DRAFT INDIVIDUAL ENVIRONMENTAL REPORT

GOVERNMENT FURNISHED BORROW MATERIAL #4

PLAQUEMINES, ST. BERNARD, AND JEFFERSON PARISHES, LOUISIANA

IER #28

US Army Corps of Engineers®

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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 #28 (IER #28) to evaluate the potential impacts associated with the possible excavation of two government furnished borrow areas, and an access road to a previously-approved government furnished borrow area. The proposed actions are located in southeastern Louisiana (figure 1). The term "borrow" is used in the fields of construction and engineering to describe material that is dug in one location for use at another location. The CEMVN is proposing to use suitable borrow material for construction of the proposed Hurricane and Storm Damage Risk Reduction System (HSDRRS).

IER #28 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 13 March 2007, under the provisions of the Council on Environmental Quality 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 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 HSDRRS in the New Orleans Metropolitan Area as a result of Hurricanes Katrina and Rita in 2005.

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, if requested by a stakeholder during the review period. Any comments received during this public meeting will be considered part of the official record. After the 30-day comment period, and public meeting if requested, 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, an Addendum to the IER will be prepared and published for an additional 30-day public review and comment period. After the expiration of the public comment period, the District Commander will make a decision on the proposed action. The decision will be documented in an IER Decision Record.

Two potential government furnished borrow areas and an access route to a previously-approved government furnished borrow area were investigated by the CEMVN Borrow Project Delivery Team (PDT) and are discussed in this IER. The goal of the PDT is to acquire suitable borrow material needed for improvements to the HSDRRS. The CEMVN's engineers currently estimate that over 60,000,000 cubic yards of suitable material are required to improve Federal and non-Federal levee and floodwall projects. Due to the importance of providing safety to the citizens of southeastern Louisiana, and

the amount of borrow needed to supply levee projects for the HSDRRS, multiple borrow IERs are being prepared as potential borrow site information becomes available.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to acquire suitable borrow material for use for the construction of the HSDRRS. The completed HSDRRS would lower the risk of harm to citizens and damage to infrastructure during a storm event. The safety of people in the region is the highest priority of the CEMVN. The proposed action results from the need to provide a total of over 60,000,000 cubic yards of suitable clay for all HSDRRS projects. Raising levee elevations and the completion of levees requires the excavation of material from borrow areas necessary for project construction to ensure authorized levels of flood protection for local communities.

The term "100-year level of protection," as it is used throughout this document, refers to a level of protection which reduces the risk of hurricane surge and wave driven flooding that the New Orleans Metropolitan Area has a 1 percent chance of experiencing each year.

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) Project and the West Bank and Vicinity (WBV) Project. Congress and the Administration granted a series of supplemental appropriations acts following Hurricanes Katrina and Rita in 2005 to repair and upgrade the project systems damaged by the storms. The supplemental appropriations acts gave additional authority to the USACE to construct all HSDRRS projects.

The LPV project was authorized under the Flood Control Act of 1965 (Public Law [P.L.] 89-298, Title II, Sec. 204) which, as amended, authorized a "project for hurricane protection on Lake Pontchartrain, Louisiana ... substantially in accordance with the recommendations of the Chief of Engineers in House Document 231, Eighty-ninth Congress." The original statutory authorization for the LPV Project was amended by the Water Resources Development Acts (WRDA) of 1974 (Public Law [P.L.] 93-251, Title I, Section [Sec.] 92); 1986 (P.L. 99-662, Title VIII, Sec. 805), 1990 (P.L. 101-640, Sec. 116), 1992 (P.L. 102-580, Sec. 102), 1996 (P.L. 104-303, Sec. 325), 1999 (P.L. 106-53, Sec. 324), and 2000 (P.L. 106-541, Sec. 432); and Energy and Water Development Appropriations Acts of 1992 (P.L. 102-104, Title I, Construction, General), 1993 (P.L. 102-377, Title I, Construction, General), and 1994 (P.L. 103-126, Title I, Construction, General).

The Westwego to Harvey Canal Hurricane Protection Project was authorized by the WRDA of 1986 (P.L. 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, Sec. 101(a)(17) & P.L 104-303, 101(b)(11)). The WRDA of 1999 combined the three projects into one project as the West Bank and Vicinity Hurricane Protection Project (P.L. 106-53, Sec. 328).

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.

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:

<u>Lake Pontchartrain and Vicinity Project</u>

- On 26 May 2009, the CEMVN signed a Decision Record for IER #10, entitled "Lake Pontchartrain and Vicinity, Chalmette Loop Levee, St. Bernard Parish, Louisiana." The document evaluates the impacts related to improving hurricane risk reduction structures in St. Bernard Parish, Louisiana.

- On 13 March 2009, the CEMVN signed a Decision Record for IER #4, entitled "Lake Pontchartrain and Vicinity, Orleans East Bank, New Orleans Lakefront Levee, West of Inner Harbor Navigation Canal to Eastbank of 17th Street Canal, Orleans Parish, Louisiana." The document was prepared to evaluate the potential impacts associated with improving the Orleans lakefront hurricane risk reduction features.

- On 3 February 2009, the CEMVN 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 approving government furnished borrow areas for use in construction of the HSDRRS.

- On 21 October 2008, the CEMVN signed a Decision Record on IER #11 Tier 2 Borgne entitled "Improved Protection on the Inner Harbor Navigation Canal, Tier 2 Borgne Orleans and St. Bernard Parishes, Louisiana." The document was prepared to evaluate the potential impacts associated with constructing a surge barrier on Lake Borgne.

- On 20 October 2008, the CEMVN 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 contractor furnished borrow areas for use in construction of the HSDRRS.

- On 21 October 2008, the CEMVN signed a Decision Record on IER #11 Tier 2 Borgne entitled "Improved Protection on the Inner Harbor Navigation Canal, Tier 2 Borgne Orleans and St. Bernard Parishes, Louisiana." The document was

prepared to evaluate the potential impacts associated with constructing a surge barrier on Lake Borgne.

- On 25 July 2008, the CEMVN signed a Decision Record on IER #3, entitled "Lake Pontchartrain and Vicinity, Lakefront Levee, Jefferson Parish, Louisiana." The proposed action includes raising approximately nine and a half miles of earthen levees, completing upgrades to foreshore protection, replacing two floodgates, and completing fronting protection modifications to four existing pump stations in Jefferson Parish, Louisiana.

- On 18 July 2008, the CEMVN signed a Decision Record on IER #2, entitled "LPV, West Return Floodwall, Jefferson and St. Charles Parishes, Louisiana." The proposed action includes replacing over 17,900 linear feet of floodwalls in Jefferson and St. Charles Parishes, Louisiana.

- On 9 June 2008, the CEMVN signed a Decision Record on IER #1, entitled "Lake Pontchartrain and Vicinity, La Branche Wetlands Levee, St. Charles Parish, Louisiana." The proposed action includes raising approximately nine miles of earthen levees, replacing over 3,000 feet of floodwalls, rebuilding or modifying four drainage structures, closing one drainage structure, and modifying one railroad gate in St. Charles Parish, Louisiana.

- On 30 May 2008, the CEMVN 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 approving government furnished borrow areas for use in construction of the HSDRRS.

- On 6 May 2008, the CEMVN 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 approving contractor furnished borrow areas for use in construction of the HSDRRS.

- On 14 March 2008, the CEMVN signed a Decision Record on IER #11 (Tier 1) entitled "Improved Protection on the Inner Harbor Navigation Canal, Orleans and St. Bernard Parishes, Louisiana." The document was prepared to evaluate potential impacts associated with building navigable and structural barriers to prevent storm surge from entering the Inner Harbor Navigation Canal from Lake Pontchartrain and/or the Gulf Intracoastal Waterway-Mississippi River Gulf Outlet-Lake Borgne complex. Two Tier 2 document discussing alignment alternatives and designs of the navigable and structural barriers, and the impacts associated with exact footprints, are being completed.

- On 21 February 2008, the CEMVN 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 approving government furnished borrow areas for use in construction of the HSDRRS.

- On 14 February 2008, the CEMVN signed a Decision Record on IER #19 entitled "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 approving contractor furnished borrow areas for use in construction of the HSDRRS.

- In July 2006, the CEMVN signed a Finding of No Significant Impact (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 30 October 1998, the CEMVN signed a FONSI on EA #279 entitled "Lake Pontchartrain Lakefront, Breakwaters, Pump Stations 2 and 3." The report evaluates the impacts associated with providing fronting protection for outfall canals and pump stations. It was determined that the action would not significantly impact resources in the immediate area.

- On 2 October 1998, the CEMVN signed a FONSI on EA #282 entitled "LPV, Jefferson Parish Lakefront Levee, Landside Runoff Control: Alternate Borrow." The report investigates the impacts of obtaining borrow material from an urban area in Jefferson Parish. No significant impacts to resources in the immediate area were expected.

- On 2 July 1992, the CEMVN signed a FONSI on EA #169 entitled "LPV, Hurricane Protection Project, East Jefferson Parish Levee System, Jefferson Parish, Louisiana, Gap Closure." The report addresses the construction of a floodwall in Jefferson Parish to close a "gap" in the levee system. The area was previously leveed and under forced drainage, and it was determined that the action would not significantly impact the already disturbed area.

- On 22 February 1991, the CEMVN signed a FONSI on EA #164 entitled "LPV Hurricane Protection – Alternate Borrow Area for the St. Charles Parish Reach." The report addresses the impacts associated with the use of borrow material from the Mississippi River on the left descending back in front of the Bonnet Carré Spillway Forebay for LPV construction.

- On 30 August 1990, the CEMVN signed a FONSI on EA #163 entitled "LPV Hurricane Protection – Alternate Borrow Area for Jefferson Parish Lakefront Levee, Reach III." The report addresses the impacts associated with the use of a borrow area in Jefferson Parish for LPV construction.

- On 2 July 1991, the CEMVN signed a FONSI on EA #133 entitled "LPV Hurricane Protection – Alternate Borrow at Highway 433, Slidell, Louisiana." The report addresses the impacts associated with the excavation of a borrow area in Slidell, Louisiana for LPV construction.

- On 12 September 1990, the CEMVN signed a FONSI on EA #105 entitled "LPV Hurricane Protection – South Point to Gulf Intracoastal Waterway, A. V. Keeler and Company Alternative Borrow Site." The report addresses the impacts associated with the excavation of a borrow area in Slidell, Louisiana for LPV construction.

- On 12 March 1990, the CEMVN signed a FONSI on EA #102 entitled "LPV Hurricane Protection – 17th Street Canal Hurricane Protection." The report addresses the use alternative methods of providing flood protection for the 17th

Street Outfall Canal in association with LPV activity. Impacts to resources were found to be minimal.

- On 4 August 1989, the CEMVN signed a FONSI on EA #89 entitled "LPV Hurricane Protection, High Level Plan - Alternate Borrow Site 1C-2B." The report addresses the impacts associated with the excavation of a borrow area along Chef Menteur Highway, Orleans Parish for LPV construction. The material was used in the construction of a levee west of the Inner Harbor Navigation Canal.

- On 27 October 1988, the CEMVN signed a FONSI on EA #79 entitled "LPV Hurricane Protection – London Avenue Outfall Canal." The report investigates the impacts of strengthening hurricane protection at an existing the London Avenue Outfall Canal.

- On 21 July 1988, the CEMVN signed a FONSI on EA #76 entitled "LPV Hurricane Protection – Orleans Avenue Outfall Canal." The report investigates the impacts of strengthening hurricane protection at the Orleans Avenue Outfall Canal.

- On 26 February 1986, the CEMVN signed a FONSI on EA #52 entitled "LPV Hurricane Protection – Geohegan Canal." The report addresses the impacts associated with the excavation of borrow material from an extension of the Geohegan Canal for LPV construction.

- Supplemental Information Report (SIR) #25 entitled "LPV Hurricane Protection – Chalmette Area Plan, Alternate Borrow Area 1C-2A" was signed by the CEMVN on 12 June 1987. The report addresses the used of an alternate contractor furnished borrow area for LPV construction.

- SIR #27 entitled "LPV Hurricane Protection – Alternate Borrow Site for Chalmette Area Plan" was signed by the CEMVN on 12 June 1987. The report addresses the use of an alternate contractor furnished borrow area for LPV construction.

- SIR #28 entitled "LPV Hurricane Protection – Alternate Borrow Site, Mayfield Pit" was signed by the CEMVN on 12 June 1987. The report addresses the use of an alternate contractor furnished borrow area for LPV construction.

- SIR #29 entitled "LPV Hurricane Protection – South Point to GIWW Levee Enlargement" was signed by the CEMVN on 12 June 1987. The report discusses the impacts associated with the enlargement of the GIWW.

- SIR #30 entitled "LPV Hurricane Protection Project, Jefferson Lakefront Levee" was signed by the CEMVN on 7 October 1987. The report investigates impacts associated with changes in Jefferson Parish LPV levee design.

- SIR #17 entitled "LPV Hurricane Protection – New Orleans East Alternative Borrow, North of Chef Menteur Highway" was signed by the CEMVN on 30 April 1986. The report addresses the use of an alternate contractor furnished borrow area for LPV construction.

- SIR #22 entitled "LPV Hurricane Protection – Use of 17th Street Pumping Station Material for LPHP Levee" was signed by the CEMVN on 5 August 1986. The

report investigates the impacts of moving suitable borrow material from a levee at the 17th Street Canal in the construction of a stretch of levee from the Inner Harbor Navigation Canal to the London Avenue Canal.

