

Cultural resource investigations indicate that there are significant historic structures and archaeological sites within and adjacent to the existing right-of-way. The three potentially significant archaeological sites (16PL196, 16PL155, and 16OR122) located within the existing right-of-way extend outside of the right-of-way, and these locations would also be avoided. No staging areas would be allowed in the immediate vicinity of these three sites. An archaeological monitor would be present during work near 16PL196, 16PL155, and 16OR122 to ensure that project activities do not indirectly impact the sites.

Two sites located adjacent to the existing right-of-way would be avoided. Site 16PL35 has been determined to be NRHP eligible, and Site 16PL120 has been identified as potentially NRHP eligible. An archaeological monitor would be present during work near 16PL120 to ensure that project activities do not indirectly impact the site. Structure 38-0008, which has been determined to be NRHP eligible is located in the vicinity, but should not be impacted by construction activities.

Table 7.
Archaeological Sites and Loci Within the Project Corridor

Site Number (Locus Number)	Site Name	Levee Reach	Site Type	Significance	Recommendation
16PL169 (OAK-02B-01)	Mahoney-Crouere	WBV-MRL 1.1	19th to 20th century historic	Not significant	No additional cultural resources investigation required.
16PL202 (OAK-02A-03)	Hygiene Plantation	WBV-MRL 1.1	19th century plantation	Portion of site within ROW not significant; outside ROW not assessed	No additional cultural resources investigation required.
(OAK-02A-05)	n/a	WBV-MRL 1.1	Modern	Not significant	No additional cultural resources investigation required.
(OAK-02A-04)	n/a	WBV-MRL 1.1	Modern	Not significant	No additional cultural resources investigation required.
(OAK-02A-02)	n/a	WBV-MRL 1.1	Isolate (Historic)	Not significant	No additional cultural resources investigation required.
(OAK-02A-01)	n/a	WBV-MRL 1.1	20th century historic/modern	Not significant	No additional cultural resources investigation required.
(BWB-12-01)	n/a	WBV-MRL 1.1	20th century historic/modern	Not significant	No additional cultural resources investigation required.
16PL201 (BWB-11-01)	Sewer Plant Road	WBV-MRL 1.1	Late 19th-20th century historic	Not significant	No additional cultural resources investigation required.
(BWB-09-01)	n/a	WBV-MRL 3.1	20th century historic/modern	Not significant	No additional cultural resources investigation required.
(BWB-08D-01)	n/a	WBV-MRL 3.1	20th century historic/modern	Not significant	No additional cultural resources investigation required.
16PL87 (Sea Train, BWB-08A-03, BWB-08C-01)	Sea Train Terminal	WBV-MRL 3.1	20th century historic/modern	Historic railroad trestle is potentially significant, but located outside ROW; archeological component not significant	No additional cultural resources investigation required.
16PL200 (BWB-08A-02)	Tiemaker Road	WBV-MRL 3.1	20th century historic/modern	Not significant	No additional cultural resources investigation required.
(BWB-08A-01)	n/a	WBV-MRL 3.1	Late 19th-20th century historic	Not significant	No additional cultural resources investigation required.
16PL199 (BWB-08-01)	Lejeune Road	WBV-MRL 3.1	Late 19th-20th century historic	Not significant	No additional cultural resources investigation required.
16PL198 (BEL-05A-01)	Baker Road	WBV-MRL 3.1	Late 19th-20th century historic	Not significant	No additional cultural resources investigation required.

Site Number (Locus Number)	Site Name	Levee Reach	Site Type	Significance	Recommendation
16PL196 (BEL-04-01)	Belle Chasse Plantation	WBV-MRL 4.1	19th century plantation	Potentially significant on land side; not significant on river side	Avoidance or additional testing
16PL35	Ft. St. Leon	WBV-MRL 6.1	18th - 19th century fort	Portion of site within ROW not significant; outside ROW previously assessed as NRHP eligible	No additional cultural resources investigation required within ROW.
(TUL-03A-01)	n/a	WBV-MRL 6.1	Isolate (Historic)	Not significant	No additional cultural resources investigation required.
(TUL-03B-01)	n/a	WBV-MRL 6.1	Isolate (Historic)	Not significant	No additional cultural resources investigation required.
16PL203 (BWB-06-01)	Tulane 1	WBV-MRL 6.1	Historic Unknown	Not significant	No additional cultural resources investigation required.
16PL204 (TUL-01-01/TUL-02-01/BWB-06A-01)	Ft. St. Leon Plantation, Levee Area	WBV-MRL 6.1	19th century plantation, 20th century military	Portion within ROW not significant, outside ROW not assessed	No additional cultural resources investigation required.
16PL155	Rockville, Little Rock	WBV-MRL 6.1	Late 19th-20th century African American community	Potentially significant	Avoidance or additional testing
16PL120	Upper Magnolia Plantation	WBV-MRL 6.1	18th - 20th century plantation	NRHP eligible	Avoidance or additional testing
16OR121	12 MIR No. 3	WBV-MRL 7.1	19th century road	Not significant	No additional cultural resources investigation required.
(CG-01A-01)	n/a	WBV-MRL 7.1	Modern	Not significant	No additional cultural resources investigation required.
16OR122	12 MIR No. 4	WBV-MRL 7.1	Colonial	Potentially significant	Avoidance or additional testing
16OR573 (BWB-02-01)	Patterson Road	WBV-MRL 7.1	20th century historic/modern	Not significant	No additional cultural resources investigation required.
(BWB-01-01)	n/a	WBV-MRL 7.1	Isolate (Historic)	Not significant	No additional cultural resources investigation required.

Cumulative

Construction of the Co-Located EAMs would have beneficial cumulative impacts on historic properties in the West Bank area. The proposed action is part of the ongoing federal effort to reduce the threat to property posed by flooding. The combined effects from construction of the multiple projects underway and planned for the HSDRRS would reduce flood risk and storm damage to significant archaeological sites, individual historic properties, engineering structures and historic districts.

Proposed construction of the WBV-MRL Co-Located resilient features, including an all earthen levee (with alternative floodside, straddle and protected side alignments) and a floodwall has the potential to adversely impact cultural resources, and implementation of this alternative would require additional cultural resources investigations and consultation with the SHPO and Indian tribes. Appropriate measures would be initiated under the Section 106 review process to ensure that impacts to significant cultural resources are avoided, minimized, or mitigated before construction of the resilient features.

3.1.16. Farmland

3.1.16.1. Existing Conditions

Within NEPA evaluations, the USACE must consider the protection of the nations' significant/important agricultural lands from irreversible conversion to uses that result in their loss as an environmental or essential food production resource. The Farmland Protection Policy Act (FPPA), 7 USC 4201 et seq., and the U.S. Department of Agriculture's (USDA) implementing procedures (7 CFR § 658) require Federal agencies to evaluate the adverse effects of their actions on prime and unique farmland, including farmland of statewide and local importance.

Based on aerial photography and field investigations along the entire length of the co-located levee project, there does not appear to be any active farming occurring near the levee alignment. There is some cattle grazing occurring in the lands adjacent to the Walker Road borrow pits. Since the proposed action includes work within the existing footprint of the existing Mississippi River Levee and within existing borrow processing sites, CEMVN determined that there would be no direct or indirect impacts to farmland resources. The Natural Resources Conservation Service (NRCS) verified that no impacts to prime and unique farmlands would occur via letter dated October 25, 2010.

3.1.16.2. Discussion of Impacts

No Action
Direct, Indirect, and Cumulative

Without the Federal action, the designation and use of the stabilized soil mixing sites and, subsequent, levee construction for all contract reaches would not occur. Therefore, it is expected there would be no direct, indirect or cumulative impacts to farmland resources.

Alternative 1 (Proposed Action)
Direct, Indirect, and Cumulative

The actions necessary to implement any of the proposed action would not involve conversion of, or otherwise cause direct, indirect, or cumulative effects to prime, unique, or important U.S. farmland. No impacts to cattle grazing near the Walker Road soil mixing site are expected.

3.2. Socioeconomics

3.2.1. Displacement of Population and Housing

3.2.1.1. Existing Conditions

Orleans Parish

There are five census blocks in Orleans Parish that would potentially be impacted by the proposed actions in IER #33. These include blocks 1000, 1020, 1038, 1039, and 1040 in group 1, census tract 6.12. This area is bounded on the north by Delacroix Road, Donner Canal on the west and south, and the Mississippi River on the east. There are some residential structures in the area, but these tend to be low density, rural structures. According to U.S. Census data, there were 238 housing units in 2000 located in this area and a total population of 693 (U.S. Bureau of the Census, 2000).

Plaquemines Parish

Several census blocks in Plaquemines Parish are located proximate to the proposed construction activities of IER #33. However, the majority of these areas have no residential housing structures and no individuals residing within their boundaries. There are two housing units with a total population of four in census tract 502, group 1, block 1015 which runs parallel and directly adjacent to the MRL from Widgeon Road to the north and Avenue M to the south and is bounded by Main Street to the west. Census tract 503, group 3, block 3026, located between Highway 23 and Highway 11 between Clausen Road and Walker Road, had a total of six housing units and fifteen individuals within its borders (U.S. Bureau of the Census, 2000).

The majority of the population potentially impacted by the actions proposed in IER #33 is concentrated near Belle Chasse. Census tract 502, group 4 is bounded by Highway 23 to the north and east, Apricot Street to the south, and Schlief Drive to the west. According to U.S. Census data, it had a total of 620 residential structures with a population of 1,797 (U.S. Bureau of the Census, 2000). Census tract 502, group 5 which is bounded by Highway 23 on the west, the Mississippi River on the east, Oak Road to the north, and Tiemaker Road to the south, had a population of 1,010 within 430 residential structures in 2000 (U.S. Bureau of the Census, 2000). The area included in census tract 503, group 2 is located between Tiemaker Road and Russell Drive to the north and south, the Mississippi River on the east, and Highway 23 on the west. This area had 536 residential structures and 1,281 individuals residing within its borders (U.S. Bureau of the Census, 2000). Finally, census tract 504, group 2, which is bounded by Russell Drive to the north, Highway 23 to the west, the Mississippi River to the east, and Walker Road to the south, had a population of 2,246 within 776 housing units in 2000. In total, 6,353 individuals and 2,364 housing units in Plaquemines Parish are located proximate to the proposed construction activities of IER #33 (U.S. Bureau of the Census, 2000).

3.2.1.2. Discussion of Impacts

No Action

Direct

Under the no action alternative, flood protection in the study area would not be raised to the 100-year level of risk reduction and the storm surge risk reduction system would not allow many properties in these communities to benefit from discounted flood insurance premiums offered by the National Flood Insurance Program (NFIP). There would be no displacement of population or housing under the no action alternative. However, since

this alternative fails to provide 100-year level of risk reduction, the actual and perceived risks to population under this alternative would be higher than under the proposed action.

Indirect

Under the no action alternative, the potential for permanent displacement of population and housing would be higher than under the proposed action.

Cumulative

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. There would be no displacement of population or housing under the No Action alternative. However, since this alternative fails to provide the 1% level of risk reduction, the actual and perceived risks to population under this alternative would be higher than under the proposed alternative. Floods occurring under the No Action alternative that would likely be avoided under the proposed alternative increase the potential for permanent displacement of population and housing.

Alternative 1 (Proposed Action)

Direct

Construction of the EAM would be designed to remain within the existing right-of-way and therefore impacts that could cause the displacement of population and housing are expected to be minimal.

Indirect

No adverse, indirect impacts related to displacement of population and housing are expected to occur under the proposed action. With the completion of the proposed action, residents will be at a reduced risk of permanent displacement due to the lowered risk of flooding.

Cumulative

Positive cumulative impacts to population and housing associated with completion of the HSDRRS in its entirety may occur. The lower flood risk that accrues to much of the New Orleans metropolitan area upon completion of the HSDRRS may enhance the desirability of living within the protected areas. As a result, a shift in the dispersion of population within the New Orleans Metropolitan Statistical Area (MSA), or beyond, may occur. Also, to the extent that the completion of the HSDRRS encourages regional economic growth, any additional jobs thus created may manifest itself in either in-migration to the area or an increase in commuting activity.

3.2.2. Impacts to Employment, Business, and Industrial Activity

3.2.2.1. Existing Conditions

The proposed site is a 15-mile stretch of the Mississippi River Levee starting in the west side of Orleans Parish and extending south into Plaquemines Parish, through Belle Chasse, down to the community of Cedar Grove. The northern reaches in Orleans Parish are sparsely developed. What few businesses there are in the northern portion are centered around river services. The central reaches in Plaquemines Parish include Belle Chasse which contains mixed retail and light industry. In the Belle Chase area several businesses are located adjacent to the levee. These include petroleum service companies, river services companies, a boat storage complex adjacent to the levee with a launch that

crosses the levee. The southern reaches include the Belle Chasse Naval Air Station and the Chevron refinery, which is adjacent to the project site.

3.2.2.2. Discussion of Impacts

No Action

Direct

Under the no action alternative, flood protection in the study area would not be raised to the 100-year level of risk reduction and the storm surge risk reduction system would not allow many properties in these communities to benefit from discounted flood insurance premiums offered by the National Flood Insurance Program (NFIP). There would be no displacement of employment, businesses or industrial activity under the no action alternative. However, since this alternative fails to provide 100-year level of risk reduction, the actual and perceived risks to these resources under this alternative would be higher than under the proposed action.

Indirect

There would be no indirect impacts to employment, business, and industry proximate to the Co-Located project under the no action alternative.