- SIR #10 entitled "LPV Hurricane Protection, Bonnet Carré Spillway Borrow" was signed by the CEMVN on 3 September 1985. The report evaluates the impacts associated with using the Bonnet Carré Spillway as a borrow source for LPV construction, and found that "no significant adverse effect on the human environment."

- In December 1984, an SIR to complement the Supplement to final EIS on the LPV Hurricane Protection project was filed with the U.S. Environmental Protection Agency (USEPA).

- The final EIS for the LPV Hurricane Protection Project, dated August 1974. A Statement of Findings was signed by the CEMVN on 2 December 1974. Final Supplement I to the EIS, dated July 1984, was followed by a Record of Decision (ROD), signed by the CEMVN on 7 February1985. Final Supplement II to the EIS, dated August 1994, was followed by a ROD signed by the CEMVN on 3 November 1994.

- A report entitled "Flood Control, Mississippi River and Tributaries," published as House Document No. 90, 70th Congress, 1st Session, submitted 18 December 1927, resulted in authorization of a project by the Flood Control Act of 1928. The project provided comprehensive flood control for the lower Mississippi Valley below Cairo, Illinois. The Flood Control Act of 1944 authorized the USACE to construct, operate, and maintain water resources development projects. The Flood Control Acts have had an important impact on water and land resources in the proposed project area.

<u>West Bank and Vicinity Project</u>

- On 18 February 2009, the CEMVN 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 construction of construct approximately 3 miles of levee and floodwall in the project vicinity.

- On 3 February 2009, the CEMVN 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 approving government furnished borrow areas for use in construction of the HSDRRS.

- On 21 January2009, the CEMVN 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 20 October 2008, the CEMVN 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 approving contractor furnished borrow areas for use in construction of the HSDRRS.

- On 18 February 2009, the CEMVN 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 construction of construct approximately 3 miles of levee and floodwall in the project vicinity.

- On 26 August 2008, the CEMVN 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 protection along the WBV, Westwego to Harvey Levee project.

- On 12 June 2008, the CEMVN signed a Decision Record on IER #15, entitled "Lake Cataouatche Levee, Jefferson Parish, Louisiana." The proposed action includes constructing a 100-year level of protection in the project area.

- On 30 May 2008, the CEMVN 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 approving government furnished borrow areas for use in construction of the HSDRRS.

- On 6 May 2008, the CEMVN 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 approving contractor furnished borrow areas for use in construction of the HSDRRS.

- On 21 February 2008, the CEMVN 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 approving government furnished borrow areas for use in construction of the HSDRRS.

- On 14 February 2008, the CEMVN signed a Decision Record on IER #19 entitled "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 approving contractor furnished borrow areas for use in construction of the HSDRRS.

- In July 2006, the CEMVN 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 23 August 2005, the CEMVN 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 22 February 2005, the CEMVN 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 discusses the impacts related to the relocation of a proposed floodwall moved because of the aforementioned sector gate, as authorized by the LPV Project.

- On 5 May 2003, the CEMVN signed a FONSI on EA #337 entitled "Algiers Canal Alternative Borrow Site."

- On 19 June 2003, the CEMVN 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 16 May 2002, the CEMVN 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 30 August 2000, the CEMVN 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 18 August 1998, the CEMVN signed a FONSI on EA #258 entitled "Mississippi River Levee Maintenance - Plaquemines West Bank Second Lift, Fort Jackson Borrow Site."

- The final EIS for the WBV, East of Harvey Canal, Hurricane Protection Project was completed in August 1994. A ROD was signed by the CEMVN in September 1998.

- The final EIS for the WBV, Lake Cataouatche, Hurricane Protection Project was completed. A ROD was signed by the CEMVN in September 1998.

- In December 1996, the USACE completed a post-authorization change study entitled, "Westwego to Harvey Canal, Louisiana Hurricane Protection Project Lake Cataouatche Area, EIS." The study investigates the feasibility of providing hurricane surge protection to that portion of the west bank of the Mississippi River in Jefferson Parish between Bayou Segnette and the St. Charles Parish line. A Standard Project Hurricane (SPH) level of protection 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 23 December 1996.

- On 12 January 1994, the CEMVN signed a FONSI on an EA #198 entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, Louisiana, 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 investigates the feasibility of providing hurricane surge protection to that portion of the west bank of metropolitan New Orleans from the Harvey Canal eastwards to the Mississippi River. 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 protection east of the Harvey Canal. The report also recommends that the level of protection for the area east of the Algiers Canal deviate from the National Economic Development Plan's level of protection and provide protection for the SPH. The Division Engineer's Notice was issued on 1 September 1994. The Chief of Engineer's report was issued on 1 May 1995. Preconstruction, engineering, and design was initiated in late 1994 and is continuing. The WRDA of 1996 authorized the project.

- On 20 March 1992, the CEMVN signed a FONSI on EA #165 entitled "Westwego to Harvey Canal Disposal Site."

- In February 1992, the USACE completed a reconnaissance study entitled "West Bank Hurricane Protection, Lake Cataouatche, Louisiana." The study investigated the feasibility of providing hurricane surge protection to that portion of the west bank of the Mississippi River in Jefferson Parish, between Bayou Segnette and the St. Charles Parish line. The study found a 100-year level of protection to be economically justified based on constructing a combination levee/ sheetpile wall along the alignment followed by the existing non-Federal levee. Due to potential impacts to the Westwego to Harvey Canal project, the study is proceeding as a post-authorization change.

- On 3 June 1991, the CEMVN signed a FONSI on EA #136 entitled "West Bank Additional Borrow Site between Hwy 45 and Estelle PS."

- On 15 March 1990, the CEMVN signed a FONSI on EA #121 entitled "West Bank Westwego to Harvey Changes to EIS." The report addresses the impacts associated with the use of borrow material from Fort Jackson for LPV construction. The material was used for constructing the second life for the Plaquemines West Bank levee upgrade, as part of LPV construction.

- 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 investigates the feasibility of providing hurricane surge protection 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 recommends implementing a plan that would provide SPH level of protection 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). Construction of the project was initiated in early 1991.

1.4 INTEGRATION WITH OTHER IERS

In addition to this IER, the CEMVN is preparing a draft Comprehensive Environmental Document (CED) that will describe the work completed and remaining to be constructed.

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, a finalized mitigation plan, 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 posted for public review.

The draft CED will be 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 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, signed by the District Commander, and made available to any stakeholders requesting a copy.

Compensatory mitigation for unavoidable impacts associated with this and other proposed HSDRRS projects will be documented in forthcoming mitigation IERs, which are being written concurrently with all other IERs.

1.5 PUBLIC CONCERNS

The public has had the opportunity to give input about the proposed HSDRRS work throughout the planning process through a number of outlets (i.e., public meetings; written and verbal comments; www.nolaenvironmental.gov). IER #18, IER #19, IER #22, IER #23, IER #25, and IER #26 all discuss the impacts of borrow excavation related to the HSDRRS. These documents contain public comments regarding borrow issues (appendix B – all documents) and are available at www.nolaenvironmental.gov, or upon request.

The foremost public concern in the project area is reducing 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. Comments at public meetings indicated concern over the current risk reduction structures from storm-induced tidal surges during major storm events that might overtop levees or floodwalls, or induce levee or floodwall failure. A key concern of local officials is to increase public confidence in the HSDRRS so that the physical and economic recovery of the area can proceed. Scheduling of construction for the HSDRRS is also a concern. Local officials also want the public to be aware that the completed HSDRRS is not intended to invalidate evacuation measures.

Residents in the vicinity of proposed borrow areas have expressed concern over their potential or perceived impact on potential future development, land values, and public safety. Some members of the public have stated that they would prefer that remaining land in coastal parishes either not be excavated, or should be developed as residential, commercial, or industrial areas. Members of the public have also said that they feel that borrow areas should be backfilled. Non-governmental organizations have commented on the importance of avoiding impacts to jurisdictional wetlands when looking for borrow sources. The CEMVN is currently avoiding impacts to all jurisdictional wetlands, as other reasonable alternatives are available (see section 2.1). Residents in the vicinity of proposed borrow areas are concerned about truck haulers causing traffic congestion and noise. The public is also concerned about safety issues during and after the borrow area is excavated. Finally, landowners are concerned about the USACE using their privately-owned property as a source of borrow material and not being fairly compensated.

1.6 DATA GAPS AND UNCERTAINTIES

At the time of submission of this report, geotechnical evaluations have not been completed for the proposed government furnished borrow areas. Final selection and/or footprints of borrow areas could vary based on the results of these evaluations. Borrow area footprints would be decreased in the case of negative geotechnical findings; areas not included in this investigation would be discussed in subsequent IERs.

Transportation impacts and routes for the delivery of borrow material have not been determined, as it is currently uncertain to which construction sites each proposed government furnished borrow area would provide material. Large quantities of material would be delivered to construction sites, as well as to other ongoing flood protection projects in the area. This could have localized short-term impacts to transportation corridors that cannot be quantified at this time. The CEMVN is completing a transportation study to determine any impacts associated with the transporting of material to construction sites. This analysis will be discussed in the CED.

Details on environmental justice impacts from potential use of the proposed government furnished borrow areas and access route will be analyzed when further project planning data become available at conclusion of small group neighborhood focus meetings. These details will be included in the CED.

Noise impacts are not fully known at this time. The effects of the proposed action on noise levels are discussed in section 3.3. Once noise impacts are fully determined the analysis will be discussed in the CED.

Air impacts from the excavation of proposed government furnished borrow areas and proposed access route are not fully known at this time, and additional or cumulative air impacts will be discussed in the CED.

Cumulative visual impacts from the excavation of the proposed government furnished borrow areas and use of the proposed access route are unknown at this time, as the borrow area selection and excavation process is ongoing. The impacts will be discussed in the CED.

Some construction schedules are changing or not known at this time.

2. ALTERNATIVES

2.1 ALTERNATIVES DEVELOPMENT AND PRELIMINARY SCREENING CRITERIA

NEPA requires that in analyzing alternatives to a proposed action a Federal agency consider an alternative of “No Action.” Likewise, Section 73 of the WRDA of 1974 (P.L. 93-251) requires Federal agencies to give consideration to non-structural measures to reduce or prevent flood damage. Since this IER deals with government furnished borrow material and an access route there are no nonstructural alternatives. Non-structural alternatives will be evaluated in the IERs dealing directly with the construction of the HSDRRS structures.

The CEMVN is pursuing three avenues of obtaining the estimated amount of borrow material needed for construction of the HSDRRS. The three avenues are being pursued by the CEMVN to obtain borrow material are government furnished (the Government

acquires rights to property), pre-approved contractor furnished (a CEMVN levee construction contractor works in partnership with a landowner to provide suitable pre-approved borrow material from the landowner's property), and supply contract (a landowner or corporation delivers a pre-specified amount of suitable borrow material to a designated location for use by a CEMVN levee construction contractor). Two of the avenues being pursued (contactor furnished and supply contract) would allow a private individual or corporation to propose a site where borrow material could come from. It is possible that some of the government furnished, contractor furnished, and supply contract sources of borrow material may come from anywhere in the United States.

IER #18, IER #22, and IER #25 discuss approved government furnished borrow alternatives. Approved contractor furnished borrow areas are discussed in IER #19, IER #23, and IER #26. IER #30 will discuss potential supply contract alternatives. This IER discusses potential government furnished borrow areas. Additional borrow IERs will be prepared as future potential government furnished and contractor furnished borrow areas are identified.

The U.S. Fish and Wildlife Service (USFWS) supports the CEMVN's prioritization of selection for potential borrow areas in the following order: existing commercial areas, upland sources, previously disturbed/manipulated wetlands within a levee system, and low-quality wetlands outside a levee system (letter dated May 8, 2009, appendix D). The USFWS recommended that prior to utilizing borrow areas, every effort should be made to reduce impacts by using sheetpile and/or floodwalls to increase levee heights wherever feasible. The USFWS also recommended the following protocol be adopted and utilized to identify borrow sources in descending order of priority:

1. "Permitted commercial sources, authorized borrow sources for which environmental clearance and mitigation have been completed, or non-functional levees after newly constructed adjacent levees are providing equal protection.

2. Areas under forced drainage that are protected from flooding by levees, and that are:

    a) non-forested (e.g., pastures, fallow fields, abandoned orchards, former urban areas and non-wetlands;

    b) wetland forests dominated by exotic tree species (i.e., Chinese tallow) or non-forested wetlands (e.g., wetland pastures), excluding marshes;

    c) disturbed wetlands (e.g., hydrologically altered, artificially impounded).

3. Areas that are outside a forced drainage system and levees, and that are:

    a) non-forested (e.g., pastures, fallow fields, abandoned orchards, former urban areas) and non-wetlands;

    b) wetland forests dominated by exotic tree species (i.e., Chinese tallow) or non-forested wetlands (e.g., wetland pastures), excluding marshes;

    c) disturbed wetlands (e.g., hydrologically altered, artificially impounded)."

The USFWS is currently assisting the CEMVN in meeting this protocol.

The HSDRRS includes completing and raising of levees and floodwalls in southeastern Louisiana. Raising levee elevations and completing levees and floodwalls requires the excavation of material from borrow areas for use in project construction. As part of construction, the following methods shall be followed:

- Numerous utilities, including electrical services, gas lines, telephone poles and lines, storm drainpipes, subdrain lines, and storm drain catch basins, would be avoided or relocated.