Cumulative

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. There would be no incremental direct impacts to business and industry under the No Action alternative. However, under these conditions, the actual and perceived risks to businesses in the vicinity would be directly impacted. Costs associated with business development and sustainability would likewise be impacted. The lack of flood risk reduction could be a long term detriment to the economic vitality of the area to be protected. Additionally, there may be moderate congestion-related impacts to businesses due to an increased presence of construction vehicles associated with already on-going and/or planned HSDRRS construction. Under the No Action alternative, businesses along the MRL within the proposed project area that are outside of the current HSDRRS would experience continued risk of flooding.

Alternative 1 (Proposed Action)

Direct

Temporary impacts may occur to area businesses due to delays caused by increased traffic congestion. All of the construction, with the exception of mixing the stabilized soil, would occur within the existing levee right-of-way. But transportation of the prepared borrow to the sites will lead to congestion along the River Road and Hwy 23 between the mixing site and the construction sites. Those businesses related to river services would most likely be most affected because their activity occurs on both sides of the levee.

Indirect

Minimal indirect impacts to business, such as customer avoidance of the project vicinity due to congestion, are expected as a result of the proposed action. However, these impacts would be expected to be temporary and negligible.

Cumulative

Under the proposed action, cumulative indirect impacts associated with the completion of the HSDRRS in its entirety may occur. The lower flood risk that accrues to much of the New Orleans metropolitan area upon completion of the HSDRRS may have the effect of spurring additional economic growth in the region than would otherwise occur. As a result, an increase in the number of firms and the output of business and industry would likely manifest itself in such growth.

3.2.3. Availability of Public Facilities and Services

3.2.3.1. Existing Conditions

There are a few public facilities within the study area, primarily located in the Belle Chasse polder. There are 2 police stations, 3 fire stations, 5 school buildings, 2 veterinary clinics, 6 utilities facilities, and 1 electrical facility. A Plaquemines Parish municipal complex is located within the study area, adjacent to the project site, near the ferry landing. Additionally, a Tulane University Research Laboratory is located within the study area.

3.2.3.2. Discussion of Impacts

No Action

Direct

Under the no action alternative, flood protection in the study area would not be raised to the 100-year level of risk reduction and the storm surge risk reduction system would not allow many properties in these communities to benefit from discounted flood insurance premiums offered by the NFIP. There would be no direct impacts to the availability of public facilities and services under the no action alternative. However, under these conditions, the actual and perceived risks to public facilities in the vicinity would be directly impacted, and the costs of providing these services would likewise be impacted. The lack of enhanced flood risk reduction could be a long-term detriment to the economic vitality of the area to be protected.

Indirect

There would be no indirect impacts to the availability of public facilities and services under the no action alternative.

Cumulative

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. There would be no direct impacts to the availability of public facilities and services under the No Action alternative. However, under these conditions, the actual and perceived risks to public facilities in the vicinity would be directly impacted, and in the event of flooding, the costs of providing these services would likewise be impacted. The lack of enhanced flood risk reduction could be a long term detriment to the economic vitality of the area to be protected.

Alternative 1 (Proposed Action)

Direct

Construction of the EAMs would occur within the existing rights-of-way and therefore direct impacts to public facilities and services are expected to be minimal. There may be

temporary, construction-related impacts to public facilities in the immediate vicinity of the areas along the stretch of the MRL to be raised due to traffic congestion. These impacts are likely to be concentrated in the Belle Chasse polder where the majority of the public facilities within the study are located.

Indirect

The proposed action would have no indirect adverse effect on the availability of public facilities and services. Increased protection from flooding would preserve and enhance the availability of public services in the area.

Cumulative

Under the proposed action alternative, cumulative indirect impacts associated with the completion of the HSDRRS in its entirety may occur. The lower flood risk that accrues to much of the New Orleans metropolitan area upon completion of the HSDRRS may have the effect of spurring additional economic growth in the region than would otherwise occur. As a result, an increase in the number of firms and the output of business and industry would likely manifest itself in such growth.

3.2.4. Effects on Transportation

3.2.4.1. Existing Conditions

CEMVN has published an analysis of the effects on transportation from construction of the HSDRRS (USACE, 2009b). The report provides estimates on the numbers of truckloads necessary to complete construction of the HSDRRS and the effects of transporting these materials. The Co-Located project site is located east of LA 23. A road runs along the protected side toe of the levee that is known as River Road and Hwy 11. Access to the mixing site would be from LA 23. Access to the levee site would be provided from River Road and Hwy 11.

3.2.4.2. Discussion of Impacts

No Action

Direct

Under the no action alternative there would be no direct impacts to transportation proximate to the proposed Co-Located project area.

Indirect

Under the no action alternative, there would be no indirect impacts proximate to the proposed Co-Located project area.

Cumulative

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. Under the No Action alternative, there would be congestion related impacts to transportation due to an increased presence of construction vehicles in the vicinity associated with on-going and planned HSDRRS construction. Potentially affected roadways include Engineers Road, Concord Road, and Bayou Road, all on the east bank of the Harvey Canal near the confluence with the Algiers Canal and the GIWW. Additionally, there may be increased congestion on Peters Road and Lapalco Boulevard, Highway 23, Walker Road, Buccaneer Road, and East Bayou Road; as well as on

General DeGaulle Drive, Highway 406, Barriere Road, and Destrehan Avenue. However, all congestion-related impacts would be temporary in nature. Other cumulative impacts to transportation resulting from construction of HSDRRS are discussed below.

Transportation impacts related to the construction of the HSDRRS have been analyzed in a report titled "Transportation Report for the Construction of the 100- year Hurricane and Storm Damage Risk Reduction System," which was released in March, 2010 and is available on nolaenvironmental.gov.

Alternative 1 (Proposed Action)

Direct

Under the proposed action, borrow may be trucked from Bonnet Carre Spillway to the mixing site. This may increase congestion on US 61, US 51, I-310, I-10, US 90, and Hwy 23. There may be temporary, congestion-related impacts to LA 23 near the Walker Road where the mixing site is located. Congestion impacts and decreases in levels of service around the mixing area would likely be moderate to severe. In addition, plans to lift the section of levee at the Belle Chasse Ferry Landing have been made to affect only one lane at a time, with the use of signalmen to coordinate traffic movement. Even with this plan in place, normal traffic flow would be interrupted and may lead to congestion and delays.

To complete the placing of the clay and stabilized caps along the 15.5 miles of levee, it is estimated that it would take approximately 14,500 truckloads of borrow and 13,500 truckloads of other material and debris. Due to the increased levels of truck traffic, and the movement of many truckloads of material, there would likely be increased wear and tear on these roads. Due to frequent heavy loads, local roadways around the project area would likely suffer degradation requiring rehabilitation that is sooner than would normally be expected. Lastly, because of increased levels of truck traffic, there would be a higher risk of accidents, with resulting injuries, fatalities, and damage to property.

Indirect

There would be increased congestion, decreased levels of service, accelerated wear and tear, and increased risk of traffic accidents on other major and local roads in the project area and throughout the Greater New Orleans area as borrow and other construction materials are transported to construction sites for use at project sites and within the HSDRRS.

Cumulative

Congestion impacts to the greater metropolitan area are likely to be moderate to severe as a result of HSDRRS construction. Heavy vehicles adversely affect traffic in two ways. First, they are larger than passenger cars and occupy more road space, and secondly, they have poorer operating capabilities than passenger cars, particularly with respect to acceleration, deceleration, and the ability to maintain speed on upgrades. Heavy vehicles cannot keep pace with passenger vehicles in many situations creating large gaps in the traffic stream that are difficult to fill by passing maneuvers. CEMVN estimates 29,616,300 cubic yards of borrow would be required for completion of HSDRRS. This would result in 2,042,500 truck trips traveling 57,270,000 miles in total. Decreases in levels of service on local roads would occur due to the high number of truck trips required to transport the required amounts of construction material. Additionally, there is a higher risk of traffic accidents and resulting damage to property as a result of the higher number of truck trips occurring on major transportation arteries within the metropolitan area. Given the expected accident rates reported (USACE, 2009b), approximately one fatality, 29 persons injured, and 91 vehicles damaged can be expected to occur as a result of the over 57 million miles driven.

There is also likely to be moderate to severe degradation of infrastructure as a result of wear and tear from transporting HSDRRS construction materials. These impacts are likely to be greatest on local and feeder roads, as well as on local bridges. Higher design characteristics for high capacity roads such as Interstate Highways are able to withstand wear much better than for lesser roads. The pavement degradation cost of a 3-axle loaded truck on a local road is more than 60 times the pavement degradation cost for that same vehicle on an interstate highway. As a result of HSDRSS construction, rehabilitation to area infrastructure would likely be required sooner than would normally be expected.

The large number of truck miles would also increase pollutants in the air of the New Orleans metro area caused by the burning of diesel fuel. All of the parishes in the New Orleans metro area are currently designated as "in attainment" of all criteria pollutants covered by the Clean Air Act.

On the other hand, there may emerge cumulative indirect impacts associated with the completion of the HSDRRS in its entirety. The lower flood risk that accrues to much of the New Orleans metropolitan area upon completion of the HSDRRS may have the effect of spurring additional economic growth in the region than would otherwise occur. An increase in the demand for transportation resources usually follows gains in economic activity and would thus be expected given any additional economic growth in the region.

3.2.5. Disruption of Desirable Community and Regional Growth

3.2.5.1. Existing Conditions

Community and regional growth are generally influenced by national trends, but otherwise depend significantly upon relatively local attributes that allow it to be evaluated apart from the national economy. Growth has also historically been heavily dependent on reliable flood protection. The proposed project is planned with the result being improved flood and hurricane risk reduction. For the purposes of socioeconomic impact analysis, the project area is first described in summary terms with respect to prevailing trends in the growth of population, housing, income, and employment. Against this baseline, the relative effects of the proposed and alternative actions are evaluated.

According to U.S. Census data from 2000 and 2008, the following trends were observed in Plaquemines Parish: population decreased from 26,757 to 21,494, per capita personal income increased from $21,494 to $45,688, and employment declined from 21,304 to 19,349. During the same period, population in Orleans Parish declined from 484,674 to 326,968, per capita personal income increased from $26,116 to $44,234, and employment declined from 322,081 to 236,080.

3.2.5.2. Discussion of Impacts

No Action
Direct

Under the no action alternative, flood protection in the study area would not be raised to the 100-year level of risk reduction and the storm surge risk reduction system would not allow many properties in these communities to benefit from discounted flood insurance premiums offered by the NFIP. There would be no direct impacts to community and regional growth under the no action alternative. However, under these conditions, the actual and perceived risks to businesses and residences in the vicinity would be directly impacted, reducing the potential for community and regional growth. Costs associated with business and residential development would likewise be impacted. The lack of enhanced flood protection could be a long-term detriment to the economic vitality of the area to be protected.

Indirect

There would be no indirect impacts on the community and regional growth under the no action alternative.

Cumulative

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. There would be no direct impacts to community and regional growth under the No Action alternative. However, under these conditions, the actual and perceived risks to businesses and residences in the vicinity would be directly impacted, reducing the potential for community and regional growth. Costs associated with business and residential development and sustainability would likewise be impacted. The lack of enhanced flood risk reduction could be a long term detriment to the economic vitality of the area.

Alternative 1 (Proposed Action)

Direct

The proposed project would advance the growth of communities within the HSDRRS by reducing their flood risk. Without strong storm and flood protection, a community's growth would necessarily be limited. The limitation in growth is primarily caused by the inability to certify the levee system such that the protected area could comply with the requirements of the NFIP, and consequently would face higher flood risk and insurance premiums. Although improving improvements to flood and hurricane protection would not fully eliminate the threat of storm damages in the future, by advancing the hurricane and storm damage risk reduction system, confidence and investment in the greater New Orleans community would increase. Since this alternative would provide the most reliable flood risk reduction, it would most likely have the greatest effect in increasing community growth.

Indirect

The proposed action would have no indirect adverse effect on community and regional growth. Increased protection from flooding would preserve and enhance community and regional growth.

Cumulative

There would be cumulative impacts associated with the completion of the HSDRRS in its entirety. The lower flood risk that accrues to much of the New Orleans metropolitan area upon completion of the HSDRRS may have the effect of spurring additional economic growth in the region than would otherwise occur. In addition, the lower incidence of flooding that the HSDRRS is designed to achieve would reduce the propensity for disruption of community life.

3.2.6. Impacts to Tax Revenues and Property Values

3.2.6.1. Existing Conditions

The proposed project is located in Orleans and Plaquemines Parishes. Almost all of the residential housing units proximate to the construction area are in Plaquemines Parish, around Belle Chasse and south to river mile 70. The median value for specified owner-occupied housing units in Plaquemines Parish was $110,100 in 2000.

3.2.6.2. Discussion of Impacts

No Action

Direct

Under the no action alternative, there would be no direct impacts to tax revenues and property values proximate to the proposed project.

Indirect

Under the no action alternative, there would be no indirect impacts to tax revenues and property values proximate to the proposed project.

Cumulative

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. There would be no direct impacts to tax revenues under the No Action alternative. Under these conditions, the actual and perceived risks to businesses and residences in the vicinity would be directly impacted. Costs associated with business and residential development and sustainment could likewise be impacted. As a result, tax revenues may be affected by a relative decrease in development. The lack of enhanced flood protection could be a long term detriment to the economic vitality of the area to be protected.