- The access routes and land would be cleared using bulldozers and excavators. Woody debris would be stockpiled on-site and placed in the area once excavation is completed or in some cases the material may be removed to an approved landfill.

- Silt fencing would be installed around the perimeter of the borrow area to control runoff, as per Best Management Practices (BMPs).

- Construction contractors would be responsible for obtaining National Pollutant Discharge Elimination System (NPDES) permits, if applicable, and implementing BMPs, including standard USACE storm water prevention requirements at all borrow area locations, as well as complying with all other Federal, state, and local laws, regulations, and ordinances.

- In most cases, excavation of the borrow areas would commence from the back of the areas to the access road to provide adequate space for staging haul trucks and stockpiled material.

- To make optimum use of available material, excavation should begin at one end of the borrow area and be made continuous across the width of the areas to the allowed borrow depths to provide surface drainage to the low side of the borrow area as excavation proceeds. During this process the overburden (topsoil that lays on top of suitable borrow material) would be stockpiled.

- The excavation activities shall be long enough to provide the required quantity of material, and shall be accomplished in such a manner that all available material within the required width to full depth would be utilized when possible.

- Upon completion of excavation, site restoration would include placing the stockpiled overburden back into the area and grading the slopes to the specified cross-section figure shown in the borrow area management plan.

- If additional overburden is available at the areas, it would be used to create gradual side slopes, islands, and smooth out corners within the borrow area to enhance wildlife and fishery habitat. The Environmental Design Considerations for Main Stem Levee Borrow Areas Along the Lower Mississippi River Report 4: Part V, incorporated by reference, and the CEMVN operating procedures may be basic guidelines referred to when designing the borrow areas. However, the full depth of the borrow area should be excavated according to the borrow area management plan for the approved borrow area to minimize impacts to the human and natural environment.

2.2 DESCRIPTION OF THE ALTERNATIVES

Four alternatives were considered. These included the no action, the proposed action, use of contractor furnished borrow material, and use of borrow material from a supply contract.

No Action. Under the no action alternative the proposed government furnished borrow areas and proposed access route would not be used by the CEMVN. The borrow areas listed in the proposed action would not be excavated and the proposed access route to the approved Westbank F borrow area would not be used. The HSDRRS levee and floodwall projects would be built to authorized levels using government and contractor furnished borrow sites described in IER #18, IER #19, IER #22, IER #23, IER #25, and IER #26 or other sources yet to be identified.

Proposed Action. The proposed action consists of excavating the two proposed government furnished borrow areas and a proposed access road to the approved Westbank F borrow area, as discussed in Section 2.3. For government furnished borrow material, the Government would acquire the rights to a property, from which suitable borrow material would be used for construction of the HSDRRS. Other government furnished borrow alternatives are discussed in IER #18, IER #22, and IER #25, and will be explored in future borrow IERs.

Pre-Approved Contractor Furnished Borrow Material Alternative. A CEMVN levee construction contractor would work in partnership with a landowner to provide suitable borrow material from the landowner's property. Sources of contractor furnished borrow material may come from anywhere in the United States. Pre-approved contractor furnished borrow sites are discussed in IER #19, IER #23, and IER #26, and will be explored in future borrow IERs.

Supply Contract Borrow Material Alternative. The supply contract would allow a private individual(s) or corporation(s) to deliver a pre-specified amount of suitable borrow material from an area(s) anywhere in the United States where suitable borrow material could come from. The individual(s) or corporation(s) would deliver the borrow material to a designated location for use by a CEMVN construction contractor. Supply contract borrow alternatives will be discussed in IER #30.

2.3 PROPOSED ACTION

The proposed action (preferred alternative) consists of potentially excavating all suitable material from the proposed Bazile borrow area (figures 1, 2, 5) and Johnson/Crovetto borrow area (figures 1, 3, 6), and constructing an access road to the approved Westbank F borrow site (figures 1, 4, 7).

In order to meet the borrow needs of the HSDRRS, personnel from the CEMVN Project Management, Engineering, Real Estate, Office of Counsel, Relocations, and Environmental branches established a Borrow Project Delivery Team. This team worked closely with other CEMVN offices (Hurricane Protection Office, Protection and Restoration Office, and Regulatory Functions Branch) to accomplish its mission. The team's goal is to locate and procure high quality clay borrow sources suitable for levee and floodwall construction in such a way as to be least damaging to both the natural and human environments within the project area.

The team investigated and completed environmental coordination on the proposed government furnished borrow areas and proposed access route, and is currently

investigating other potential borrow sources. When an area is proposed for CEMVN borrow procurement, Real Estate personnel acquire right-of-entry to investigate the property. A map of the site is forwarded to the Regulatory Functions Branch for a jurisdictional wetland determination. The proposed government furnished borrow area is revised as necessary to avoid jurisdictional wetlands. A CEMVN archaeologist completes a preliminary, in-office survey of mapped cultural resource sites to detect any obvious cultural resources within the proposed government furnished borrow area.

A CEMVN biologist completes an in-office survey of aerial photos of the area to determine if the potential area raises Coastal Zone Management (CZM) issues based on location or if there are other obvious environmental issues that could be detected from aerial photography. The biologist also coordinates with the USFWS to ensure the proposed area will not adversely affect threatened or endangered (T&E) species or their critical habitat.

Once the team completes a preliminary site approval, a site visit is conducted. The field team typically consists of a project manager, biologist, geologist, archeologist, and hazardous, toxic, and radioactive waste (HTRW) investigator. The area is visually inspected for the presence of obvious HTRW issues and cultural resources. If no HTRW concerns or cultural resources are observed, the area is cleared to proceed with geotechnical borings to identify soil characteristics.

The proposed action consists of removing all suitable material from the following two proposed government furnished borrow areas, and to use the proposed access route to the approved Westbank F government furnished borrow area. Excavation would have no effect on cultural resources, threatened and endangered species or their critical habitat. All HTRW issues would be avoided.

- The Bazile site is located on Highway 39, near English Turn, in Plaquemines Parish (figures 1, 2, 5). The proposed government furnished borrow area is 18 acres with a 1.1-acre access corridor.

- The Johnson/Crovetto site is located on Bayou Road in St. Bernard Parish (figures 1, 3, 6). The proposed government furnished borrow area is 12.5 acres with a 0.4-acre access corridor.

- The access to the Westbank F borrow site is located adjacent to the Lake Cataouatche Road in Jefferson Parish (figures 1, 4, 7). The Westbank F borrow area is discussed in IER #22, and an appropriate access route is needed to the site. The proposed 0.29-access corridor is discussed in this IER.

If the proposed government furnished borrow areas, or portions of them, are not able to be used as a borrow source they may be used as stockpile sites.

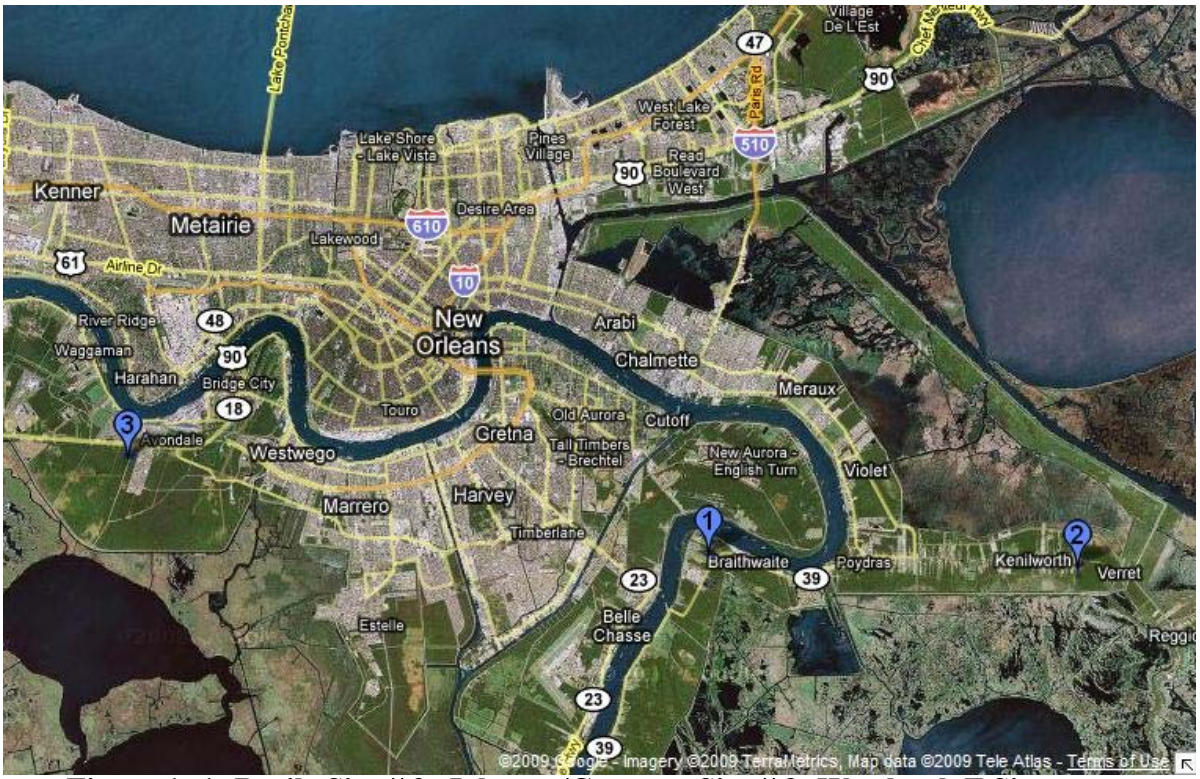

Figure 1: 1: Bazile Site // 2: Johnson/Crovetto Site // 3: Westbank F Site

Figure 2: Proposed Bazile Government Furnished Borrow Area, Plaquemines Parish

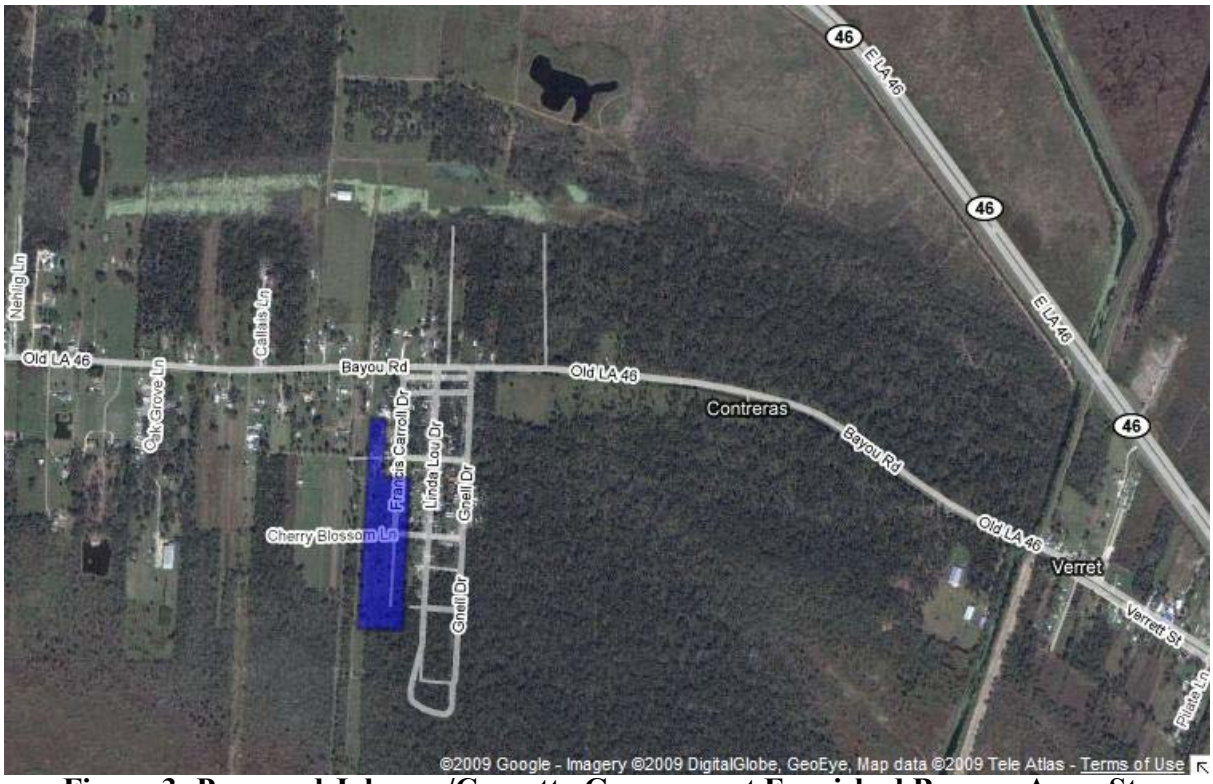

Figure 3: Proposed Johnson/Crovetto Government Furnished Borrow Area, St. Bernard Parish

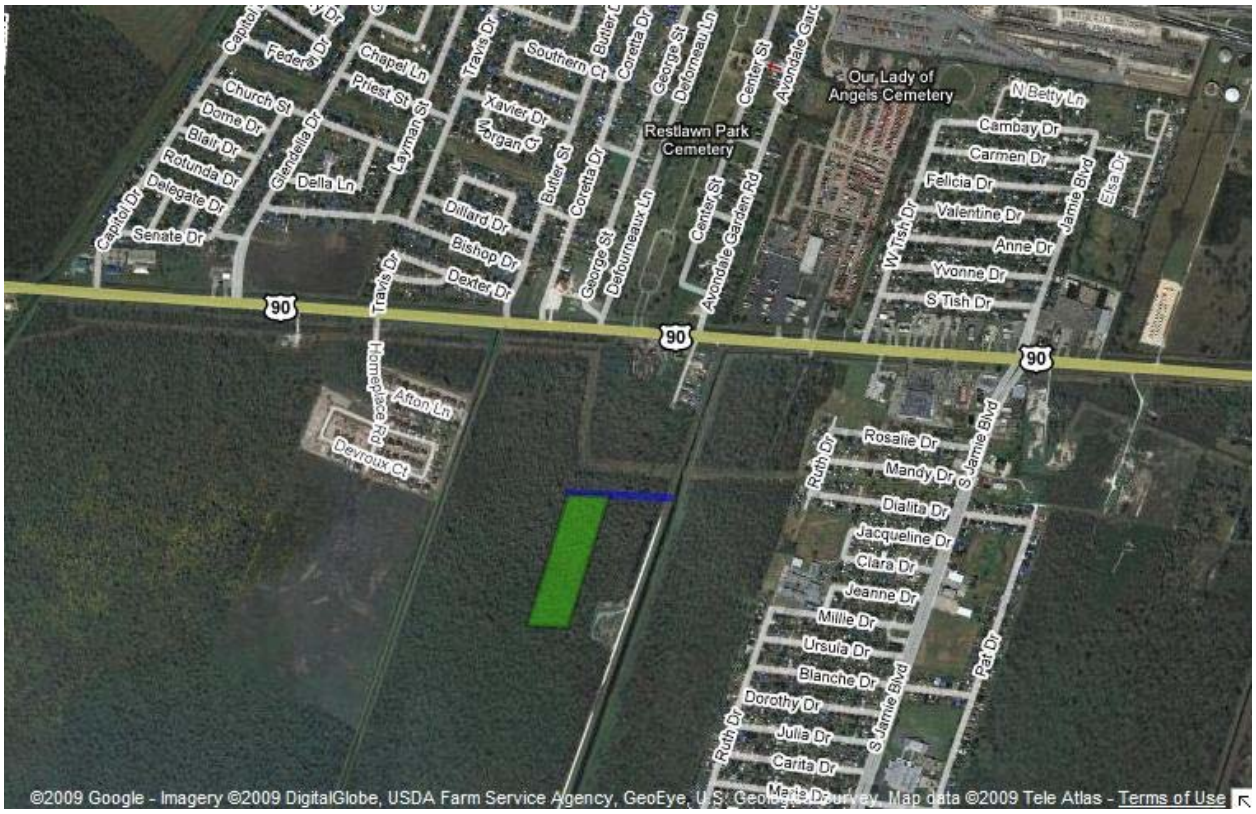

Figure 4: Proposed Westbank F Access Route (blue), Jefferson Parish

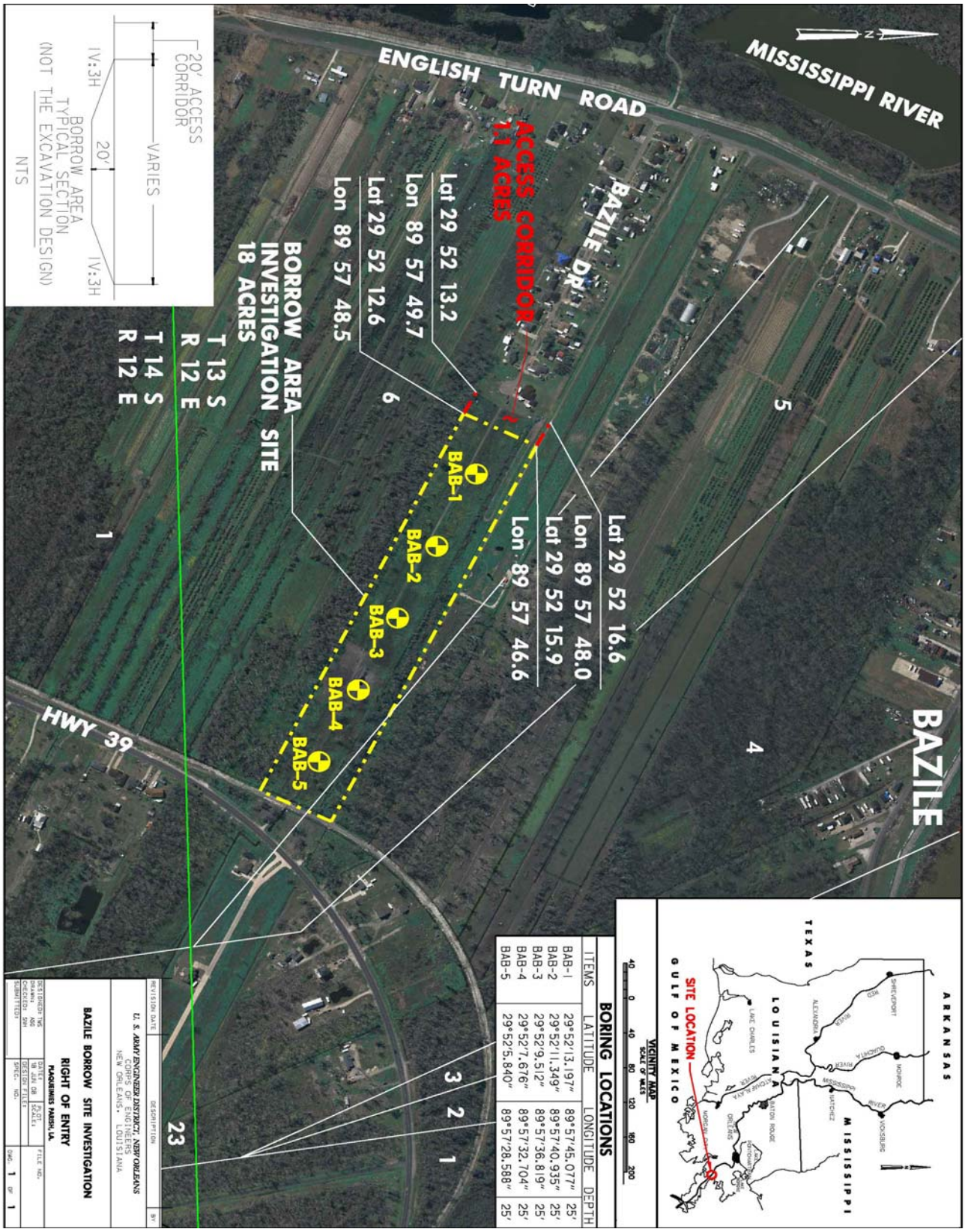

Figure 5: Proposed Bazile Government Furnished Borrow Area

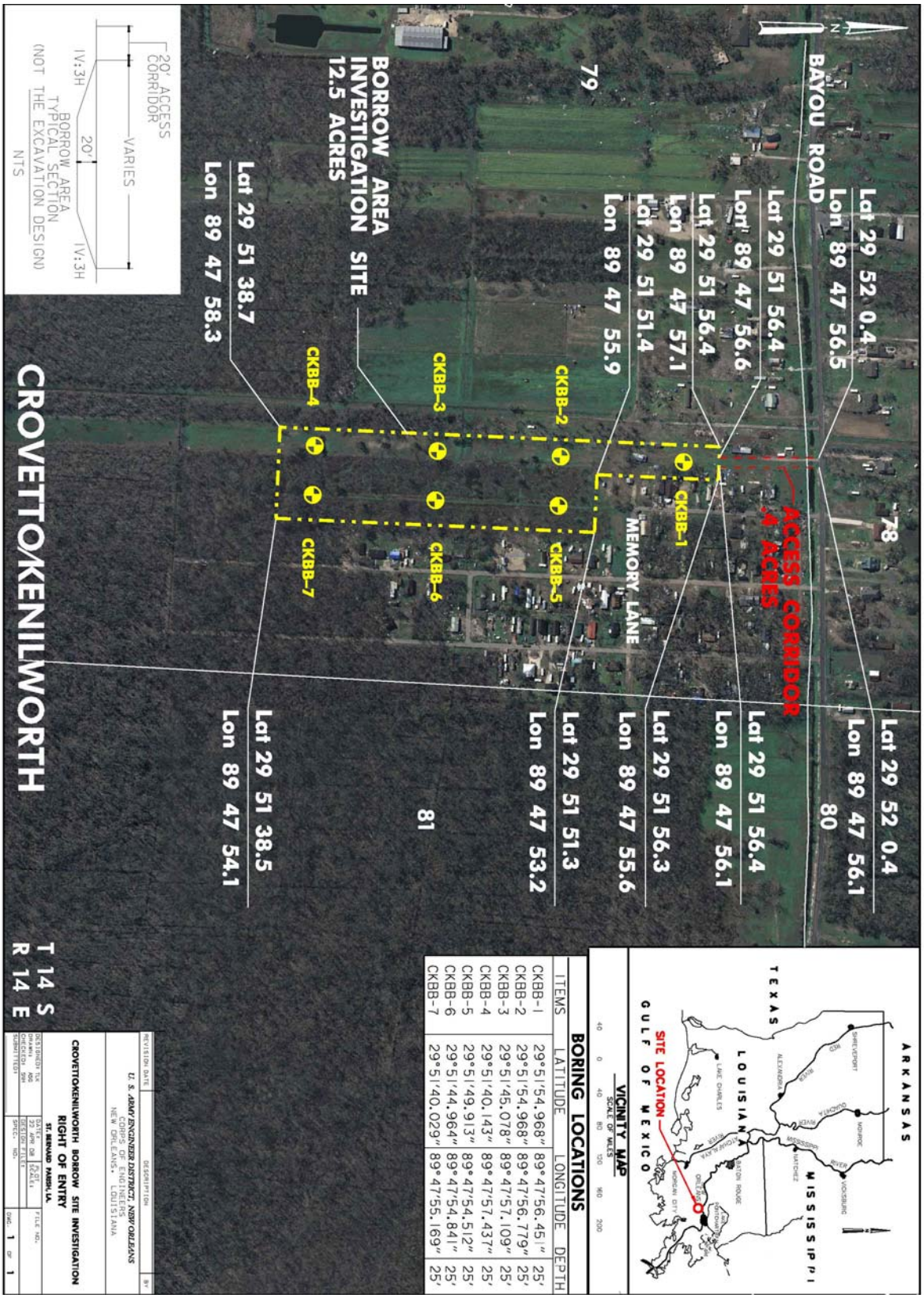

Figure 6: Proposed Johnson/Crovetto Government Furnished Borrow Area

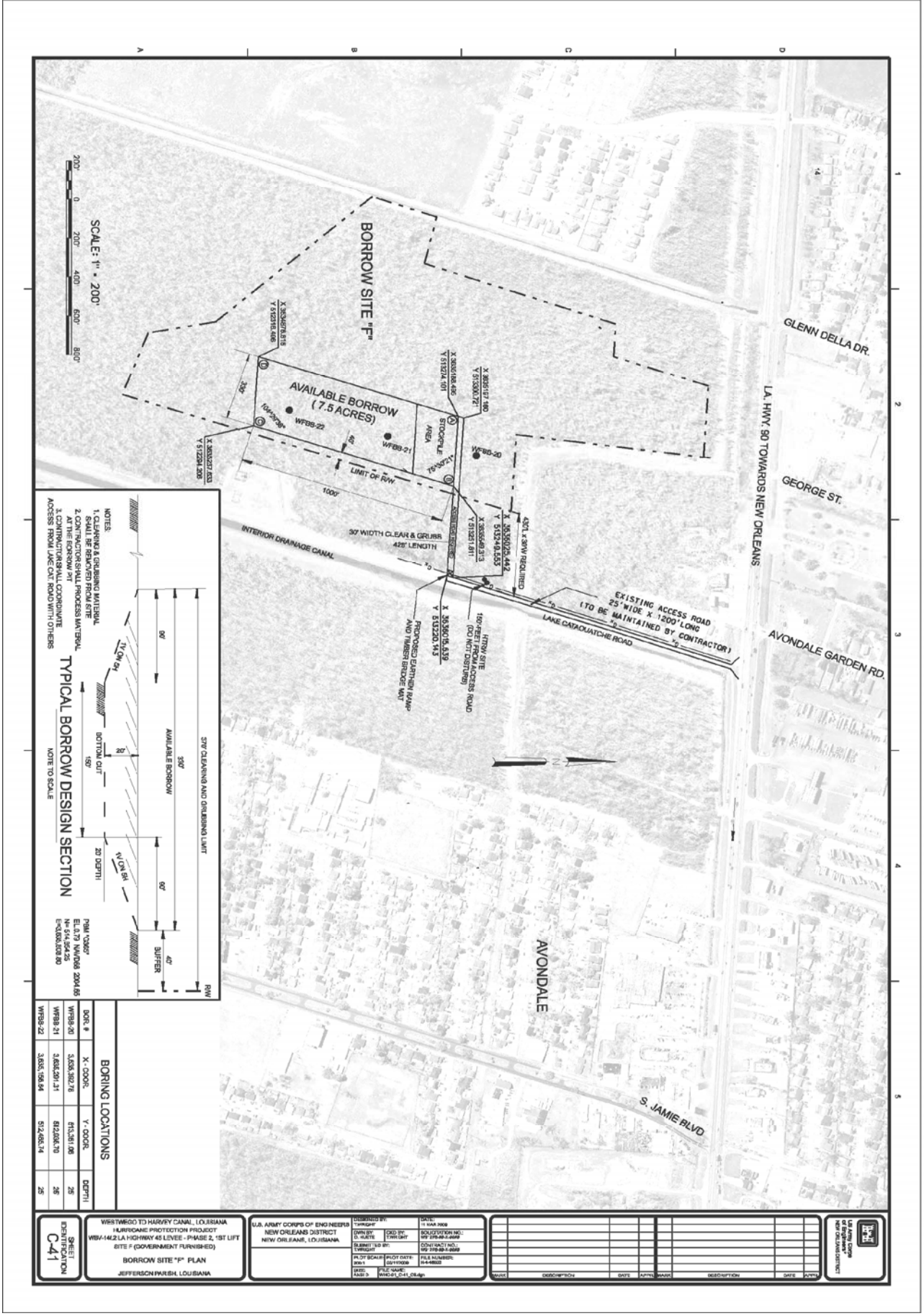

Figure 7: Proposed Westbank F Access Route

2.4 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The other alternatives to the proposed action that were considered were the no action, the proposed action, use of contractor furnished borrow material, and use of borrow material from a supply contract. These alternatives are described in Section 2.2.