Alternative 1 (Proposed Action)
Direct

Property values near the construction site itself may decrease temporarily due to the added traffic congestion and construction noise and dust. The impact, however, would be temporary, lasting only as long as the construction.

Indirect

There should be no significant indirect impact on tax revenues for Orleans and Plaquemines Parishes as a result of the proposed action.

Cumulative

Cumulative impacts associated with the completion of the HSDRRS in its entirety may occur. The lower flood risk that accrues to much of the New Orleans metropolitan area upon completion of the HSDRRS may have the effect of spurring additional economic growth in the region than would otherwise occur. It follows that increases in tax revenues would ensue given additional economic growth. In addition, the lower incidence of flooding that the HSDRRS is designed to achieve would have the effect of preserving, if not enhancing, property values within the protected areas.

3.2.7. Changes in Community Cohesion

3.2.7.1. Existing Conditions

Community cohesion refers to the common vision and sense of belonging within a community that is created and sustained by the extensive development of individual relationships that are social, economic, cultural, and historical in nature. The degree to which these relationships are facilitated and made effective is contingent upon the physical and spatial configuration of the community itself: the functionality of the

community owes much to the physical landscape within which it is set. The viability of community cohesion is compromised to the extent to which these physical features are exposed to interference from outside sources.

The areas of the proposed actions are currently settled communities with stable complements of churches, schools, businesses, and community interaction.

3.2.7.2. Discussion of Impacts

No Action

Direct

Under the no action alternative, flood protection in the study area would not be raised to the 100-year level of risk reduction and the storm surge risk reduction system would not allow many properties in these communities to benefit from discounted flood insurance premiums offered by the NFIP. There would be no direct impacts to community cohesion under the no action alternative. However, under these conditions, the actual and perceived risks to the community would be directly impacted and the civic infrastructure would likewise be impacted. The lack of enhanced flood protection could be a long-term detriment to the community cohesion of the area to be protected.

Indirect

There would be no indirect impacts on community cohesion in the study area under the no action alternative.

Cumulative

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. There would be no direct impacts to community cohesion under the No Action alternative. However, under these conditions, the actual and perceived risks to businesses and residences in the vicinity would be directly impacted. Costs associated with business and residential development and sustainability would likewise be impacted. The lack of enhanced flood protection could be a long term detriment to the economic vitality of the area to be protected. Additionally, an increased risk of flooding due to a lower level of risk reduction may have detrimental effects on community cohesion in the area.

Alternative 1 (Proposed Action)

Direct

The proposed project is intended for the purpose of advancing the HSDRRS to the 100-year level of risk reduction. Storm surge protection measures are designed to protect the community from the catastrophic effects of flooding, preserving the physical integrity of the developed landscape that promotes patterns of social interchange. The proposed action would increase the level of community cohesion because the entire project area is within the HSDRRS and as a result would benefit from its advancement.

Indirect

The proposed action would have no indirect adverse effect on community cohesion in the study area. Increased protection from flooding would preserve and enhance the potential for community cohesion.

Cumulative

Impacts on community cohesion are contingent upon the degree to which project construction is expected to encroach upon the physical landscape that directly or

indirectly affects the patterns of social interrelationships. In the current analysis, the construction and borrow sites are sufficiently distant from areas of development such that no spatial element of the community is impinged upon and the shared identity of the community materially threatened. This does not mean that adverse impacts, such as degraded aesthetic qualities or foregone economic opportunities, do not occur. Rather, the adverse impacts in other resource areas are not sufficiently large to affect community cohesion. The impact on community cohesion is first demonstrated by identifying a change in the pattern of social interaction, such as diminished contact due to physical separation, impediments to contact, interference in communication, dislocation, or voluntary migration. None of these conditions are present with the proposed action.

Construction-related impacts can be distinguished from project-related outputs, that is, the economic and social consequences that are specifically intended from the project design and that make it worthwhile to pursue. An increase in community cohesion can be seen as a specifically intended output from the project, as represented by the HSDRRS. This occurs since storm surge protection measures are designed to protect the community from the catastrophic effects of flooding, preserving the physical integrity of the developed landscape that promotes patterns of social interchange.

Additional cumulative impacts associated with the completion of the HSDRRS in its entirety may occur. The lower flood risk that accrues to much of the New Orleans metropolitan area upon completion of the HSDRRS may have the effect of enhancing community cohesion. The reason for this is that the lower incidence of flooding reduces the likelihood that patterns of social interaction and communication within the community are interrupted or permanently altered. This impact is applicable for only the proposed contractor-furnished borrow areas that lie inside the HSDRRS.

3.3. Environmental Justice

3.3.1. Existing Conditions

Environmental Justice (EJ) is institutionally significant because of Executive Order 12898 of 1994 (E.O. 12898) and the Department of Defense's Strategy on Environmental Justice of 1995, which direct Federal agencies to identify and address any disproportionately high adverse human health or environmental effects of Federal actions to minority and/or low-income populations. Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50-percent or is meaningfully greater than in the general population. Low-income populations as of 2000 are those whose incomes are $22,050.00 for a family of four or below and are identified using the Census Bureau's statistical poverty threshold. The Census Bureau defines a "poverty area" as a Census tract with 20-percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40-percent or more below the poverty level. This is updated annually at http://aspe.hhs.gov/poverty/09poverty.shtml.

This resource is technically significant because the social and economic welfare of minority and low-income populations may be positively or disproportionately impacted by the proposed actions. This resource is publicly significant because of public concerns about the fair and equitable treatment (fair treatment and meaningful involvement) of all people with respect to environmental and human health consequences of federal laws, regulations, policies, and actions.

A potential disproportionate impact may occur when the percent minority (50-percent) and/or percent low-income (20-percent) population in an EJ study area are greater than

those in the reference community. For purposes of this analysis, all Census Block Groups within a one mile radius of the project footprint are defined as the EJ study area. Orleans and Plaquemines Parishes, of which the IER #33 project area is located, is considered the reference community of comparison, whose population is therefore considered the EJ reference population for comparison purposes for unincorporated areas located within one mile of the proposed project footprint.

The methodology, consistent with E.O. 12898, to accomplish this Environmental Justice analysis includes, identifying low-income and minority populations within the IER #33 project area using up-to-date economic statistics, aerial photographs, 2000 U.S. Census records, Environmental Systems Research Institute, Inc. (ESRI) estimates, as well as conducting community outreach activities such as public meetings. Despite the 2000 U.S. Census being nine years old (awaiting 2010 Census results), it serves as a logical baseline of information and is the primary deciding variable per data accuracy and reliability for the following reasons:

- Census 2000 data is the most accurate source of data available due to the sample size of the Census decennial surveys. With one of every six households surveyed, the margin of error is negligible.
- The Census reports data at a much smaller geographic level than other survey sources, providing a more defined and versatile option for data reporting.
- Census information sheds light upon the demographic and economic framework of the area pre-Hurricane Katrina. By accounting for the absent population, the analysis does not exclude potentially low income and minority families that wish to return home.

The proposed IER #33 project area is located along the Mississippi River levee near Belle Chasse, Louisiana and covers nearly 15.5 miles of river levee from Orleans Parish to Plaquemines Parish, Louisiana.

According to the 2000 U.S. Census, Orleans Parish had a population of 72-percent minority and 27.9-percent low-income. Plaquemines Parish had a population of 32.3-percent minority and 18 percent low-income. The percentage of the population that is minority and low-income in Orleans Parish is significantly higher than state population figures which, as of the 2000 Census, is 38.9-percent minority and 19.6-percent low-income; while the Plaquemines figures are lower than state figures. According to the U.S. Census, the study area had a population of 12.2-percent minority and 11.4-percent low-income in 2000. Therefore, based on the 2000 U.S. Census data, and analysis of the project footprint for this project, it has been determined that while the project boundary falls within portions of minority and low-income population areas, the areas does not qualify as an EJ study area. The Mississippi River levee impacts non-minority and non-low income populations and business areas as well.

Consultation with the affected communities has been ongoing throughout this and previous IERs 12 and 13 projects. Updated information has been provided and several public meetings have been held within the minority and low-income communities in the project area. No additional outreach efforts are necessary as they are ongoing, per the requirements of E.O. 12898.

3.3.2. Discussion of Impacts

No Action
Direct

Under the No Action Alternative, no project efforts would take place under this authority. Communities would continue to be threatened by eroding levee and floodwalls during

major storm events, incurring associated cost in damage to housing, local economy and commercial structures. The communities surrounding the IER #33 include minority and/or low-income populations as well as non-minority and non-low income populations along the Mississippi River levee reach. All persons living and working in the project area, irrespective of race or income status, would be equally impacted in a future without project conditions. Therefore, there would be no disproportionately high or adverse human health or environmental effects on minority or low-income populations.

Indirect.

No disproportionately high or adverse human health or environmental indirect impacts on minority or low-income populations would occur.

Cumulative.

Under the No Action alternative, the EAMs along the MRL would not be constructed by the CEMVN. Because the current MRL elevation along the five reaches does not provide 1% risk reduction, the area would experience continued risk of levee failures and flooding. Minority and/or low income populations would not be disproportionately affected under the No Action alternative. However, since this alternative fails to provide the 1% level of risk reduction, the actual and perceived risks to all populations under this alternative would be higher than under the proposed alternative. Floods occurring under the No Action alternative that would likely be avoided under the proposed alternative increase the potential for permanent displacement of all populations, including minority and low income populations.

Alternative 1 (Proposed Action)

Direct

No disproportionate impacts on minority or low-income population groups are expected as a result of the proposed action of IER #33.

Indirect

Temporary effects due to construction activities would equally affect all population groups in the project area. No disproportionately high adverse indirect impacts on human health or the environment would occur.

Cumulative

The cumulative effects of implementing the proposed action would be the additive combination of impacts to minority and/or low-income populations by this and other Federal, state, local, and private restoration efforts. The proposed action would work synergistically with other restoration and protection projects to provide greater critical flood protection, which, in turn, would provide 1 percent risk reduction to communities in the area that may otherwise be damaged due to gradual erosion and levee failure.

3.4. Hazardous, Toxic, and Radioactive Waste

3.4.1. Existing Conditions

There must be reasonable identification and evaluation of all HTRW contamination within the vicinity of the proposed action. Under Engineer Regulation (ER) 1165-2-132, the reasonable identification and evaluation of Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within a proposed area of construction is required. ER 1165-2-132 identifies the CEMVN HTRW policy to avoid the use of project funds for HTRW removal and remediation activities. Costs for necessary special handling or remediation of wastes (e.g., Resource Conservation and Recovery Act [RCRA] regulated), pollutants

and other contaminants, which are not regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), will be treated as project costs if the requirement is the result of a validly promulgated Federal, state or local regulation.

An American Society of Testing Materials (ASTM) E 1527-05 Phase I Environmental Site Assessment (ESA) entitled English Turn, Mississippi River and Levees, Orleans, Plaquemines, and St. Bernard Parishes, Louisiana (HTRW # 10-07) and dated March 12, 2010 was completed by USACE personnel for the proposed action and is on file in the Regional Planning and Environment Division, South, of USACE-MVN.

An American Society of Testing Materials (ASTM) E 1527-05 Phase I Environmental Site Assessment (ESA) entitled Plaquemines Parish Soil Mixing Site, Walker Road, Belle Chasse, Plaquemines Parish, Louisiana was completed November 3, 2010 for the proposed action and is on file in the Regional Planning and Environment Division, South, of USACE-MVN.

These Phase I Environmental Site Assessments documented the Recognized Environmental Conditions (RECs) for the project area. Eleven RECs were found in the vicinity of the project area. One well, Serial Number 98293, plugged and abandoned in 1963, is on the property, within the Soil Mixing work area. A No-Excavation Zone of 300-foot radius should be designated in the immediate vicinity of well # 98293. Surface activities, such as soil mixing, should not affect or be affected by the plugged oil well.

No other RECs were found within the footprint of the proposed action; therefore, it is unlikely that HTRW would be encountered during construction. If a REC is discovered and cannot be avoided, due to construction requirements, USACE-MVN may further investigate the REC to confirm the presence or absence of contaminants, actions to avoid possible contaminants, and whether local, state, or Federal coordination is required. Because USACE-MVN plans to avoid the known RECs, the probability of encountering HTRW in the project area is very low.

3.4.2. Discussion of Impacts

No Action

Direct, Indirect, and Cumulative

Potential flooding as a result of not providing the 100-year elevation could indirectly contribute to the dispersion of HTRW materials and environmental damage to local communities. Significant flooding can result in the mobilization and dispersion of HTRW from commercial, municipal, and residential sources. Hurricane damage clean-up experience has shown that vast quantities of debris and increasingly hazardous materials are dispersed into the terrestrial and aquatic environments when large-scale flooding occurs.

Alternative 1 (Proposed Action)

Direct

The potential to release HTRW materials or petroleum products during the construction process remains an environmental concern. Storage, fueling, and lubrication of equipment and motor vehicles associated with the construction process would be conducted in a manner that affords the maximum protection against spills and evaporation. Fuels, lubricants, oils, and other materials would be managed and stored in accordance with all Federal, state, and local laws and regulations. Used lubricants, used

oil, and other fluids would be stored in marked corrosion-resistant containers and recycled or disposed of in accordance with appropriate requirements. Contract specifications would require the construction contractor to develop a spill control plan.

Indirect

The proposed project would provide a greater level of risk reduction from storm-induced flooding than is available at present; therefore, the likelihood of floodwater dispersing HTRW would be reduced.

Cumulative

The cumulative impacts of the proposed action would be positive: improved protection from storm-induced flooding would reduce the likelihood of flood water dispersing HTRW.

3.5. Noise

3.5.1. Existing Conditions

The project area includes residential, commercial, and recreational areas with varying degrees of associated noise. Changes in noise are typically measured and reported in units of dBA, a weighted measure of sound level. The primary sources of noise within the area include everyday vehicular traffic along nearby roadways (typically between 50 and 60 dBA at 100 feet), maintenance of roadways, bridges, and the other structures (typically between 80 and 100 dBA at 50 feet), and the ongoing construction of various components of the existing floodwalls, pumping stations, and closure structures.

Noise effects to the residences and businesses within the project area are dominated by transportation sources such as trains, garbage and construction trucks, private vehicles, and emergency vehicles. Noise from occasional commercial aircraft crossing at high altitudes is typically indistinguishable from the natural background noise of the area. Noise ranging from about 10 dBA for the rustling of leaves to as much as 115 dBA (the upper limit for unprotected hearing exposure established by the Occupational Safety and Health Administration) is common in areas where there are sources of industrial operations, construction activities, and vehicular traffic.

The U.S. Federal Transit Administration (FTA) has established noise impact criteria founded on well-documented research on community reaction to noise based on change in noise exposure using a sliding scale (USFTA, 1995). The FTA Noise Impact Criteria groups noise sensitive land uses into the following three categories:

- Category 1: Buildings or parks where quiet is an essential element of their purpose,
- Category 2: Residences and buildings where people normally sleep (e.g., residences, hospitals, and hotels with high nighttime sensitivity), and
- Category 3: Institutional buildings with primarily daytime and evening use (e.g., schools, libraries, and churches).

The only Category 1 property in proximity to the alignment would be Tulane University's A Studio in the Woods at 13401 Patterson Road[5]. The facility is "a peaceful retreat where visual, literary, and performing artists can work uninterrupted" and is approximately 450 feet from the construction right-of-way.

[5] www.astudiointhewoods.org/sitw/

Throughout the entire project area, many residences (Category 2) are in close proximity (less than 300 feet) to the existing MRL and proposed action. The density of residences is greatest in Oakville and Belle Chasse, LA.

Category 3 buildings in proximity to the existing MRL include:

- Embry-Riddle Aeronautical University (approximately 1,000 feet),
- Belle Chasse Middle School (approximately 1,400 feet),
- Our Lady of Perpetual Help School (approximately 1,000 feet),
- The First Baptist Church in Belle Chasse (approximately 1,000 feet),
- The Belle Chasse Independent Church (approximately 1,000 feet),
- The Belle Chasse United Methodist Church (approximately 800 feet), and
- The Tulane University Museum of Natural History (approximately 300 feet).

3.5.2. Discussion of Impacts

No Action

Direct

Without construction of the HSDRRS for the Co-Located area, noise within the area would remain unchanged from current conditions where the largest source of noise is vehicle traffic and industrial activity along Louisiana Highway 23 paralleling the MRL.

Indirect

In the event of significant hurricane flooding, noise would be generated associated with the clean up after floodwaters had receded from the heavy equipment used for cleanup and reconstruction. Under the no action alternative, this cleanup and reconstruction noise would occur more frequently than if one of the action alternatives would be implemented.

Cumulative

There would be no cumulative effects associated with noise from selecting the no action alternative.

Alternative 1 (Proposed Action)
Direct, Indirect, and Cumulative

With the construction of the proposed action, noise would be created from high-powered machinery (Table 8) and human activities within the project right-of-way and emanate various distances beyond the construction site until the noise energy dissipated. The distance between the construction right-of-way and the Category 1 facility is approximately 450 feet from the existing right-of-way through a wooded lot. There are many Category 2 (residences) within 100-300 feet from the toe of the existing levee and four residences less than 100 feet from the existing levee toe in Oakville. Seven Category 3 facilities are in proximity to the proposed action, but none are closer than 300 feet and most would be greater than 1,000 feet away. Table 8 is a listing of noise generating equipment typically used for construction of levees, using data from the Federal Highway Administration (FHWA).

Table 8.
FHWA Noise Levels at Distance from the Source (dBA)

Noise Generator	50 feet*	100 feet*	200 feet*	500 feet*	1000 feet*
Dump Truck	76	70	64	56	50
Backhoe	78	72	68	58	52
Front End Loader	79	73	67	59	53
Concrete Mixer	79	73	67	59	53
Crane	81	75	69	61	55
Bull Dozer	82	76	70	62	56
Auger Drill	84	78	72	64	58
Pile Driver	91	85	79	71	65

* Distance from receptor. Source: FHWA 2007. The dBA at 50 feet is measured; the others are model estimates.

Construction activity, and the associated noise, can be quite annoying and disruptive during leisure hours, during sleep hours, and any time when loud continuous noises may affect receptors. Time constraints and use of equipment regulations can be effective in reducing the effects caused during these hours of the day. The basis for the noise control strategy is to limit the times that certain construction activities may be conducted. Generally, this can be accomplished by requiring contractors to perform such work during daylight hours when the majority of individuals who would ordinarily be affected by the noise are either not present or are engaged in less noise-sensitive activities.

4. CUMULATIVE IMPACTS

NEPA requires Federal agencies to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impact of the action. A cumulative impact is defined as "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 (40 CFR§1508.7)." Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. These actions include on- or off-site projects conducted by government agencies, businesses, or individuals that are within the spatial and temporal boundaries of the actions considered in this IER.

As indicated previously, in addition to this IER, the CEMVN is preparing a draft CED that would describe the work completed and the work remaining to be constructed. The purpose of the draft CED will be to document the work completed by the USACE on a system-wide scale. The draft CED will describe the integration of individual IERs into a systematic planning effort. Additionally, the draft CED will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review. Overall cumulative impacts and future operation maintenance, repair, replacement and rehabilitation requirements will also be included. The discussion provided below describes an overview of other actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed.

Providing the area enclosed by the Co-Located Project with the 100-year level of risk reduction would contribute to the protection of life and to the reduction of physical and environmental damage. Significant flooding often results in contamination of drinking water supplies, dispersion of HTRW, and dispersion of large quantities of solid waste that require clean up and disposal. Experience has shown that vast quantities of debris (e.g., homes, vehicles, mobile homes, etc.) and sediment must be collected and hauled away after a flooding event. Hauling the collected debris to a local municipal landfill requires significant transportation and involves large quantities of solid waste that fill available landfill space. Providing the 100-year level of risk reduction reduces the probability that these environmental consequences of flooding would be incurred.

Negative effects associated with implementation of the proposed action that could contribute cumulatively with the effects of other projects include temporary construction-related increases in truck traffic, noise and vibration, vehicle and equipment emissions, and minor localized degradation of water quality. There would be no permanent loss of aquatic habitat, terrestrial habitat, or wetlands. The total loss of habitat related to the implementation of all actions under all of the IERs has not yet been compiled, but the current totals are presented in table 9. The positive cumulative effects of implementing the proposed action include the temporary expansion of the local economy through the influx of construction-related expenditures.

Currently, the WBV project extends approximately 66 miles in length from the Western Tie-in in St. Charles Parish to the Hero Canal Levee and Eastern Terminus in Belle Chasse (IER # 13) (USACE, 2007). Upon completion of the WBV-MRL Co-located work, the WBV project would subsequently be increased from approximately 66 miles to approximately 81.6 miles ending at the upper limit of the proposed action under IER #33, or around river mile 85.5 of the westbank MRL. The LPV Project (IERs # 1-11) extends an even larger distance protecting the East Bank of New Orleans. The construction-related negative effects as well as the positive consequences (e.g., spending in the local economy) resulting from providing the 100-year level of hurricane damage risk reduction for these projects may potentially represent the largest cumulative environmental consequences in the New Orleans region for the next 4 years to 7 years.

Table 9. HSDRRS Impacts and Compensatory Mitigation to be Completed

IER	Parish	Side	Non-wet BLH	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	Water (EFH)
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
1 LaBranche Levee	St. Charles	Protected	-	-	-	-	137.50	73.99	-	-	-
		Flood	-	-	11.33	8.09	143.57	110.97	-	-	
1 Supp. LaBranche Levee	St. Charles	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
2 West Return Floodwall	St. Charles, Jefferson	Protected	-	-	-	-	-	-	-	-	75.00
		Flood	-	-	-	-	-	-	17.00	9.00	
3 Jefferson Lakefront Levee	Jefferson	Protected	-	-	-	-	-	-	-	-	26.40
		Flood	-	-	-	-	-	-	-	-	
4 Orleans Lakefront Levee	Orleans	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
5 Lakefront Pump Stations	Jefferson, Orleans	Protected	-	-	-	-	-	-	-	-	3.20
		Flood	-	-	-	-	-	-	-	-	
6 Citrus Lands Levee	Orleans	Protected	-	-	-	-	-	-	-	-	6.90
		Flood	-	-	-	-	-	-	0.00	-	
7 Lakefront Levee	Orleans	Protected	-	-	151.70	79.30	-	-	100.40	36.80	106.00
		Flood	-	-	30.00	11.90	-	-	70.00	37.20	
7 Supp Lakefront Levee	Orleans	Protected	-	-	17.30	9.90	-	-	18.60	6.10	-
		Flood	-	-	2.80	0.30	-	-	56.00	29.80	
8 Bayou Bienvenue/Dupre	St. Bernard	Protected	-	-	-	-	-	-	-	-	0.30
		Flood	-	-	-	-	-	-	-	-	
9 Caenarvon Floodwall	St. Bernard	Protected	-	-	-	-	-	-	-	-	-
		Flood	10.00	4.65	1.16	0.66	-	-	1.90	1.20	
10 Chalmette Loop	St. Bernard	Protected	-	-	38.32	16.44	-	-	106.55	57.31	95.00
		Flood	-	-	35.31	15.22	-	-	323.04	209.94	
11 Tier 2 Borgne IHNC	Orleans, St. Bernard	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	15.00	2.59	-	-	122.00	24.33	

IER	Parish	Side	Non-wet BLH	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	Water (EFH)
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
11 Tier 2 Pontchartrain IHNC	Orleans, St. Bernard	Protected	-	-	-	-	-	-	-	-	7.00
		Flood	-	-	-	-	-	-	-	-	
12 GIWW, Harvey, Algiers	Jefferson, Orleans, Plaquemines	Protected	-	-	251.70	177.3	-	-	-	-	-
		Flood	-	-	2.30	1.90	74.90	38.50	-	-	
13 Hero Canal, East. Terminus	Plaquemines	Protected	-	-	13.00	7.80	-	-	-	-	-
		Flood	-	-	19.00	10.59	39.00	28.87	-	-	
14 Westwego to Harvey Levee	Jefferson	Protected	-	-	45.00	30.00	-	-	-	-	-
		Flood	-	-	45.50	18.58	29.75	17.02	-	-	
14 Supp. Westwego to Harvey Levee	Jefferson	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	42.00	24.00	-	-	
15 Lake Cataouatche	Jefferson	Protected	-	-	23.50	6.13	-	-	-	-	-
		Flood	-	-	3.60	1.35	-	-	-	-	
16 Western Tie-in	Jefferson, St. Charles	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	137.80	66.30	
16 Supp Western Tie-in	Jefferson, St. Charles	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	79.10	37.26	-	-	-	-	
17 Company Canal Floodwall	Jefferson	Protected	-	-	5.50	2.69	-	-	-	-	-
		Flood	-	-	-	-	19.00	17.09	-	-	
18 GFBM	Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles	Protected	379.30	152.32	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
19 CFBM	Hancock County, MS; Iberville, Jefferson, Orleans, Plaquemines, St. Bernard	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
22 GFBM	Jefferson, Plaquemines	Protected	244.69	118.54	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
23 CFBM	Hancock County, MS; Plaquemines, St. Bernard, St. Charles	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
25 GFBM	Jefferson, Orleans, Plaquemines	Protected	933.00	284.00	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	

IER	Parish	Side	Non-wet BLH	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	Water (EFH)
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
26 CFBM	Jefferson, Plaquemines, St. John the Baptist; Hancock, MS	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
27 Lakefront Pump Stations	Orleans	Protected	-	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
28 GFBM	Jefferson, Plaquemines, St. Bernard	Protected	19.94	8.45	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
29 CFBM	Orleans, St. Tammany, St. John the Baptist	Protected	107.30	48.60	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
30 CFBM	St. Bernard and St. James; Hancock,MS	Protected	225.00	189.40	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
31 CFBM	E.Baton Rouge, Jeff, Lafourche, Plaquem, St. Bern, St. Tam; Hancock, MS	Protected	965.3	-	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
32 CFBM	Ascension, Plaquemines, St. Charles	Protected	202.10	97.43	-	-	-	-	-	-	-
		Flood	-	-	-	-	-	-	-	-	
Totals		Protected	3086.63	708.32	545.52	329.22	137.50	73.99	225.55	100.21	00.00
		Flood	10.00	4.65	323.80	163.33	350.02	237.30	740.54	388.42	230.99
		Both	3096.63	712.97	869.32	492.55	487.52	311.29	966.09	488.63	230.99

BLH – Bottomland Hardwood
AAHUs – Annual average habitat units are the total number of habitat units gained or lost as a result of a proposed action, divided by the life of the action
- Not applicable to the IER or number impacted is 0
GFBM: Government Furnished Borrow Material
CFBM: Contractor Furnished Borrow Material

5. SELECTION RATIONALE

On the basis of the assessment of potential environmental impacts presented in this IER and the evaluation of feasibility based on the engineering effectiveness, economic efficiency, and environmental and social acceptability criteria, the proposed action is selected and is environmentally preferred.