The following areas were investigated and deemed unsuitable by the CEMVN for construction of the HSDRRS:

- Proposed Gray borrow area: The proposed borrow area is located on East Judge Perez Drive in St. Bernard Parish. This 13.2 acre area was investigated, but declined due to mixed wetlands throughout the site. The CEMVN may be forced to reconsider this area at some point in the future should there be an inadequate quantity of suitable borrow material for construction of the HSDRRS, after it has exhausted its search for reasonable and practicable non-wetland sites. Refer to the CEMVN selection prioritization of potential borrow areas (section 2.1), and the USFWS guidance (appendix D).

- Proposed Hennings borrow area: The proposed 26.8 acre borrow area is located on Delacroix Highway in St. Bernard Parish. The site was declined because it was infeasible to conduct hydrologic modeling to evaluate the wave effects from removing borrow material from a natural ridge.

3. AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 ENVIRONMENTAL SETTING

The proposed government furnished borrow areas and the proposed access route described in this report are located in southeastern Louisiana. The proposed Bazile borrow area is located between LA-3137 and LA-39 in Plaquemines Parish, Louisiana. The surrounding area is mostly farmland and forest, with a residential area to the west of the site. The proposed Johnson/Crovetto borrow area is located south of Bayou Road in St. Bernard Parish, Louisiana. The surrounding areas are mostly farmland and forest, with residential areas to the north, west, and east of the site. The proposed access route to the approved Westbank F government furnished borrow area is located south of Highway 90 approximately 1000 feet from residential areas to the north, west, and east. For the purposes of this report the project study area is defined as southeastern Louisiana.

Fauna and Flora

The Louisiana Coastal Plain area contains an extraordinary diversity of estuarine habitats that range from narrow natural levee and beach ridges to expanses of bottomland hardwood (BLH) forest, forested swamps and fresh, brackish, saline marshes, and pasture lands. The wetlands support various functions and values, including commercial fisheries, harvesting of furbearers, recreational fishing and hunting, ecotourism, critical wildlife habitat (including that for threatened and endangered species), water quality improvement, navigation and waterborne commerce, flood control, and buffering protection from storms.

Terrestrial animals that may inhabit some of the proposed government furnished borrow areas include nutria, muskrat, raccoon, mink, and otter, which are harvested for their furs.

White-tailed deer, feral hogs, rabbits, various small mammals, and a variety of birds, reptiles, amphibians, and mosquitoes also occur in the study area. Agricultural crops grown in the vicinity of some of the proposed government furnished borrow areas include sugar cane, citrus fruits, and truck crops.

Soils

The USACE HSDRRS Design Guidelines, of which the below-stated soil standards are a part, are reviewed and updated as necessary. Changes to the guidelines are reviewed and approved by USACE staff at the local, regional and headquarters level; additional reviews are completed by academia and private individuals who are recognized experts in their fields. Additionally, the guidelines being utilized by the CEMVN have been reviewed by members of the Interagency Performance Evaluation Team (IPET). The design guidelines may be updated from time to time to respond to new engineering analysis of improved technology, innovative processes, or new data.

The term "borrow" is used in the fields of construction and engineering to describe material that is dug in one location for use at another location. The term "suitable" as it relates to borrow material discussed in this document is defined as meeting the following current criteria after placement as levee fill:

- Soils classified as clays (CH or CL) are allowed as per the Unified Soils Classification System;
- Soils with organic contents greater than 9 percent are not allowed;
- Soils with plasticity indices (PI) less than 10 are not allowed;
- Soils classified as silts (ML) are not allowed;
- Clays will not have more than 35 percent sand content.

<u>Clay Specifications</u>
The earthen clay material shall be naturally occurring or contractor blended. Addition of lime, cement, or other soil amendments for any reason is not permitted. Soil that is classified in accordance with ASTM D2487 and the Unified Soil Classification System as CH and CL are suitable. Soil classified as ML shall be considered unsuitable; however, minor amounts of ML may be suitably blended with CH or CL to formulate a material that classifies as a CL as per ASTM D2487. Soil must be free from masses of organic matter, sticks, branches, roots, and other debris, including hazardous and regulated solid wastes. Soil from a contractor-supplied earthen clay material source may not contain excessive amounts of wood. However, isolated pieces of wood would not be considered objectionable in the embankment provided their length does not exceed 1 foot, their cross-sectional area is less than 4 square inches, and they are distributed throughout the fill. Not more than 1 percent (by volume) of objectionable material shall be contained in clay material ordered by the Government. Pockets and/or zones of wood shall not be acceptable. Material consisting of greater than 35 percent sands (by dry weight) or materials with a Plasticity Index (PI) of less than 10 will not be accepted as well as material having an organic content exceeding 9 percent by weight. Under no circumstances shall frozen earth, snow, or ice in the material be considered acceptable.

The geotechnical analysis shall consist of the following:

A geotechnical report stamped and signed by a licensed civil engineer with a specialization in geotechnical engineering certifying that the proposed source contains suitable material meeting the specifications outlined in the CEMVN's Soil Boring Factsheet.

The geotechnical report must consist of a summary and conclusion section in the main body of the report with any supporting data attached separately. The licensed engineer shall determine the sub-surface investigations required. These investigations could include but are not limited to soil borings, test sites, or cone penetrometer tests.

Investigations shall be spaced according to the geotechnical engineer's sub-surface evaluation and be representative of the entire proposed source. The licensed engineer's test plan must provide a comprehensive sampling to at least 5 feet below the bottom of the proposed excavation.

All soil samples must be classified in accordance with the Unified Soil Classification system. The supporting data attached to the geotechnical report shall be comprehensive and include as a minimum all field logs, soil sampling and testing results and a detailed investigation location map with the location of the potential borrow source and all investigation locations superimposed. The soil investigation locations must include latitudes and longitudes for plotting purposes. The required soil tests are listed below.

Laboratory Tests shall include:

1. Soil classification shall be performed in accordance with the Unified Soil Classification System and ASTM D 2487.

2. Atterberg Limits Test shall be performed in accordance with ASTM D 4318.

3. Determination of moisture content shall be performed in accordance with ASTM D 2216 or ASTM D 4643.

4. Determination of organic content shall be performed in accordance with ASTM D 2974, Method C.

5. Control compaction curves shall be established in accordance with ASTM D 698 (Standard Proctor Compaction Tests). A control compaction curve is required for each soil type from each source. Where material is blended and stockpiled, a control compaction curves would be required for each resulting blend of material and would be utilized in lieu of those required for the "unblended materials."

6. Sand Content shall be determined by- 200 wash in accordance with ASTM D-1140.

Test Procedures for Borings shall include:

1. A moisture content determination shall be made and recorded on all samples classified as (CH), (CL), and (ML) at no less than 2 foot intervals.

2. For (CH), (CL), and (ML) soils, Atterberg Limits and Organic Content Testing (ASTM D 2974, Method C), is required every 5 feet (minimum).

3. Samples with moisture contents at 70 percent or higher or having a Liquid Limit of 70 or higher must be tested for organic content for that sample as well as for a sample 2 feet above and 2 feet below that sample.

4. Sand content tests would be required for samples that classify as CL (with a PI greater than 10) and for all clay samples (CH and CL) with greater than 10 percent coarse grain materials estimated by visual classification for 2 or more consecutive feet.

5. Sand content tests would be limited to one test every 5 feet of sampling and shall conform to ASTM D1140-00 (#200 sieve required).

6. Sand content tests would be required for samples that classify as a ML, but limited to one test every 5 feet of sampling.

The resulting classification, plasticity, water content, and organic content determinations and borrow area boring logs with GPS readings at the boring locations have been or will be analyzed for potential borrow use by the CEMVN to determine the suitability of the soil. Geotechnical testing and soil analysis is ongoing at some of the areas, so it is possible that the area of suitable acreage may decrease as results are finalized.

Government Furnished Sites

For potential government furnished borrow sites, the CEMVN would conduct site visits, perform soil borings and testing, acquire all pertinent environmental clearances, and be responsible for borrow material excavations. Using this method, the landowner simply provides the CEMVN with a signed right-of-entry (ROE) form and the Government completes all required testing and analysis.

Contractor Furnished Sites

For potential contractor furnished borrow sites, individual landowners are responsible for soil boring and testing, and acquiring state and Federal environmental clearances. Upon completing all required tasks, the landowner would submit a complete package to the CEMVN for approval. The Government would complete an analysis of the site and the material proposed for use based upon the information supplied to the Government by the landowner. Upon approval of the site by the Government, the potential borrow site would be placed on the contractor furnished list of potential contractor furnished borrow sources. The CEMVN may opt to provide in construction contracts a complimentary list of contractor furnished clay sources that have been deemed to have material that meet geotechnical standards and to be environmentally acceptable. The USACE does, however, caution that it cannot vouch for the availability, suitability or quantity of borrow material from such listed sources. The construction contractor is not obligated to select a site from the contractor furnished clay source list. However, if the contractor chooses to obtain borrow elsewhere, then it must demonstrate that its source has undergone environmental clearance conforming to the USACE's requirements, and that the source meets the USACE's geotechnical standards. Agreements for use of a site would solely be between a construction contractor and the landowner, and at no point in time would the landowner have an agreement with the CEMVN. Additionally, there are no guarantees that the landowner would ever sell borrow material for construction of the HSDRRS. For a contractor to use borrow from the contractor furnished clay source list, the contractor must reach an agreement with the site owner(s) and compensate the owner for the material used from the site, based on that agreement. Reaching the agreement and compensating the landowner are the responsibility of the construction contractor.

Supply Contract

The Government may secure borrow material through a supply contractor that would deliver material to the construction site and/or stockpile area for placement by the construction contractor. For potential supply contract borrow sites individual bidders are responsible for geotechnical testing and acquiring state and Federal environmental clearances. Upon completing all required tasks, the landowner would submit a complete package to the CEMVN for approval, when requested as per a contract Request for Proposal. Sites would be evaluated by the CEMVN for environmental compliance and soil suitability. If approved, the bidders would be allowed to participate in the supply contract process.

3.2 SIGNIFICANT RESOURCES

This section contains a list of the significant resources located in the vicinity of the proposed action, and describes in detail those resources that may 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 the impacts 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).

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 1 shows those significant resources found within the project area, and notes whether they would be impacted by any of the alternatives.

This report assumes that under the no action alternative the proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified. Borrow material would be acquired at sites not discussed in this IER. Consequently, the impacts discussed in this report are those impacts specifically associated with utilizing the proposed Bazile and Johnson/Crovetto government furnished borrow areas, and the proposed Westbank F access route.

Table 1: Significant Resources in Project Study Area

Significant Resource	Impacted	Not Impacted
Jurisdictional Wetlands		X
Non-Jurisdictional Bottomland Hardwood Forest	X	
Upland Areas	X	
Prime and Unique Farmland	X	
Wildlife	X	
Threatened and Endangered Species		X
Cultural Resources		X
Recreational Resources		X
Air Quality	X	
Water Quality	X	
Aesthetic (Visual) Resources	X	
Noise	X	
Socioeconomic Resources	X	

3.2.1 Jurisdictional Wetlands

Existing Conditions

At this time, the CEMVN is working diligently to avoid impacts to jurisdictional wetlands (as defined by Section 404 of the Clean Water Act) associated with providing

borrow material for construction of the HSDRRS. The CEMVN selection prioritization of potential borrow areas (section 2.1), as well as the USFWS guidance (appendix D), relating to impacts to jurisdictional wetlands have been and will continue to be followed. The CEMVN will coordinate with governmental agencies and the public if jurisdictional wetland may be impacted during future proposed government or contractor furnished borrow activities.

During initial investigations, a jurisdictional wetland determination from the CEMVN Regulatory Functions Branch was completed for the potential government furnished borrow areas and access route. The proposed Gray government furnished borrow area was eliminated from further consideration due to its mixed wetland habitat. Wetland acreages avoided are shown in table 2. The proposed Bazile and Johnson/Crovetto government furnished borrow areas and access route for the approved Westbank F government furnished borrow site do not contain jurisdictional wetlands.