The CEQ regulations for implementing NEPA require that the Record of Decision (ROD) for an environmental impact statement specify "the alternative or alternatives which were considered to be environmentally preferable" (40 CFR §1505.2(b)). This alternative has generally been interpreted to mean the alternative that would promote the national environmental policy as expressed in NEPA's Section 101 (CEQ's "Forty Most-Asked Questions," 46 Federal Register, 18026, March 23, 1981). Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources.

The proposed action for IER #33 presents an engineering-effective, cost-efficient, environmentally-preferable selection to other alternatives. Taking no action, although avoiding the direct effects from construction of the 100-year level of risk reduction EAM, may lead to indirect effects from large-scale flooding to area residences and businesses, and associated costs for clean up.

Failing to provide residents with flood damage risk reduction measures could, in the predictable occurrence of a significant flood, contribute to the loss of life and physical as well as environmental damage to Plaquemines Parish and Orleans Parish. Significant flooding can result in the overtopping of water and sewage treatment works, contamination of drinking water supplies, dispersion of HTRW and dispersion of large quantities of solid waste that need clean up from the floodplain when the storm surge subsides. Substantial quantities of debris (e.g., homes, vehicles, mobile homes, etc.) and sediment must be removed from the area after a flooding event. The physical removal of the debris from the damaged area typically involves large, heavy equipment and requires the removal of trees and vegetation to provide points of ingress and egress for the cleanup equipment. Hauling the collected debris to a local municipal landfill requires significant transportation, construction-type noise during cleanup, and involves huge quantities of solid waste that fill available landfill space.

Debris generated as a result of hurricane damages to Louisiana in 2005 has been estimated at 26.5 million cubic yards; all of this debris needed to be removed for appropriate disposal (USACE, 2007). Assuming the clean up was performed using dump trucks that could haul 40 CY of debris, the debris removal alone would require more than 1 million truckloads and tens of millions of miles traveled (USACE, 2007). Failing to provide New Orleans with appropriate hurricane risk reduction would eventually result in a damaging storm causing substantial quantities of debris requiring extraction, transportation, and disposal.

6. COORDINATION AND CONSULTATION

Preparation of this IER has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. An interagency environmental team was established for this project in which Federal and state agency staff played an integral part in the project planning and alternative analysis phases of the project (members of this team are listed in appendix D). This interagency environmental team was integrated with the CEMVN Project Delivery Team to assist in the planning of this project and to complete a mitigation determination of the potential

direct and indirect impacts of the proposed action. Monthly meetings with resource agencies were also held concerning this and other CEMVN IER projects. Project-specific discussion of the proposed IER #33 project took place as part of the demonstration project during the fall of 2010. The following agencies, as well as other interested parties, are receiving copies of this draft IER:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of the Interior, National Park Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer

The USFWS has reviewed the proposed action and in a letter dated November 2, 2010, stated that the USFWS is unaware of any known threatened or endangered species under its jurisdiction in the proposed project area. National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) will review the proposed action during the 30-day review and comment period to ensure compliance with Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act.

In their November 8, 2007 correspondence, the NMFS Protected Resources Division provided a list of threatened and endangered species under their jurisdiction in Louisiana. Based on that information, the CEMVN made a determination of no effect for species under NMFS jurisdiction. In addition, Essential Fish Habitat (EFH) has not been designated for any of the contract reaches, so no further coordination on EFH is required.

In compliance with the Coastal Zone Management Act, the CEMVN applied for Coastal Zone Consistency concurrence from the Louisiana Department of Natural Resources by letter dated October 19, 2010.

A Water Quality Certification has been requested from the Louisiana Department of Environmental Quality (LDEQ) by letter dated October 19, 2010.

Section 106 of the National Historic Preservation Act, as amended, requires consultation with SHPO and Native American tribes. SHPO is reviewing the proposed action for its potential to adversely affect any significant cultural resources. Eleven Federally recognized tribes that have an interest in the region are being given the opportunity to review and comment on the proposed action.

The USFWS reviewed the proposed action in accordance with the Fish and Wildlife Coordination Act and have provided a draft Coordination Act Report for IER #33 dated November 2, 2010. A final report would be prepared after the 30-day public review of IER #33 and comments related to USFWS trust resources have been resolved.

Programmatic Recommendations of the U.S. Fish and Wildlife Service.

In November 2007, the USFWS provided programmatic recommendations, in the "Draft Fish and Wildlife Coordination Act Report for the Individual Environmental Reports (IER), Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4)". The uncertainties in the design of several projects prohibited a complete evaluation of the

impacts to fish and wildlife species and the reporting responsibilities under Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended: 16 U.S.C. 661 et seq.). Therefore, a subsequent final supplemental report will be provided by the USFWS at a later date. The draft (programmatic) Fish and Wildlife Coordination Act Report for the IERs dated November 2007, can be accessed through the www.nolaenvironmental.gov website.

The USFWS' programmatic recommendations applicable to this project will be incorporated into project design studies to the extent practicable, consistent with engineering and public safety requirements. The USFWS' programmatic recommendations, and the CEMVN's response to them, are listed below:

Recommendation 1: To the greatest extent possible, situate flood risk reduction so that destruction of wetlands and non-wet bottomland hardwoods are avoided or minimized.

CEMVN Response 1: The project would utilize the authorized level of risk reduction footprint to avoid and minimize impacts to wetlands.

Recommendation 2: Minimize enclosure of wetlands with new levee alignments. When enclosing wetlands is unavoidable, acquire non-development easements on those wetlands, or maintain hydrologic connections with adjacent, un-enclosed wetlands to minimize secondary impacts from development and hydrologic alteration.

CEMVN Response 2: Not applicable.

Recommendation 3: Avoid adverse impacts to bald eagle nesting locations and wading bird colonies through careful design project features and timing of construction.

CEMVN Response 3: No known bald eagle nesting locations or wading bird colonies exist within the scope of this project.

Recommendation 4: Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

CEMVN Response 4: This recommendation will be considered in the design and implementation of the project to the greatest extent practicable.

Recommendation 5: The project's first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation features.

CEMVN Response 5: USACE Project Partnering Agreements (PPA) do not contain language mandating the availability of funds for specific project features, but require the non-Federal sponsor to provide certification of sufficient funding for the entire project. Further, mitigation components are considered a feature of the entire project. The non-Federal sponsor is responsible for Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) of all project features in accordance with the OMRR&R manual that the USACE provides upon completion of the project.

Recommendation 6: Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the USFWS, NMFS, LDWF, USEPA, and LDNR. The USFWS shall be provided an opportunity to review and submit recommendations on all the work addressed in those reports.

CEMVN Response 6: Concur.

Recommendation 7: The CEMVN should avoid impacts to public lands, if feasible. If not feasible, the CEMVN should establish and continue coordination with agencies managing public lands that may be impacted by a project feature until construction of that

feature is complete and prior to any subsequent maintenance. Points of contacts for the agencies overseeing public lands potentially impacted by project features are: Kenneth Litzenberger, Project Leader for the USFWS' Southeast National Wildlife Refuges, and Jack Bohannan (985)822-2000, Refuge Manager for the Bayou Sauvage National Wildlife Refuge (NWR), Office of State Parks contact Mr. John Lavin at (888)677-1400, National Park Service (NPS) contact Superintendent David Luchsinger, (504)589-3882, extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management David Muth (504)589-3882, extension 128 (david_muth@nps.gov) and for the 404(c) area contact the previously mentioned NPS personnel and Ms. Barbara Keeler (214)665-6698 with the USEPA.

CEMVN Response 7: Concur.

Recommendation 8: If applicable, a General Plan should be developed by the CEMVN, the USFWS, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

CEMVN Response 8: Concur.

Recommendation 9: If mitigation lands are purchased for inclusion within a NWR, those lands must meet certain requirements; a summary of some of those requirements is provided in Appendix A (to the Draft Fish and Wildlife Coordination Act Report.) Other land-managing natural resource agencies may have similar requirements that must be met prior to accepting mitigation lands; therefore, if they are proposed as a manager of a mitigation site, they should be contacted early in the planning phase regarding such requirements.

CEMVN Response 9: Concur.

Recommendation 10: If a proposed project feature is changed significantly or is not implemented within one year of the date of the Endangered Species Act consultation letter, the USFWS recommended that the Corps reinitiate coordination to ensure that the proposed project would not adversely affect any Federally-listed threatened or endangered species or their habitat.

CEMVN Response 10: Concur.

Recommendation 11: In general, larger and more numerous openings in a risk reduction levee better maintain estuarine-dependent fishery migration. Therefore, as many openings as practicable, in number, size, and diversity of locations should be incorporated into project levees.

CEMVN Response 11: Not applicable.

Recommendation 12: Flood risk reduction water control structures in any watercourse should maintain pre-project cross-sections in width and depth to the maximum extent practicable, especially structures located in tidal passes.

CEMVN Response 12: Not applicable.

Recommendation 13: Flood risk reduction water control structures should remain completely open except during storm events. Management of those structures should be developed in coordination with the USFWS, NMFS, LDWF, and LDNR.

CEMVN Response 13: Not applicable.

Recommendation 14: Any flood risk reduction water control structure sited in canals, bayous, or a navigation channel which does not maintain the pre-project cross-section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

CEMVN Response 14: Not applicable.

Recommendation 15: The number and siting of openings in flood risk reduction levees should be optimized to minimize the migratory distance from the opening to enclosed wetland habitats.

CEMVN Response 15: Not applicable.

Recommendation 16: Flood risk reduction structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered.

CEMVN Response 16: Not applicable.

Recommendation 17: To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 ft per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

CEMVN Response 17: Not applicable.

Recommendation 18: To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts selected should maintain sufficient flow to prevent siltation.

CEMVN Response 18: Concur.

Recommendation 19: Culverts should be installed in construction access roads unless otherwise recommended by the natural resource agencies. At a minimum, there should be one 24-inch culvert placed every 500 ft and one at natural stream crossings. If the depth of water crossings allow, larger-sized culverts should be used. Culvert spacing should be optimized on a case-by-case basis. A culvert may be necessary if the road is less than 500 feet long and an area would hydrologically be isolated without that culvert.

CEMVN Response 19: Concur.

Recommendation 20: Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

CEMVN Response 20: Not applicable.

Recommendation 21: Levee alignments and water control structure alternatives should be selected to avoid the need for fishery organisms to pass through multiple structures (i.e., structures behind structures) to access an area.

CEMVN Response 21: Not applicable.

Recommendation 22: Operational plans for water control structures should be developed to maximize the cross-sectional area open 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.

CEMVN Response 22: Concur.

Recommendation 23: The CEMVN shall fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

CEMVN Response 23: Concur.

Recommendation 24: Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the CEMVN shall provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

CEMVN Response 24: Construction of the project features are cost shared between the Government and the non-Federal sponsor. However, costs for operation, maintenance, repair, replacement, and rehabilitation would be the responsibility of the non-Federal sponsor.

Recommendation 25: Any proposed change in mitigation features or plans should be coordinated in advance with the USFWS, NMFS, LDWF, USEPA, and LDNR.

CEMVN Response 25: Mitigation for the impacts caused by this project will be coordinated through a mitigation IER. Any changes to the mitigation plan in this IER would be coordinated in advance.

Recommendation 26: A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the CEMVN, USFWS, NMFS, USEPA, LDNR, and LDWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.

CEMVN Response 26: Concur.

Project-Specific Recommendations of the U.S. Fish and Wildlife Service

The USFWS' project-specific recommendations in their Draft Coordination Act Report dated November 2, 2010, and the CEMVN's response to the recommendations are listed below:

Recommendation 1: The Corps should avoid impacts to all public lands to the maximum extent practicable, though we are not aware of any publically owned or managed lands in the immediate project vicinity.

CEMVN Response 1: Concur. Disruption of public lands is being kept to a minimum, although some of the vegetation and topsoil from the levee may be placed on Plaquemines Parish property at the request of the Parish, so that the Parish can use it to enhance their publically-owned and operated facilities.

Recommendation 2: On site contract personnel should be informed to identify nesting sites for bald eagles and wading birds and should avoid affecting them during the breeding season.

CEMVN Response: Concur. The construction contracts will contain language requiring the contractor to avoid disturbing such nesting sites. In addition, Corps personnel will inspect the areas near construction activities, during the nesting season, to identify and make provisions to avoid, any such nesting sites.

Recommendation 3: We recommend that you notify the Service of any project changes that could have a negative effect on fish and wildlife within our purview, and include the Service in future planning efforts related to the evaluation and selection of Resilient Features, particularly those that would impact areas outside of the existing levee right-of-way.

CEMVN Response: Concur. The Corps will advise the Service of any changes to the proposed action that could impact fish and wildlife resources and the Service will

definitely be notified and engaged in the planning and development of the Resilient Features.

7. COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Construction of the proposed action would not commence until the proposed action achieves environmental compliance with all applicable laws and regulations, as described below.

Environmental compliance for the proposed action would be achieved upon coordination of this IER with appropriate agencies, organizations, and individuals for their review and comments; USFWS and NMFS confirmation that the proposed action would not adversely affect any threatened or endangered species or require completion of Endangered Species Act Section 7 consultation; LDNR concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LCRP; receipt of a Water Quality Certification from the State of Louisiana; public review of the Section 404(b)(1) Public Notice and signature of the Section 404(b)(1) Evaluation; coordination with the Louisiana SHPO; receipt and acceptance or resolution of all Fish and Wildlife Coordination Act recommendations; and receipt and acceptance or resolution of all Essential Fish Habitat recommendations.

Executive Order (E.O.) 11988. E.O. 11988, Floodplain Management, addresses minimizing or avoiding adverse impacts associated with the base floodplain unless there are no practicable alternatives. It also involves giving public notice of proposed actions that may affect the base floodplain. The proposed action would not accelerate development of the floodplain for the following reasons: development of the study area is more closely related to access routes and the need for affordable housing space than flooding potential and conditions conducive for development were established initially when the area was levied and forced drainage was initiated in the middle 1960s.

Executive Order 11990. E.O. 11990, Protection of Wetlands, has been important in project planning. It is acknowledged that much of the area being enclosed by the proposed alignment consists of wetlands, but other linear features have previously enclosed these wetlands. The construction of the drainage canal integral to the alignment would have essentially no indirect effect on the rate of drainage from the area. Increased pumping station capacities are not a part of this action.

Consistency with Coastal Zone Management (CZM) Program. The CEMVN has determined that construction and maintenance of 100-year level of risk reduction along the WBV/MRL Co-Located Project is consistent, to the maximum extent practicable, with the guidelines of the State of Louisiana's approved Coastal Zone Management Program. A CZM consistency determination was prepared and provided to the LDNR by latter dated October 19, 2010.

Clean Air Act. The original 1970 Clean Air Act (CAA) authorized the USEPA to establish National Ambient Air Quality Standards (NAAQS) to limit levels of pollutants in the air. USEPA has promulgated NAAQS for six criteria pollutants: sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO), ozone, lead, and particulate matter (PM-10). All areas of the United States must maintain ambient levels of these pollutants below the ceilings established by the NAAQS; any area that does not meet these standards is considered a "non-attainment" area (NAA). The 1990 Amendments require that the boundaries of serious, severe, or extreme ozone or CO non-attainment areas located within Metropolitan Statistical Areas (MSAs) or Consolidated Metropolitan Statistical Areas (CMSAs) be expanded to include the entire MSA or CMSA unless the

governor makes certain findings and the Administrator of the USEPA concurs. Consequently, all urban counties included in an affected MSA or CMSA, regardless of their attainment status, will become part of the NAA. The project is located in Plaquemines and Orleans Parishes, which are both classified as attainment areas; therefore NAAQS are not applicable to this project.

Clean Water Act. The Clean Water Act (CWA; 33 U.S.C. 1251-1387; Act of June 30, 1948, as amended) is a very broad statute with the goal of maintaining and restoring waters of the United States. The CWA authorizes water quality and pollution research, provides grants for sewage treatment facilities, sets pollution discharge and water quality standards, addresses oil and hazardous substances liability, and establishes permit programs for water quality, point source pollutant discharges, ocean pollution discharges, and dredging or filling of wetlands. The intent of the CWA's §404 program and it's §404(b)(1) "Guidelines" is to prevent destruction of aquatic ecosystems including wetlands, unless the action will not individually or cumulatively adversely affect the ecosystem.

Section 404(b)(1) guidelines were used to evaluate the discharge of dredged or fill material for adverse impacts to the aquatic ecosystem. The following actions would be taken to minimize the potential for adverse environmental impacts. Non-forested wetlands, consisting of mown levee grasses or grazed pasture, were not mitigated because of their low value to fish and wildlife resources. Any disturbance to the mowed wetlands within the levee maintenance corridor would be temporary and the area would be restored to its pre-project condition, as part of the construction contract, after the need for using the area has passed. The proposed project complies with the requirements of the guidelines.

Endangered Species Act. The Endangered Species Act (16 U.S.C. 1531-1543; P.L. 93-205, as amended) was enacted in 1973 to provide for the conservation of species that are in danger of extinction throughout all or a significant portion of their range. "Species" is defined by the Act to mean either a species, a subspecies, or, for vertebrates (i.e., fish, reptiles, mammals, etc.) only, a distinct population. No threatened or endangered species or their critical habitat would be impacted by the proposed action. The USFWS concurred with the CEMVN determination in their letter dated November 2, 2010 and in the draft Coordination Act Report dated November 2, 2010.

Fish and Wildlife Coordination Act. The Fish and Wildlife Coordination Act (16 U.S.C. 661-666c; Act of March 10, 1934, as amended) requires that wildlife, including fish, receive equal consideration and be coordinated with other aspects of water resource development. This is accomplished by requiring consultation with the USFWS and NMFS whenever modifications are proposed to a body of water and a Federal permit or license is required. This consultation determines the possible harm to fish and wildlife resources, and the measures that are needed to both prevent the damage to and loss of these resources, and to develop and improve the resources, in connection with water resource development. NMFS submits comments and recommendations to Federal licensing and permitting agencies, and to Federal agencies conducting construction projects on the potential harm to living marine resources caused by proposed water development projects, and suggests recommendations to prevent harm. The USFWS provided the “Draft Fish and Wildlife Coordination Act Report for the Individual Environmental Reports (IER), Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4)” in November 2007 (USFWS, 2007).

To fulfill the responsibilities of the Fish and Wildlife Coordination Act, the USFWS will provide a post-authorization final supplemental 2(b) report to the draft programmatic report. A draft project-specific Coordination Act Report was received from USFWS by

letter dated November 2, 2010. A final report would be prepared after the 30-day public review period and all comments regarding USFWS trust resources have been resolved, and before a final IER has been completed.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over-utilization. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take. The MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, of any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR §21.11). The USFWS addressed compliance with this Act in the "Draft Fish and Wildlife Coordination Act Report for the IER, Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4)" in November 2007 (USFWS, 2007). To fulfill the responsibilities of the Fish and Wildlife Coordination Act, the USFWS will provide a post-authorization final supplemental 2(b) report to the draft programmatic report.

National Environmental Policy Act. The National Environmental Policy Act (NEPA; 42 U.S.C. 4321-4347; Pub. L. 91-190, as amended) requires Federal agencies to analyze the potential effects of a proposed Federal action that would significantly affect historical, cultural, or natural aspects of the environment. It specifically requires agencies to use a systematic, interdisciplinary approach in planning and decision-making, to insure that environmental values may be given appropriate consideration, and to provide detailed statements on the environmental impacts of proposed actions including: (1) any adverse impacts; (2) alternatives to the proposed action; and (3) the relationship between short-term uses and long-term productivity. The agencies use the results of this analysis decision-making. The preparation of this IER is a part of compliance with NEPA.

National Historic Preservation Act. Congress established the most comprehensive national policy on historic preservation with the passage of the National Historic Preservation Act of 1966 (NHPA). In this Act, historic preservation was defined to include "the protection, rehabilitation, restoration and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, or culture." The Act led to the creation of the National Register of Historic Places, a file of cultural resources of national, regional, state, and local significance. The act also established the Advisory Council on Historic Preservation (the Council), an independent Federal agency responsible for administering the protective provisions of the act. The major provisions of the NHPA are Sections 106 and 110. Both sections aim to ensure that historic properties are appropriately considered in planning Federal initiatives and actions. Section 106 is a specific, issue-related mandate to which Federal agencies must adhere. It is a reactive mechanism that is driven by a Federal action. Section 110, in contrast, sets out broad Federal agency responsibilities with respect to historic properties. It is a proactive mechanism with emphasis on ongoing management of historic preservation sites and activities at Federal facilities. Coordination of this project with SHPO will fulfill the requirements to comply with the NHPA.

8. CONCLUSION

8.1. Proposed Decision

The proposed action for IER#33 would require construction of approximately 15.5 miles of soil crown cap levee on the west bank Mississippi River Levee. For locations where the existing levee is 2 feet or less deficient (the upstream-most 2 miles), the crown cap would be constructed of untreated clay; where the existing levee is greater than two feet deficient (all other contract reaches), the crown cap would be constructed with stabilized soil (soil mixed with lime, fly-ash and/or bed-ash). Soil from other previously investigated government or contractor furnished locations would be mixed with lime, fly-ash and/or bed-ash at the Walker Road borrow area and then transported to the MRL for placement upon the levee.

The CEMVN has assessed the environmental impacts of the proposed action and has determined that the proposed action would have the following impacts:

- Short-term impact to air quality from heavy equipment and trucks used during the construction and maintenance thereafter of the EAM providing 100-year level of risk reduction,
- Temporary, construction-related decrease in the water quality from runoff of sediment during earth moving activities,
- Temporary indirect effects to fish and wildlife species due to construction activities (e.g., noise, vibration) within adjacent wetlands or aquatic habitat,
- Temporary displacement of fish in aquatic shallows of the Mississippi River and temporary displacement of wading birds, waterfowl, or other wildlife adjacent to the footprint of construction,
- Temporary effects from construction-related activities to 27 acres of wetlands within the 15-foot corridor paralleling the river-side of the MRL. These effects would not require compensatory wetland mitigation (USFWS, 2010),
- Permanent direct effects to the aesthetic (visual) resource of the MRL corridor for the adjacent residences and businesses. Existing views of the MRL corridor encompass a grassy vista that blends with the natural vegetation and different hues of greens, blues and other soft, natural colors. In the contract reaches that would utilize stabilized soil (1.1-4.1), the view would be split by a clay-soil colored line, starkly contrasting within the existing MRL viewshed,
- There are historic properties which may be affected by the proposed action; however, conditions would be imposed to avoid adverse effects to historic properties. To avoid adverse effects to historic properties within and adjacent to the right-of-way, “no staging areas” would be designated in the immediate vicinity of historic properties. Geotextile and appropriate material would be placed over the three buried sites within the existing right-of-way to ensure that project activities do not adversely affect the archaeological deposits. In addition, an archaeological monitor would be present during work in the vicinity of historic properties. Section 106 consultation is ongoing and will be concluded prior to the execution of the decision record. The CEMVN has requested that the SHPO and Indian tribes review and comment on our finding of “no adverse effect” pursuant to 36 CFR 800, of the regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f). If historic properties are discovered or unanticipated effects on historic properties are found after conclusion of Section 106 consultation, the CEMVN shall make reasonable efforts to avoid,

minimize or mitigate adverse effects to such properties and continue consultation pursuant to 36 CFR 800.13.and

- Significant hurricane risk reduction for the residences and businesses in proximity to the Co-Located Project.

8.2. Prepared By

The point of contact and responsible manager for the preparation of this IER is Mark Lahare, CEMVN. The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Regional Planning Division South, New Orleans Environmental Branch, CEMVN-PDR-R; P.O. Box 60267; New Orleans, Louisiana 70160-0267. Table 10 lists the preparers of the various sections and topics in this IER.

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9. APPENDICES

9.1. Appendix A – List of Acronyms and Definitions of Common Terms

AAHUs	Annual Average Habitat Units
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
BLH	Bottomland Hardwood Forest
BOD	Biological Oxygen Demand
CED	Comprehensive Environmental Document
CEMVN	Corps of Engineers, Mississippi Valley Division, New Orleans District
CEMVS	Corps of Engineers, Mississippi Valley Division, St. Lewis District
CEQ	The President's Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFBM	Contractor Furnished Borrow Material
CFR	Code of Federal Regulations
CSMA	Consolidated Metropolitan Statistical Area
CW	Civil Works Program
CWA	Clean Water Act
CY	Cubic Yard
CZM	Coastal Zone Management
dBA	Decibels
EA	Environmental Assessment
EAMs	Engineered Alternative Measures
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EM	Engineering Manual
EO	Executive Order
ER	Engineering Regulation
ESA	Environmental Site Assessment
ESRI	Environmental Systems Research Institute
FCU	Functional Capacity Units
FCI	Functional Capacity Index
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
GFBM	Government Furnished Borrow Material
HPS	Hurricane Protection System
HSDRRS	Hurricane and Storm Damage Risk Reduction System
HTRW	Hazardous, Toxic, and Radioactive Waste
IER	Individual Environmental Report
IRC	Integrated Report Category
LCRP	Louisiana Coastal Resources Program
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LERRDs	Lands, Easements, Relocations, Rights-of-Way, and Disposal Areas

LPV	Lake Pontchartrain and Vicinity
MBTA	Migratory Bird Treaty Act
MPH	Miles per Hour
MRL	Mississippi River Levee
MR&T	Mississippi River and Tributaries
MSA	Metropolitan Statistical Area
NAA	Non Attainment Area
NAAQS	National Ambient Air Quality Standards
NAVD	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHP	Natural Heritage Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOx	Oxides of Nitrogen
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O&M	Operations And Maintenance
OMRR&R	Operations, Maintenance, Repair, Replacement, & Rehabilitation
OSE	Other Social Effects
PA	Programmatic Agreement
PDT	Project Delivery Team
pH	Unit of Measure for acids/bases
PL	Public Law
PM	Particulate Materials
PPA	Project Partnership Agreement
PSI	Pounds Per Square Inch
P&G	Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RED	Regional Economic Development
RM	River Mile
ROD	Record of Decision
ROW	Right(s)-of-Way
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	Sulphur Dioxide
SPH	Standard Project Hurricane
TMDL	Total Maximum Daily Load
USACE	United States Army Corps Of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish And Wildlife Service
USGS	United States Geological Survey
VOC	Volatile Organic Compounds
WBV	West Bank and Vicinity
WRDA	Water Resources Development Act

9.2. Appendix B – Public Comment and Response Summary

(HELD FOR COMMENTS ON DRAFT IER THAT WILL BE IN THE FINAL IER)

9.3. Appendix C – Institutional, Ecological, and Public Significance of Resources

SIGNIFICANCE OF RESOURCES

The National Environmental Policy Act (NEPA) requires Federal agencies to analyze the impacts of proposed actions on those resources that are considered "significant." Table 11 provides a list of resources that are commonly found in the vicinity of the MRL Co-Located Project (IER#33). In providing a list of some of the key laws and regulations governing these resources, as well as a short description of some of their ecological and human environment value, this table offers a rationale for why these resources are considered significant for the purposes of NEPA analysis.