Table 2: Jurisdictional Wetland Acreage Avoided

Proposed Borrow Area	Parish	Initial Area Investigated (acres)	Jurisdictional Wetlands Present (acres)	Jurisdictional Wetlands Avoided (acres)	Size After Jurisdictional Wetland Avoidance (acres)
Gray	St. Bernard	13.2	Mixed 13.2	Mixed 13.2	0

Mixed: Impractical to excavate without disturbing wetlands

Discussion of Impacts

No Action

- *All Sites*

Direct Impacts
No direct impacts to jurisdictional wetlands would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
No indirect impacts to jurisdictional wetlands would occur under the no action alternative.

Cumulative Impacts
Cumulative impacts to jurisdictional wetlands would continue in the project area under the no action alternative. Historical and present wetland loss and gain in southeastern Louisiana has been caused by a multitude of natural and anthropogenic actions (Barras et al., 2004). Coastal wetland loss has occurred for thousands of years in Louisiana, and has until the 20th century been balanced by various natural wetland building processes (LACOAST, 1997). Multiple factors have been associated with coastal land loss, including the inhibition of sediment movement into coastal systems due to levee systems along the Mississippi River; man-made canals and their associated hydrologic changes (i.e., saltwater intrusion); a decline of suspended sediments coming from the Mississippi River due to upriver dams and other projects; erosion caused by wave action and boating activity; geologic compaction and faulting; storm events, including

hurricanes; and relative sea level rise (Boesch et al., 1994). Public and private wetland creation and restoration projects have contributed to wetland gain in southeastern Louisiana. Major programs and initiatives include the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) program; the Beneficial Use of Dredged Material (BUDMAT) program; WRDA restoration projects (e.g., Davis Pond Freshwater Diversion, Caernarvon Freshwater Diversion); vegetation restoration projects (e.g., National Resources Conservation Service Plant Materials Center); Louisiana state restoration projects; the Louisiana Parish Coastal Wetland Restoration Program; Federal Emergency Management Agency (restoration projects; public and private parties' initiatives, including those of non-governmental organizations and corporations; and private mitigation banks. It is expected that the trend of wetland loss would continue, the rate of which would be slowed by the previously mentioned wetland creation and restoration initiatives.

Human-induced impacts to wetlands have contributed the most to wetland loss in leveed areas. Most of these impacts have been associated with the conversion of wetland areas for agriculture and residential housing. These actions are regulated by the USACE Clean Water Act Section 404 regulatory program, and wetland losses are mitigated through the USACE's regulatory program. It is expected that this historical trend of anthropogenic impacts would continue to impact non-protected leveed wetlands in the region.

Federal and non-Federal borrow activity have contributed to the loss of wetlands in the region. Historically, borrow material was taken from sources nearby to a levee, sometimes within wetland areas. At this time, it is the policy of the CEMVN not to impact wetlands when acquiring borrow for the proposed HSDRRS projects (section 2.1). Other Federal, and non-Federal levee projects may incrementally impact wetlands for borrow acquisition and levee construction in the reasonably foreseeable future.

Historical and projected loss of wetlands in southeastern Louisiana has been analyzed and discussed in Coast 2050: Towards a Sustainable Coastal Louisiana (LCWCRTF, 1998), the final Louisiana Coastal Area (LCA), Louisiana - Ecosystem Restoration Study (USACE, 2004), Louisiana's Comprehensive Master Plan for a Sustainable Coast (LACPRA, 2007), and the ongoing USACE Louisiana Coastal Protection and Restoration project.

Proposed Action

- *Bazile*

Direct Impacts
No direct impacts to jurisdictional wetlands would occur with implementation of the proposed action. Any jurisdictional wetland areas outside of the proposed government furnished borrow area would be avoided. The area would be converted to ponds and small lakes if water is retained, or to a vegetated area if water is not retained.

Indirect Impacts
If ponds or small lakes form after excavation of the site wetland habitat may form around them. Wetland species from nearby habitat would be expected to colonize the area. The excavated borrow area may affect nearby jurisdictional wetlands by

changing the hydrology and nutrient dynamics in the vicinity. These changes have not been quantified.

Cumulative Impacts
Cumulative impacts to jurisdictional wetlands would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
No direct impacts to jurisdictional wetlands would occur with implementation of the proposed action. Any jurisdictional wetland areas outside of the proposed government furnished borrow area would be avoided. The area would be converted to ponds and small lakes if water is retained, or to a vegetated area if water is not retained.

Indirect Impacts
If ponds or small lakes form after excavation of the site wetland habitat may form around them. Wetland species from nearby habitat would be expected to colonize the area. The excavated borrow area may affect nearby jurisdictional wetlands by changing the hydrology and nutrient dynamics in the vicinity. These changes have not been quantified.

Cumulative Impacts
Cumulative impacts to jurisdictional wetlands would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
No direct impacts to jurisdictional wetlands would occur with implementation of the proposed action. Any jurisdictional wetland areas outside of the proposed area would be avoided.

Indirect Impacts
No indirect impacts to wetlands are expected with use of the proposed Westbank F access route. Use of the proposed access route to access the approved Westbank F borrow area would result in the excavation of borrow material from the approved Westbank F government furnished borrow area. Indirect impacts due to excavation of the site would be similar to those discussed for the proposed Bazile and Johnson/Crovetto government furnished borrow areas. The excavated borrow area may affect nearby jurisdictional wetlands by changing the hydrology and nutrient dynamics in the vicinity. These changes have not been quantified.

Cumulative Impacts
Cumulative impacts to jurisdictional wetlands would be similar to those discussed for the no action alternative.

3.2.2 Non-Jurisdictional Bottomland Hardwood Forest

Existing Conditions
Bottomland hardwood forest (BLH) is a habitat that is found throughout southeastern Louisiana. The typically productive forests are found in low-lying areas, and are usually dominated by deciduous trees such as hackberry, Chinese tallow tree, pecan, American

elm, live oak, water oak, green ash, bald cypress, black willow, box elder, and red maple. Typical understory plants include dewberry, elderberry, ragweed, Virginia creeper, and poison ivy. Hard mast (nuts) and soft mast (samaras, berries) provide a valuable nutritional food source for birds, mammals, and other wildlife species.

The USACE has regulatory authority over jurisdictional Waters of the United States, including wetlands, pursuant to Section 404 of the Clean Water Act. Non-jurisdictional BLH are those habitats that do not meet all three wetland criteria (hydrophytic vegetation, hydric soils, and wetland hydrology), and thus are out of the USACE's jurisdiction (USACE 1987). Section 906(b) of WRDA 1986 requires that impacts to BLH are mitigated for if impacted by an USACE project.

- *Bazile*
  The 19.1-acre Bazile site includes 11.6 acres of non-jurisdictional BLH forest comprised of willow, elm, ash, ragweek, vines, and poison ivy.

- *Johnson/Crovetto*
  The 12.9-acre Johnson/Crovetto site includes 8.05 acres of non-jurisdictional BLH forest comprised of elm, ash, willow, dewberry, and poison ivy.

- *Westbank F Access Route*
  The 0.29-acre access route to the Westbank F borrow area includes 0.29 acre of non-jurisdictional BLH forest comprised of red maple, green ash, elm, and hackberry.

Staff from the CEMVN and the USFWS visited the proposed government furnished borrow areas and proposed access route to assess the value of these BLH habitats. Table 8 lists these values, as calculated by using a habitat evaluation model (appendix D).

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  No direct impacts to non-jurisdictional BLH would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  No indirect impacts to non-jurisdictional BLH would occur under the no action alternative.

  Cumulative Impacts
  No cumulative impacts to non-jurisdictional BLH at the site would occur under the no action alternative. Cumulative impacts to non-jurisdictional BLH would continue in the project area under the no action alternative. There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS (figure 8). The approved Westbank N and Walker Road pits are within upper Plaquemines Parish and have non-jurisdictional BLH located on them. Additionally, most of the proposed sites

in the vicinity contain non-jurisdictional BLH. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact non-jurisdictional BLH habitat in upper Plaquemines Parish.

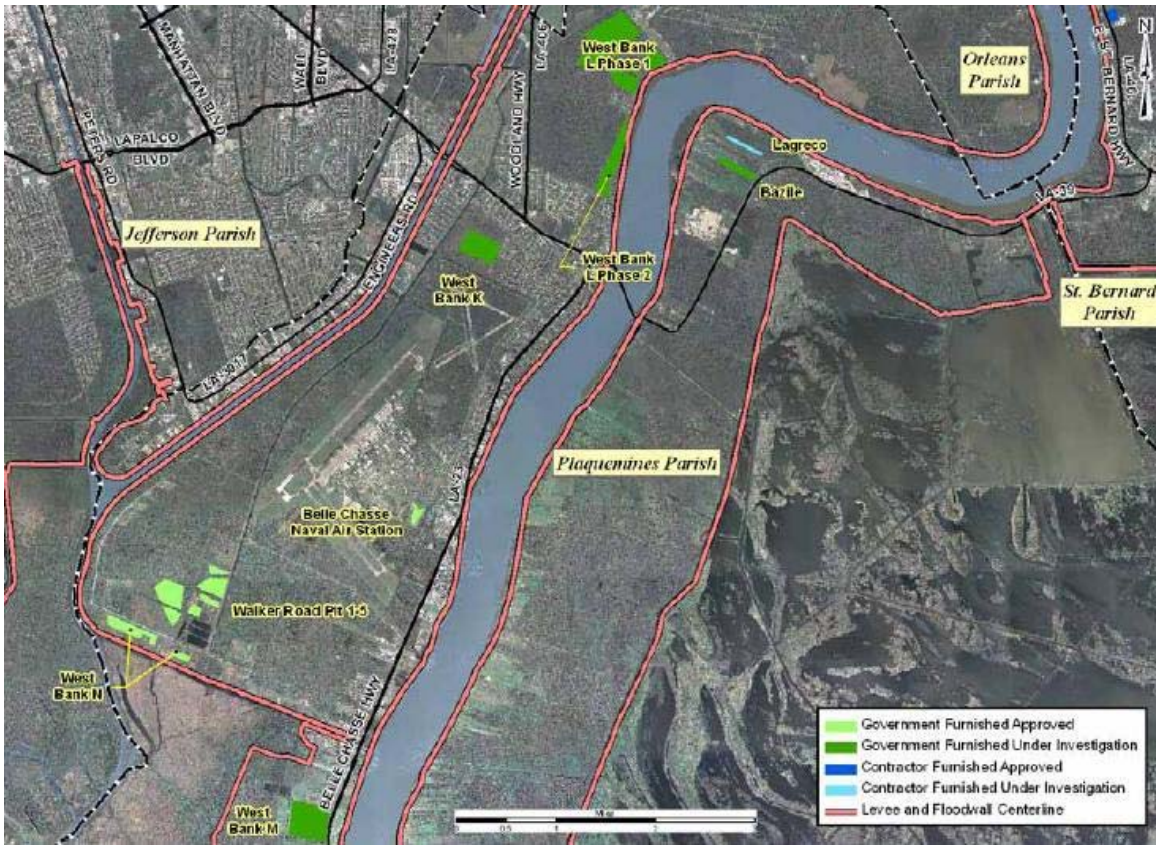

Figure 8: Potential HSDRRS Borrow Sources in Upper Plaquemines Parish

Other activities in upper Plaquemines Parish have and would continue to change land use patterns, contributing to the cumulative loss of non-jurisdictional BLH habitat in the project area. Most of upper Plaquemines Parish was historically marsh and cypress. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River because of their relatively high elevation. These natural levees were historically dominated by upland forests, a majority of which would likely be classified as non-jurisdictional BLH. Over the past 300 years portions of the area were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population in the vicinity is found on natural levees. The unleveed area to the east of the proposed project site is still dominated by marsh, cypress, and open water.

The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted

by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact non-jurisdictional BLH habitat, incrementally adding to the loss of the habitat in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to BLH loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of non-jurisdictional BLH in the region; IER #1 – IER #17 document the impacts to the habitat caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from non-jurisdictional BLH habitat. Section 906(b) of WRDA 1986 requires that impacts to BLH are mitigated for if impacted by an USACE project; compensatory mitigation will be completed for any sites excavated for use in USACE projects.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and non-jurisdictional BLH may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact non-jurisdictional BLH.

Non-jurisdictional BLH habitat in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact non-jurisdictional BLH habitat in the region.

- *Johnson/Crovetto*

<u>Direct Impacts</u>
No direct impacts to non-jurisdictional BLH would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

<u>Indirect Impacts</u>
No indirect impacts to non-jurisdictional BLH would occur under the no action alternative.

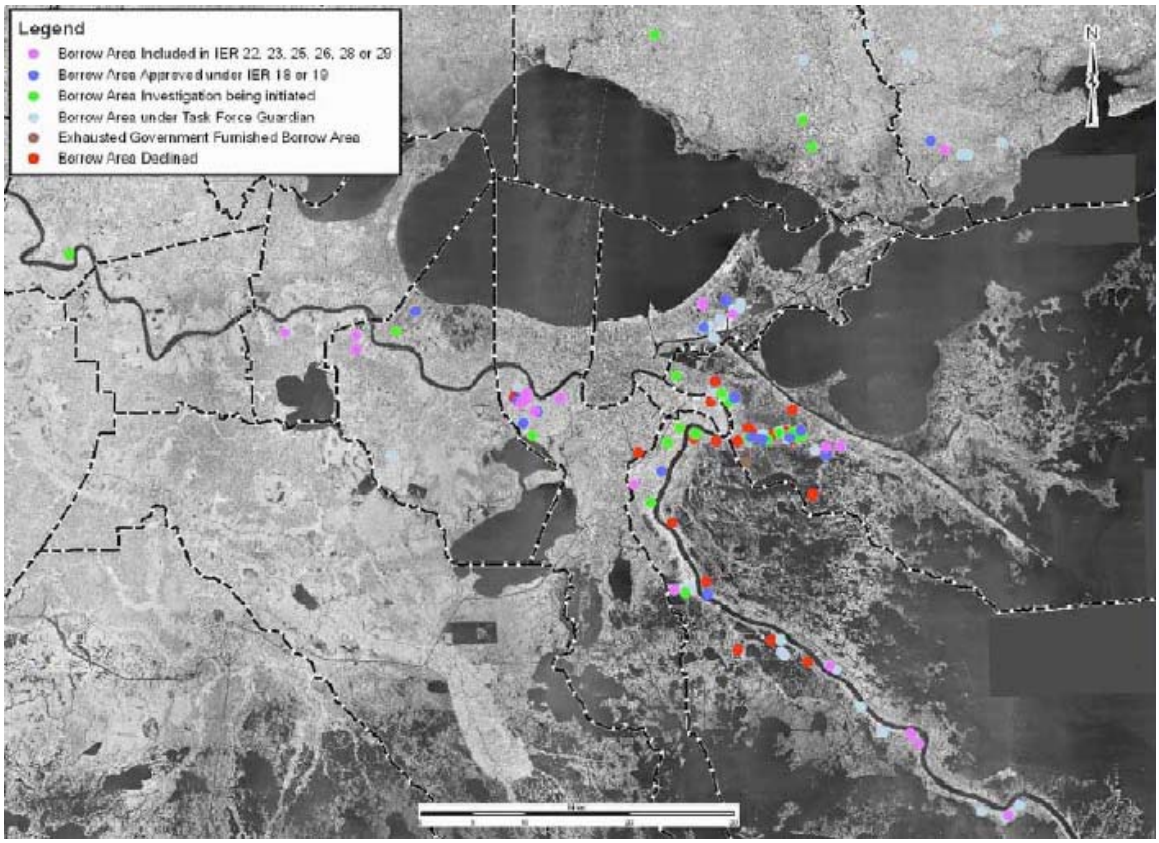

Figure 9: Potential HSDRRS Borrow Sources in Southeastern Louisiana

Cumulative Impacts

No cumulative impacts to non-jurisdictional BLH at the site would occur under the no action alternative. Cumulative impacts to non-jurisdictional BLH would continue in the project area under the no action alternative. There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS (figure 10). The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. The Dockville, 1428/1420 Bayou Road, and 1572 Bayou Road sites have non-jurisdictional BLH located on them. Additionally, the proposed Contreras Dirt site, which contains non-jurisdictional BLH, is also in the vicinity. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact non-jurisdictional BLH habitat in St. Bernard Parish.

Other activities in St. Bernard Parish have and would continue to change land use patterns, contributing to the cumulative loss of non-jurisdictional BLH habitat in the project area. Most of the area of St. Bernard Parish was historically marsh and cypress. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River, Bayou La Loutre, and Bayou Terre aux Boeuf because of their relatively high elevation. These natural levees were historically dominated by upland forests, a majority of which would likely be classified as non-jurisdictional BLH. Over the past 300 years portions of the

parish were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population of St. Bernard Parish is found on natural levees, and the parish is still dominated by marsh, cypress, and open water.

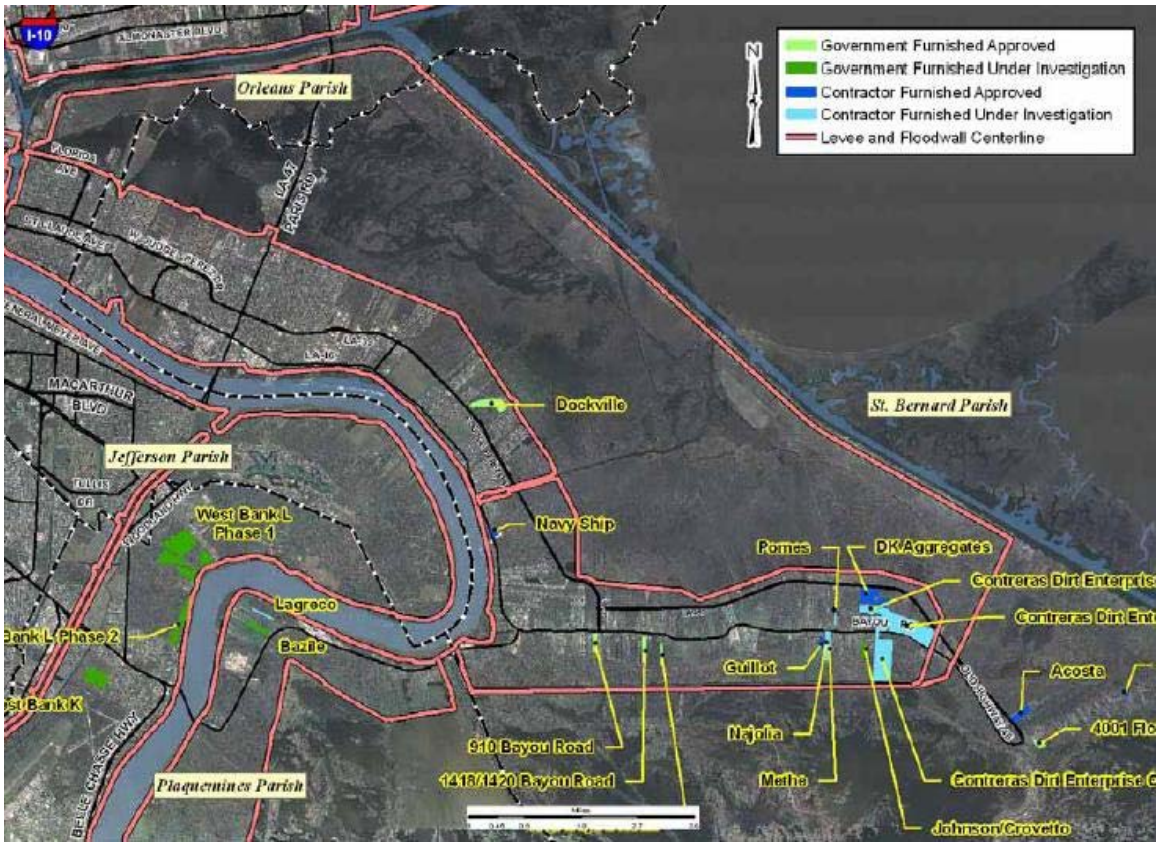

Figure 10: Potential HSDRRS Borrow Sources in St. Bernard Parish

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact non-jurisdictional BLH habitat, incrementally adding to the loss of the habitat in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to BLH loss in the project area. Additionally, construction of the HSDRRS would also

contribute to the destruction of non-jurisdictional BLH in the region; IER #1 – IER #17 document the impacts to the habitat caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from non-jurisdictional BLH habitat. Section 906(b) of WRDA 1986 requires that impacts to BLH are mitigated for if impacted by an USACE project; compensatory mitigation will be completed for any sites excavated for use in USACE projects.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and non-jurisdictional BLH may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact non-jurisdictional BLH.

Non-jurisdictional BLH habitat in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact non-jurisdictional BLH habitat in the region.

- *Westbank F Access Route*

Direct Impacts
No direct impacts to non-jurisdictional BLH would occur under the no action alternative. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the approved Westbank F borrow site, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
No indirect impacts to non-jurisdictional BLH would occur under the no action alternative.

Cumulative Impacts
No cumulative impacts to non-jurisdictional BLH at the site would occur under the no action alternative. Cumulative impacts to non-jurisdictional BLH would continue in the project area under the no action alternative. There are a number of proposed and approved borrow actions in the western portion Jefferson Parish on the west bank of the Mississippi River that were approved or are being investigated for construction of the HSDRRS (figure 11). The approved Churchill Farms, Westbank G, River Birch, Westbank F, Westbank I, Westbank D, Westbank E, Willswood, and South Kenner Road sites are within the portion of the parish. All but the Westbank D, Willswood, and South Kenner Road sites have non-jurisdictional BLH located on them. Additionally, some of the proposed sites contain non-jurisdictional BLH. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact non-jurisdictional BLH habitat in the western portion Jefferson Parish.

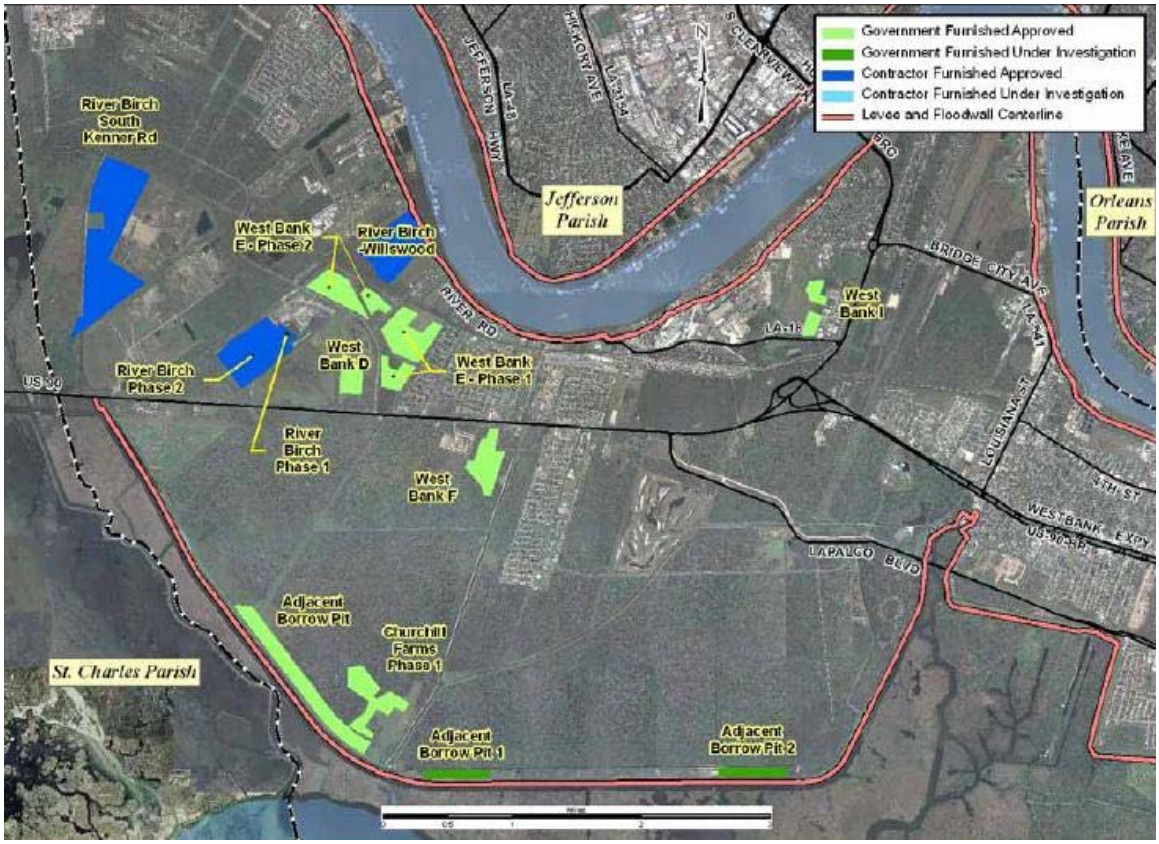

Figure 11: Potential HSDRRS Borrow Sources in Western Jefferson Parish

Other activities in the western portion Jefferson Parish on the west bank of the Mississippi River have and would continue to change land use patterns, contributing to the cumulative loss of non-jurisdictional BLH habitat in the project area. The area was historically wetlands and forest in the southern portion, and natural levee near the Mississippi River. The area is entirely leveed and includes a mix of developed and undeveloped land. Commercial farms and residential areas are found mostly in the northern portion, and modified forested wetlands and non-jurisdictional forest are in the south.

The effects of Hurricane Katrina on Jefferson Parish were extensive, as they were in most of southeastern Louisiana. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in the project vicinity would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact non-jurisdictional BLH habitat, incrementally adding to the loss of the habitat in southeastern Louisiana.

Currently, unidentified borrow sources may also incrementally add to BLH loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of non-jurisdictional BLH in the region; IER #1 – IER #17 document the impacts to the habitat caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from non-jurisdictional BLH habitat. Section 906(b) of WRDA 1986 requires that impacts to BLH are mitigated for if impacted by an USACE project; compensatory mitigation will be completed for any sites excavated for use in USACE projects.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and non-jurisdictional BLH may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact non-jurisdictional BLH.

Non-jurisdictional BLH habitat in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact non-jurisdictional BLH habitat in the region.

Proposed Action

This USFWS has assessed the environmental impacts of the proposed action, and has determined that the proposed action would have unavoidable impacts to a total of 19.94 acres and 8.45 Average Annualized Habitat Units (AAHUs) of non-jurisdictional BLH. Habitat Units (HUs) represent a numerical combination of habitat quality (Habitat Suitability Index) and habitat quantity (acres) within a given area at a given point in time. AAHUs represent the average number of HUs within any given year over the project life for a given area. Mitigation for unavoidable impacts to non-jurisdictional BLH is discussed in section 6, and will be described under a separate IER.