Table 11. Institutional, Ecological, and Public Significance of Resources

	GOVERNING LAWS AND REGULATIONS	ECOLOGICAL and HUMAN ENVIRONMENT VALUE
Agriculture	Farmland Protection Policy Act of 1981; Food Security Act of 1985; Prime and Unique Farmlands, 1980 CEQ Memorandum	Provision or potential for provision of forest products and human and livestock food products
Air	Clean Air Act of 1963, as amended; Deepwater Port Act of 1974 Louisiana Air Control Act; Louisiana Environmental Quality Act of 1983 National Ambient Air Quality Standards (NAAQS)	Clean air is important for human health and safety
Coastal Zones	Coastal Barrier Resources Act of 1982, 1990, as amended; Coastal Zone Management Act of 1972; Coastal Zone Protection Act of 1996; Deepwater Port Act of 1974 Federal Water Project Recreation Act of 1965; Outer Continental Shelf Lands Act of 1953; Submerged Land Act of 1953	Barrier islands: Protect mainland and associated fish, wildlife, and other natural resources. Coastal zones: Protect wetlands*, floodplains*, estuaries*, beaches, dunes, barrier islands, reefs, bays, ponds, bayous, dunes, and fish and wildlife* and their habitats *See specific resources for additional regulations
Cultural and Historic	Abandoned Shipwreck Act of 1987; American Folklife Preservation Act of 1976; American Indian Religious Freedom Act of 1978; Antiquities Act of 1906 Archaeological Resources Protection Act of 1979; Archaeological and Historical Preservation Act of 1974; Consultation and Coordination with Indian Tribal Governments (EO 13175) of 2000; Historic Sites Act of 1935; Historic and Archaeological Data-Preservation of 1974; Indian Sacred Sites (EO 13007) of 1996 National Historic Preservation Act of 1966; Native American Graves Protection and Repatriation Act of 1990; Protection and Enhancement of the Cultural Environment (EO 11593) of 1971; Protection of Cultural Property (EO 12555) of 1986; Reclamation Projects Authorization and Adjustments Act of 1992	Their association or linkage to past events, to historically important persons, and to design and/or construction values Their ability to yield important information about prehistory and history

	GOVERNING LAWS AND REGULATIONS	ECOLOGICAL and HUMAN ENVIRONMENT VALUE
Economic Resources	Deepwater Port Act of 1974; Environmental Review of Trade Agreements (EO 13141) of 1999	Strong economies enhance human standards of living and can allow for greater expendability of funds for the protection and enhancement of ecological resources Trade agreements and international trade can have both positive and negative environmental effects Positive effects can include greater cooperation between nation states in preserving species which cross political boundaries
Endangered/Threatened Species	Bald Eagle Protection Act of 1940; Endangered Species Act of 1973; Marine Mammal Protection Act of 1972	The status of such species provides an indication of the overall health of an ecosystem. US Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Louisiana Department of Wildlife and Fisheries (LDWF), and USACE cooperate to protect endangered and threatened species; Audubon Blue List recognizes rare species
Environmental Justice	American Indian Religious Freedom Act of 1978; Civil Rights Act of 1964; Consultation and Coordination with Indian Tribal Governments (EO 13175) of 2000; Executive Order 12898 of 1994; Federal Actions to Address Environmental Justice in Minority Populations & Low-Income Populations (EO 12898, 12948) of 1994, as amended	Ensuring the rights of minority and low-income populations can lead to greater sustainability through less burden on the environment in which these populations live, including better treatment of wastes and building processes
Essential Fish Habitat	Coastal Zone Management Act of 1972; Marine Protected Areas (EO 13158) of 2000; Magnuson-Stevens Fishery Conservation and Management Act of 1976	Shallow intertidal waters provide essential fish habitat in the form of nursery, foraging, and grow out areas. National Marine Fisheries Service recognizes value of essential fish habitat as necessary for continued survival of fisheries resources
Estuaries	Coastal Zone Management Act of 1972; Deepwater Port Act of 1974; Estuaries and Clean Waters Act of 2000; Estuary Protection Act of 1968; Estuary Restoration Act of 2000	Shallow intertidal waters provide essential fish habitat in the form of nursery, foraging, and grow out areas. Protect aquatic nurseries and oyster beds

	GOVERNING LAWS AND REGULATIONS	ECOLOGICAL and HUMAN ENVIRONMENT VALUE
Fisheries (Commercial and Recreational)	Anadromous Fish Conservation Act of 1965; Coastal Zone Management Act of 1972; Fish and Wildlife Conservation Act of 1980; Magnuson-Stevens Fishery Conservation and Management Act of 1976; Endangered Species Act of 1973 Federal Water Project Recreation Act of 1965; Fish and Wildlife Coordination Act of 1958; Recreational Fisheries (EO 12962) of 1995; Sustainable Fisheries Act of 1996	Critical element of many valuable freshwater and marine habitats. Indicator of the health of various freshwater and marine habitats USFWS, NMFS, LDWF, Louisiana Department of Natural Resources (LDNR), and USACE recognize value of fisheries and good water quality.
Flood Control/ Hurricane Risk Reduction Levees	Floodplain Management (EO 11988) of 1977; River and Harbor and Flood Control Act of 1970; Watershed Protection & Flood Prevention Act of 1954	Dewatering activities associated with urban floods result in discharge of floodwater potentially containing pollutants associated with residential, commercial, and industrial facilities
Floodplains	Coastal Zone Management Act of 1972; Floodplain Management (EO 11988) of 1977; River and Harbor and Flood Control Act of 1970	Floodplains provide storage of floodwaters and habitat for forest-dwelling wildlife and plant species. The typically linear aspect of floodplains provide important travel routes for wildlife (including insects) and plant species
Forestry	Reservoir Areas – Forest Cover Act of 1960	Managed forests provide cover and travel routes for forest-dwelling wildlife
Habitat (General)	Marine Protected Areas (EO 13158) of 2000; Oil Pollution Act of 1990	Habitat provided for open, forest-dwelling, and aquatic wildlife. Provision or potential for provision of forest products and human and livestock food products
Hazards/ Wastes	Clean Air Act of 1963, as amended; Comprehensive Environmental Response, Compensation, and Liability Act of 1980; Emergency Planning and Community Right-to-Know Act of 1986; Federal Compliance with Pollution Control Standards (EO 12088) of 1978; Federal Facilities Compliance Act of 1992; Federal Insecticide, Fungicide, and Rodenticide Act of 1996; Oil Pollution Act of 1990; Pollution Prevention Act of 1990; Resource Conservation and Recovery Act of 1976; Toxic Substances Control Act of 1976	Pollutants directly affect the health and viability of ecological habitats and all organisms living within them. Laws and regulations such as the Clean Air Act address problems such as acid rain, ground-level ozone, stratospheric ozone depletion, and air toxics. Laws such as the Pollution Prevention Act allow the government to focus on the sources of pollution rather than after-the-fact treatment

	GOVERNING LAWS AND REGULATIONS	ECOLOGICAL and HUMAN ENVIRONMENT VALUE
Invasive Species	Exotic Organisms (EO 11987) of 1977; Invasive Species (EO 13112) of 1999; National Invasive Species Act of 1996; Non-indigenous Aquatic Nuisance Prevention and Control Act of 1996	Invasive species alter interactive relationships of plants and wildlife that have developed over long periods of time and can completely alter natural habitats. Control of the introduction of invasive species protects habitats by preserving these relationships.
Lake Pontchartrain	Clean Water Act of 1977; Federal Water Project Recreation Act of 1965	Provides habitat for various species of wildlife, finfish, and shellfish.
Marine Areas	Abandoned Shipwreck Act of 1987; Coastal Zone Management Act of 1972; Federal Water Project Recreation Act of 1965; Marine Protected Areas (EO 13158) of 2000; Marine, Protection, Research, and Sanctuaries Act of 1972	Provides habitat for aquatic plant and wildlife.
Navigable Waters	Clean Water Act of 1977; Federal Water Project Recreation Act of 1965; Rivers and Harbors Acts of 1899, 1956 (Sec. 10); Outer Continental Shelf Lands Act of 1953; Rivers and Harbors Acts of 1899, 1956; River and Harbor and Flood Control Act of 1970; Submerged Land Act of 1953	Regulations and laws allow for protection of aquatic habitats from pollution and development. Regulations and laws maintain habitat for aquatic and water-dependent plants and wildlife. Maintained navigable waterways provide routes for shipping and recreational activity, protecting natural habitat from harmful intrusion.
Noise	Noise Control Act of 1972	High levels can affect the quality of habitat for wildlife and humans.
Oil, Gas, and Utilities Pipelines/ Activities	Deepwater Port Act of 1974	Regulations protects aquatic from pollution and development, including limiting turbidity which decreases aquatic plant growth.
Real Estate	Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646)	Regulations and laws assist in the acquisition of lands for conservation and preservation.
Recreation	Abandoned Shipwreck Act of 1987; Federal Water Project Recreation Act of 1965; Flood Control Act of 1944; Land and Water Conservation Fund Act of 1965; National Trails System Act of 1968; Reclamation Projects Authorization and Adjustments Act of 1992; Wild and Scenic River Act of 1968; Wilderness Act of 1964	Potential for interacting with the natural world. High economic value of recreational activities and their contribution to local, state, and national economies. Many fishing and hunting person-days are logged. Various existing facilities satisfy numerous user-days of recreation annually

	GOVERNING LAWS AND REGULATIONS	ECOLOGICAL and HUMAN ENVIRONMENT VALUE
Soils	Watershed Protection & Flood Prevention Act of 1954	Provide the building blocks for habitat for plants and wildlife, including invertebrate species Regulation provides technical and financial assistance for watershed protection, flood mitigation, flood prevention, water quality improvement, soil erosion reduction, sediment control, fish and wildlife habitat enhancement, and wetland and wetland function creation and restoration
Water	Clean Water Act of 1977; Deepwater Port Act of 1974; Estuaries and Clean Waters Act of 2000; Federal Water Pollution Control Act of 1972; Federal Water Project Recreation Act of 1965; Flood Control Act of 1944; Safe Drinking Water Act of 1974; Water Resources Development Acts of 1976, 1986, 1990, and 1992; Water Resources Planning Act of 1965; Watershed Protection & Flood Prevention Act of 1954	Allows for protection of aquatic habitats from pollution and development. Maintains habitat for aquatic and water-dependent plants and wildlife. Provides technical and financial assistance for watershed protection, flood mitigation, flood prevention, water quality improvement, soil erosion reduction, sediment control, fish and wildlife habitat enhancement, and wetland and wetland function creation and restoration
Wetlands	Coastal Wetlands Planning, Protection, and Restoration Act of 1990; Coastal Zone Management Act of 1972; Clean Water Act of 1977; Deepwater Port Act of 1974; Emergency Wetlands Restoration Act of 1986; Estuaries and Clean Waters Act of 2000; Estuary Protection Act of 1968; Estuary Restoration Act of 2000; Floodplain Management (EO 11988) of 1977; Louisiana State and Local Coastal Resources Management Act of 1978; "No Net Loss" Policy of 1988; North American Wetlands Conservation Act of 1989; Protection of Wetlands (EO 11990) of 1977; Rivers and Harbors Acts of 1899, 1956 (Sec. 10); Water Resources Development Acts of 1976, 1986, 1990, and 1992 (Sec. 906); *Wetland Value Assessment (WVA); *Habitat Suitability Index (HSI)	Provide habitat for a number of species of special emphasis (USFWS). Louisiana loses 30 square miles of wetland per year. Provide necessary habitat for various species of plants, fish, and wildlife, many of them commercially important. Serve as ground water recharge areas. Provide storage areas for storm and flood waters. Serve as natural water filtration areas. Provide protection from wave action, erosion, and storm damage. Important source of lumber and other commercial forest products (Bottomland Hardwood Forest).

	GOVERNING LAWS AND REGULATIONS	ECOLOGICAL and HUMAN ENVIRONMENT VALUE
Wildlife & Fish	Endangered Species Act of 1973; Federal Water Project Recreation Act of 1965; Fish and Wildlife Conservation Act of 1980; Fish and Wildlife Coordination Act of 1958; Fish and Wildlife Programs and Improvement and National Wildlife Refuge System Centennial Act of 2000; Migratory Bird Conservation Act of 1929; Migratory Bird Treaty Act of 1918; Migratory Bird Habitat Protection (EO 13186) of 2001; Neotropical Migratory Bird Conservation Act of 2000; Outer Continental Shelf Lands Act of 1953; Reclamation Projects Authorization and Adjustments Act of 1992 Submerged Land Act of 1953; Responsibilities of Federal Agencies to Protect Migratory Birds (EO 13186) of 2001; Wild and Scenic River Act of 1968; *Also see Endangered and Threatened Species, habitats	Habitat for a number of species of special emphasis (USFWS). Critical element of many valuable aquatic and terrestrial habitats. Indicator of the health of various aquatic and terrestrial habitats. Many species are important commercial resources. USFWS, NMFS, LDWF, LDNR, and USACE recognize value of wildlife.