- *Bazile*

Direct Impacts

With implementation of the proposed action, there would be direct impacts to 11.6 acres of non-jurisdictional BLH forest. Mature trees would be cut down with the use of chainsaws or pushed down with bulldozers and excavators. Woody debris would be cleaned up and all berms would be leveled to eliminate hydrologic impacts. Once excavated, the area would no longer be viable for silviculture practices, and some wildlife habitat would be removed. The area would be converted to ponds and small lakes if water is retained, or by vegetation and woody plants if water is not retained. It is expected that either type of area would attract a variety of wildlife including birds, reptiles, amphibians, and small mammals.

Indirect Impacts
The excavation of borrow material and the excavated borrow area may affect nearby non-jurisdictional BLH by changing the hydrology and nutrient dynamics in the vicinity. These changes have not been quantified.

Cumulative Impacts
The removal of 11.6 acres of non-jurisdictional BLH would contribute to the cumulative loss of bottomland hardwood resources in the project area. Additional cumulative impacts to non-jurisdictional BLH would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
With implementation of the proposed action, there would be direct impacts to 8.05 acres of non-jurisdictional BLH forest. Mature trees would be cut down with the use of chainsaws or pushed down with bulldozers and excavators. Woody debris would be cleaned up and all berms would be leveled to eliminate hydrologic impacts. Once excavated, the area would no longer be viable for silviculture practices, and some wildlife habitat would be removed. The area would be converted to ponds and small lakes if water is retained, or by vegetation and woody plants if water is not retained. It is expected that either type of area would attract a variety of wildlife including birds, reptiles, amphibians, and small mammals.

Indirect Impacts
The excavation of borrow material and the excavated borrow area may affect nearby non-jurisdictional BLH by changing the hydrology and nutrient dynamics in the vicinity. These changes have not been quantified.

Cumulative Impacts
The removal of 8.05 acres of non-jurisdictional BLH would contribute to the cumulative loss of these bottomland hardwood resources in the project area. Additional cumulative impacts to non-jurisdictional BLH would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
With implementation of the proposed action, there would be direct impacts to 0.29 acre of non-jurisdictional BLH forest. Mature trees would be cut down with the use of chainsaws or pushed down with bulldozers and excavators. Woody debris would be cleaned up and all berms would be leveled to eliminate hydrologic impacts. Once the 0.29 acre site is cleared, it would be used as an access route to the approved Westbank F borrow site. Excavation of the approved Westbank F borrow site would also impact BLH habitat; these impacts are discussed in IER #22.

Indirect Impacts
The use of the proposed access route to access the approved Westbank F borrow area would result in the excavation of borrow material from the approved Westbank F government furnished borrow area. The excavated borrow area may affect nearby non-jurisdictional BLH by changing the hydrology and nutrient dynamics in the vicinity. These changes have not been quantified.

Cumulative Impacts
The removal of 0.29 acre of non-jurisdictional BLH would contribute to the cumulative loss of bottomland hardwood resources in the project area. Use of the proposed access route would enable the excavation of the approved Westbank F government furnished borrow area. The excavation of 60.8 acres of non-jurisdictional BLH from the Westbank F government furnished borrow area would contribute to the cumulative loss of the resource within the project area. Additional cumulative impacts to non-jurisdictional BLH would be similar to those discussed for the no action alternative.

3.2.3 Upland Areas

For the purposes of this report, upland resources are considered to be any non-wetland areas. Non-jurisdictional BLH habitat, although part of this definition, are discussed separately in section 3.2.2. Upland areas include maintained and unmaintained pasture, and forested areas that are neither wetland nor non-jurisdictional BLH. Impacts to farmland and prime and unique farmland soils, which may be located in upland areas, are discussed in section 3.2.4.

Existing Conditions
Some species identified in the non-wet pasture areas include Johnson grass, yellow bristle grass, annual sumpweed, arrow-leaf sida, vasey grass, and Brazilian vervain. The scrub/ shrub areas are comprised of Chinese tallow tree, eastern false-willow, wax myrtle, giant ragweed, dew berry, elderberry, red mulberry, pepper vine, and dog-fennel.

The areas listed below show representative vegetation found in the pasture and scrub/ shrub areas.

- *Bazile*
  The remaining non-forested land at the proposed Bazile site, approximately 7.5 acres, is unmaintained pasture land.

- *Johnson/Crovetto*
  The remaining non-forested land at the proposed Johnson/Crovetto site is 4.85 acres of maintained pasture land.

- *Westbank F Access Route*
  The entire 0.29 acre site is dominated by non-jurisdictional BLH; impacts to this habitat are discussed in section 3.2.2.

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  No direct impacts to upland areas would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  No indirect impacts to upland areas would occur under the no action alternative.

Cumulative Impacts

Cumulative impacts to upland resources would continue in the project area under the no action alternative. There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS (figure 8). The approved Westbank N and Walker Road pits are within upper Plaquemines Parish and have non-wetland upland areas located on them. Additionally, most of the proposed sites in the vicinity contain non-wetland upland areas. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact upland in upper Plaquemines Parish.

Other activities in upper Plaquemines Parish have and would continue to change land use patterns, contributing to the cumulative loss of upland areas in the project area. Most of upper Plaquemines Parish was historically marsh and cypress. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River because of their relatively high elevation. These natural levees were historically dominated by upland forests. Over the past 300 years portions of the area were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population in the vicinity is found on natural levees. The unleveed area to the east of the proposed project site is still dominated by marsh, cypress, and open water.

The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact upland areas, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to upland loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of upland areas in the region; IER #1 – IER #17 document the impacts caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from upland areas.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and non-wetland upland areas may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact upland areas.

Upland areas in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact upland areas in the region.

- *Johnson/Crovetto*

Direct Impacts
No direct impacts to upland areas would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
No indirect impacts to upland areas would occur under the no action alternative.

Cumulative Impacts
Cumulative impacts to upland resources would continue in the project area under the no action alternative. There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS (figure 10). The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. The 910 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites have pastureland and forested areas located on them. Additionally, the proposed Contreras Dirt, Methe, and Najolia sites contain upland areas and are also in the vicinity. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact upland areas in St. Bernard Parish.

Other activities in St. Bernard Parish have and would continue to change land use patterns, contributing to the cumulative loss of upland areas in the project area. Most of the area of St. Bernard Parish was historically marsh and cypress. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River, Bayou La Loutre, and Bayou Terre aux Boeuf because of their relatively high elevation. These natural levees were historically dominated by upland forests. Over the past 300 years portions of the parish were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population of St. Bernard Parish is found on natural levees, and the parish is still dominated by marsh, cypress, and open water.

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that

remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact non-wetland upland areas, incrementally adding to the loss of the habitat in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to upland loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of upland areas in the region; IER #1 – IER #17 document the impacts to the habitat caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from non-wetland upland areas.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and upland areas may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact upland areas.

Non-wetland upland areas in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact upland areas in the region.

- *Westbank F Access Route*

<u>Direct Impacts</u>
No direct impacts to upland areas would occur under the no action alternative. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the approved Westbank F borrow area, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

<u>Indirect Impacts</u>
No indirect impacts to upland areas would occur under the no action alternative.

<u>Cumulative Impacts</u>
Cumulative impacts to upland resources would continue in the project area under the no action alternative. There are a number of proposed and approved borrow actions in the western portion Jefferson Parish on the west bank of the Mississippi River that were approved or are being investigated for construction of the HSDRRS (figure 11). The approved Churchill Farms, Westbank G, River Birch, Westbank F, Westbank I, Westbank D, Westbank E, Willswood, and South

Kenner Road sites are within the portion of the parish. The River Birch, Westbank D, Westbank E, Willswood, and South Kenner Road sites have non-wetland upland areas located on them. Additionally, some of the proposed sites contain upland areas. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact non-wetland upland areas in the western portion Jefferson Parish.

Other activities in the western portion Jefferson Parish on the west bank of the Mississippi River Parish have and would continue to change land use patterns, contributing to the cumulative loss of upland areas in the project area. The area was historically wetlands and forest in the southern portion, and natural levee near the Mississippi River. The area is entirely leveed and includes a mix of developed and undeveloped land. Commercial farms and residential areas are found mostly in the northern portion, and modified forested wetlands and non-jurisdictional forest are in the south.

The effects of Hurricane Katrina on Jefferson Parish were extensive, as they were in most of southeastern Louisiana. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in the project vicinity would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact non-wetland upland areas, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to upland loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of upland areas in the region; IER #1 – IER #17 document the impacts caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from non-wetland upland areas.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and upland areas may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact upland areas.

Non-wetland upland areas in southeastern Louisiana have historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact upland areas in the region.

Proposed Action

- *Bazile*

  Direct Impacts
  With implementation of the proposed action, direct impacts to approximately 7.5 acres of upland area would occur from clearing and excavation. Pasture areas would no longer provide grasses for herbivores such as deer, rabbits, and cattle. Some scrub/shrub areas may develop around the borrow area perimeters in time if they fill with water.

  Indirect Impacts
  No indirect impacts to upland areas would occur with implementation of the proposed action.

  Cumulative Impacts
  Use of the proposed Bazile borrow area would cumulatively impact upland areas in the project area. Additional cumulative impacts to upland areas would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

  Direct Impacts
  With implementation of the proposed action, direct impacts to approximately 4.85 acres of upland area would occur from clearing and excavation. Pasture areas would no longer provide grasses for herbivores such as deer, rabbits, and cattle. Some scrub/shrub areas may develop around the borrow area perimeters in time if they fill with water.

  Indirect Impacts
  No indirect impacts to upland areas would occur with implementation of the proposed action.

  Cumulative Impacts
  Use of the proposed Johnson/Crovetto borrow area would cumulatively impact upland areas in the project area. Additional cumulative impacts to upland areas would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

  Direct Impacts
  No direct impacts to upland areas would occur with implementation of the proposed action.

  Indirect Impacts
  No indirect impacts to upland areas would occur with implementation of the proposed action.

  Cumulative Impacts
  The cumulative loss of upland areas would continue in the project area with implementation of the proposed alternative. Additional cumulative impacts to upland areas would be similar to those discussed for the no action alternative.

3.2.4 Prime and Unique Farmland

Existing Conditions

The proposed Bazile and Johnson/Crovetto government furnished borrow areas and proposed Westbank F access route contain prime and unique soils according to the National Resources Conservation Service (NRCS) (table 3).

Table 3: Prime and Unique Farmland Soils Present

Site Name	Parish	Soil map unit(s)	Prime Farmland	Acres of Prime and Unique Farmland
Johnson/Crovetto	St. Bernard	Schriever silty clay loam	Yes	12.5
		Cancienne silt loam		
Bazile	Plaquemines	Vacherie silt loam	Yes	18
		Cancienne silt loam		
		Schriever clay		
Westbank F Access Route	Jefferson	Harahan clay	Yes	0.29
		Shriever clay		

Discussion of Impacts

No Action

- *Bazile*

Direct Impacts

No direct impacts to farmland, or prime and unique farmland soils would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts

No indirect impacts to farmland, or prime and unique farmland soils would occur under the no action alternative.

Cumulative Impacts

Cumulative impacts to farmland resources would continue in the project area under the no action alternative.

There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS (figure 8). None of the approved or proposed sites in the upper Plaquemines Parish are farmland. These approved sites do not contain prime and unique farmland soils, and it is unknown whether or not the proposed sites do. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, but their use would not cumulatively impact farmland or prime and unique farmland soils in upper Plaquemines Parish.

Other activities in upper Plaquemines Parish have and would continue to change land use patterns, contributing to the cumulative loss of farmed areas in the project area. Most of upper Plaquemines Parish was historically marsh and cypress. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River because of their relatively high elevation. These natural levees were historically dominated by upland forests. Over the past 300 years portions of the area were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population in the vicinity is found on natural levees. The unleveed area to the east of the proposed project site is still dominated by marsh, cypress, and open water.

The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact farmland or prime and unique farmland soils, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to farmland or prime and unique farmland soils loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of farmed areas in the region; IER #1 – IER #17 document the impacts caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from farmland.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and farmland or prime and unique farmland soils may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact farmland.

Farmed areas in southeastern Louisiana have historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact farmland in the region.

- *Johnson/Crovetto*

  Direct Impacts
  No direct impacts to farmland, or prime and unique farmland soils would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  No indirect impacts to farmland, or prime and unique farmland soils would occur under the no action alternative.

  Cumulative Impacts
  Cumulative impacts to farmland resources would continue in the project area under the no action alternative. There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS (figure 10). The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. All but the Dockville site contain prime and unique farmland soils on them. It is unknown where or not prime and unique farmland soils are located on proposed sites in the vicinity. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and use of the Dockville site would cumulatively impact upland areas in St. Bernard Parish.

  Other activities in St. Bernard Parish have and would continue to change land use patterns, contributing to the cumulative loss of farmland and prime and unique farmland soils in the project area. Most of the area of St. Bernard Parish was historically marsh and cypress. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River, Bayou La Loutre, and Bayou Terre aux Boeuf because of their relatively high elevation. These natural levees were historically dominated by upland forests. Over the past 300 years portions of the parish were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population of St. Bernard Parish is found on natural levees, and the parish is still dominated by marsh, cypress, and open water.