9.4. Appendix D – Members of the Interagency Environmental Team

Kyle Balkum	Louisiana Dept. of Wildlife and Fisheries
Catherine Breaux	U.S. Fish and Wildlife Service
Mike Carloss	Louisiana Dept. of Wildlife and Fisheries
David Castellanos	U.S. Fish and Wildlife Service
Frank Cole	Louisiana Department of Natural Resources
Greg Ducote	Louisiana Department of Natural Resources
John Ettinger	U.S. Environmental Protection Agency
David Felder	U.S. Fish and Wildlife Service
Michelle Fischer	U.S. Geologic Survey
Deborah Fuller	U.S. Fish and Wildlife Service
Mandy Green	Louisiana Department of Natural Resources
Jeffrey Harris	Louisiana Department of Natural Resources
Richard Hartman	NOAA National Marine Fisheries Service
Brian Heimann	Louisiana Dept. of Wildlife and Fisheries
Jeffrey Hill	NOAA National Marine Fisheries Service
Christina Hunnicutt	U.S. Geologic Survey
Barbara Keeler	U.S. Environmental Protection Agency
Kirk Kilgen	Louisiana Department of Natural Resources
Tim Killeen	Louisiana Department of Natural Resources
Brian Lezina	Louisiana Dept. of Wildlife and Fisheries
Brian Marks	Louisiana Dept. of Wildlife and Fisheries
Ismail Merhi	Louisiana Department of Natural Resources
David Muth	U.S. National Park Service
Clint Padgett	U.S. Geologic Survey
Jamie Phillippe	Louisiana Dept. of Environmental Quality
Molly Reif	U.S. Geologic Survey
Kevin Roy	U.S. Fish and Wildlife Service
Manuel Ruiz	Louisiana Dept. of Wildlife and Fisheries
Reneé Sanders	Louisiana Department of Natural Resources
Angela Trahan	U.S. Fish and Wildlife Service
Nancy Walters	U.S. Fish and Wildlife Service
David Walther	U.S. Fish and Wildlife Service
Patrick Williams	NOAA National Marine Fisheries Service

9.5. Appendix E – Interagency Correspondence

United States Department of the Interior

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

November 2, 2010

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

Dear Colonel Fleming:

Please reference the Individual Environmental Reports (IERs) 33 and 34 for the "West Bank and Vicinity (WBV) and Mississippi River Levee (MRL) Co-Located Project, Orleans and Plaquemines Parishes, Louisiana." It was determined that the existing levee segment to be evaluated under IER 34 is of sufficient height and structural integrity (to provide a 100-year level of hurricane damage risk reduction) that the initially planned upgrade will not be constructed. The levee section assessed under IER 33, however, was determined to be currently insufficient and will be evaluated with the intent of upgrading that levee to desired specifications (to provide a 100-year level of hurricane damage risk reduction). IER 33 is being prepared under the approval of the Council on Environmental Quality (CEQ) that will partially fulfill the U.S. Army Corps of Engineers (Corps) compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347). IERs are a CEQ-approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4) and Public Law 110-28, U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental). Those laws authorized the Corps to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana. This report provides planning objectives and recommendations to minimize project impacts to fish and wildlife resources.

The proposed project was authorized by Supplementals 4 and 5 which instructed the Corps to proceed with engineering, design, and modification (and construction where necessary) of the above mentioned hurricane protection project so that it would provide a 100-year level of hurricane protection. Procedurally, project construction has been authorized in the absence of the report of the Secretary of the Interior that is required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). In this case, the authorization process has precluded the normal procedures for fully complying with the FWCA. The FWCA requires that our Section 2(b) report be made an integral part of any report supporting further project authorization or administrative approval. Therefore, to fulfill the

coordination and reporting requirements of the FWCA, the Service will be providing post-authorization 2(b) reports for each IER.

This report incorporates and supplements our FWCA Reports that addressed impacts and mitigation features for the WBV of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) Hurricane Protection projects, in addition, to the November 26, 2007 Draft Programmatic FWCA Report that addresses the hurricane protection improvements authorized in Supplementals 4 and 5. However, this report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. This report has been provided to the Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service; their comments will be incorporated in, and attached to, our final report.

The study area is located in the northern portions of Plaquemines Parish and the southern portions of Orleans Parish within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Higher elevations in the proposed project vicinity occur on the natural levees of the Mississippi River. Developed lands are primarily associated with those natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development. Federal, State, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. The Mississippi River is the prominent landscape feature, though residential development and bottomland hardwood forests are present throughout the project area vicinity.

Habitat types in the vicinity of the project area include bottomland hardwood wetlands, non-wetland bottomland hardwoods, and open water. Detailed habitat descriptions and their associated values for Federal trust fish and wildlife are provided in our above-referenced November 26, 2007, Draft Programmatic FWCA Report. For brevity, that discussion is incorporated by reference herein, and we offer the following information as an update to the previously mentioned reports and to provide IER-specific recommendations.

The proposed stabilized soil mixing location that was originally described in an October 14, 2010, project description document (an area within the Bonnet Carre Spillway), has been changed. According to an October 29, 2010, endangered species determination letter and revised project description, the stabilized soil mixing is now proposed to occur within existing cleared areas (which had been previously used as borrow processing sites) along Walker Road in Plaquemines Parish. The current plan would also involve upgrading the existing flood protection levee along the west bank of the Mississippi River from the Eastern Tie-In of the West Bank and Vicinity project with the MRL at Oakville in Plaquemines Parish to a point approximately 15 miles upriver near Algiers Lock in Orleans Parish. That levee reach will be heightened by using either an untreated clay cap (where the existing levee is 2 feet, or less, deficient in height) or a fly-ash or lime-stabilized soil cap (where the existing levee is more than 2 feet deficient in height). Although the new centerline of the levee may be shifted slightly in either direction, all proposed construction activities would remain completely within the existing right-of-way (ROW) and would not impact adjacent habitats. The project description provided to our office states that approximately 27.15 acres of wetlands would be temporarily impacted by construction-related activities. Additional information provided to our office, subsequent to our receipt of that project description, explains that those wetlands exist as regularly mowed grasses

and herbs within the currently maintained ROW. For that reason, we would not pursue compensatory wetland mitigation for those temporary impacts.

The Corps should avoid impacts to all public lands to the maximum extent practicable, though we are not aware of any publically owned or managed lands in the immediate project vicinity. The Service is also currently unaware of any threatened or endangered species or their critical habitat within the project area. Accordingly, we provided a November 2, 2010, stamped concurrence response to your "not likely to adversely affect" determination. Forested and scrub-shrub areas in the vicinity of the proposed activity may provide nesting habitat, however, for bald eagles and/or wading birds in the future. For that reason, we recommend that on-site contract personnel be informed of the need to identify such nesting sites, and should avoid affecting them during the breeding season.

On November 1, 2010, we received a draft "Resilient Features – Project Description" document from your staff. It describes resilient features that may be constructed along the IER 33 levee reach in the future. Such features may be necessary to ensure that accreditation by the Federal Emergency Management Agency (FEMA) would be sustained over multiple years and storm events. Resilient features that are currently under consideration for IER 33 include an all earthen levee (with alternative alignments) and a floodwall (T-wall) alternative.

In summary, the Service does not object to providing improved hurricane protection to the Greater New Orleans area through construction of the proposed levee upgrade assessed under IER 33. We recommend that you notify the Service of any project changes that could have a negative affect on fish and wildlife resources within our purview, and include the Service in future planning efforts related to the evaluation and selection of resilient features, particularly those that would impact areas outside of the existing levee right-of-way.

Should you or your staff have any questions regarding this report, please contact David Soileau, Jr. (337/291-3109) of this office.

Sincerely,

James F. Boggs
Supervisor
Louisiana Field Office

cc: NMFS, Baton Rouge, LA
EPA, Dallas, TX
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF:

OCT 29 2010

Regional Planning and
Environmental Division, South
New Orleans Environmental Branch

Mr. James Boggs
U.S. Fish and Wildlife Service
Ecological Services
646 Cajundome Blvd., Suite 400
Lafayette, LA 70506
Attn: Mr. David Soileau

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
( ) Will have no effect on those resources
(✓) Is not likely to adversely affect those resources.
This finding fulfills the requirements under Section 7(a)(2) of the Act.

2 Nov 2010
Date

Acting Supervisor
Louisiana Field Office
U.S. Fish and Wildlife Service

Dear Mr. Boggs:

The US Army Corps of Engineers, New Orleans District (CEMVN) has prepared an Endangered Species Act (ESA) determination for Individual Environmental Report #33 (IER #33), "*West Bank and Vicinity and Mississippi River Levee Co-Located Project, Orleans and Plaquemines Parishes, Louisiana*".

The West Bank and Vicinity (WBV) and Mississippi River Levee (MRL) Co-Located Project, which extends from the Eastern Tie-in of the West Bank and Vicinity project with the MRL at Oakville in Plaquemines Parish to a point approximately 15 miles upriver near Algiers Lock, is not of sufficient height to provide 1% hurricane and storm damage risk reduction. The WBV-MRL Co-Located Project is designed to reduce risk to residents along the west bank of the MRL from hurricane-driven storm surges up the mouth of the river. The environmental effects of raising the west bank Mississippi River Levee from River Mile 85.5 to 70 to the 1% hurricane level of risk reduction design grade are currently being addressed in IER #33, which is scheduled to be available for review and comment in November 2010.

Five Federally threatened (T) or endangered (E) species are either known to or may possibly occur within the boundaries of Plaquemines and Orleans Parishes, Louisiana: West Indian manatee (*Trichechus manatus*) (E); pallid sturgeon (*Scaphirynchus albus*) (E); piping plover (*Charadrius melodus*) (T); Gulf sturgeon (*Acipenser oxyrhynchus desotoi*); and brown pelican (*Pelecanus occidentalis*).

In addition to the aforementioned listed species, five sea turtle species under the purview of the National Marine Fisheries Service (NOAA NMFS), Protected Resources Division, are recorded in Louisiana (green sea turtle (*Chelonia mydas*) (T); hawksbill sea turtle (*Eretmochelys imbricata*) (E); Kemp's ridley sea turtle (*Lepidochelys kempii*) (E); leatherback sea turtle (*Dermochelys coriacea*) (E); and loggerhead sea turtle (*Caretta caretta*) (T)). However, CEMVN has concluded that no critical habitat for any of the listed sea turtle species are

designated within the proposed project area and that the project would not adversely affect these species.

In accordance with Section 7 of the ESA, CEMVN has determined that the proposed Federal action is not likely to adversely affect any threatened or endangered species or proposed critical habitat within the project area. We request you review the enclosed information and advise us of your determination. Responses should be mailed to Mr. Mark Lahare at: U.S. Army Corps of Engineers, CEMVN-PDR-RP, P.O. Box 60267, New Orleans, Louisiana, 70160-0267. Responses may also be provided by E-mail to: mark.h.lahare@usace.army.mil, or by FAX to (504) 862-2088. Mr. Lahare may be contacted at (504) 862-1344.

Sincerely,

Joan M. Exnicios
Chief, New Orleans Environmental Branch

Enclosure

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
3737 Government Street
Alexandria, LA 71302

318-473-7751
318-473-7626

October 25, 2010

Mark Lahare
Environmental Protection Specialist
US Army Corps of Engineers - N.O. District
New Orleans, LA

RE: IER 33: WBV/MRL Co-Located Project

Mr. Lahare:

In response your request for NRCS to complete Form AD-1006: Farmland Conversion Impact Rating regarding the activities associated with IER 33: WBV/MRL Co-Located Project; my staff has reviewed the soil classification and the associated farmland classification for the project area and the rules and regulations of the Farmland Protection Policy Act (FPPA).

Since the project proposes construction that fits within the existing levee footprint, exception four (4) listed on the attached fact sheet can be cited to certify that the activities associated with this project are not subject to the rules and regulations of the Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549.

A completed Form AD-1006 is attached to this reply.

Sincerely,

Jacob Heymaker ACTING FOR
Kevin D. Norton
State Conservationist

Enclosure

cc: Michael C. Trusclair, District Conservationist, NRCS, Boutte, LA

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Fact Sheet
FPPA - Farmland Protection Policy Act

Farmland Classification: The Farmland Protection Policy Act (FPPA)—Subtitle I of Title XV, Section 1539-1549 final rules and regulations were published in the Federal Register on June 17, 1994. These rules state that 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 does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land.

NRCS policy clarifies the Rule by stating that activities not subject to FPPA include:

(1) Federal permitting and licensing

(2) Projects planned and completed without the assistance of a Federal agency

(3) Projects on land already in urban development or used for water storage

(4) Construction within an existing right-of-way purchased on or before August 4, 1984

(5) Construction for national defense purposes

(6) Construction of on-farm structures needed for farm operations

(7) Surface mining, where restoration to agricultural use is planned

(8) Construction of new minor secondary structures such as a garage or storage shed.

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 10/19/10
Name Of Project WBV/MRL Co-Located Project	Federal Agency Involved US Army Corps of Engineers - NO District
Proposed Land Use Existing MRL Raise to Design Grade	County And State Orleans & Plaquemines, LA
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 10/19/10

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☐	No ☑	Acres Irrigated	Average Farm Size
Major Crop(s)	Farmable Land In Govt. Jurisdiction Acres: %		Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System		Date Land Evaluation Returned By NRCS 10/22/10	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site				
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*				

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side) Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff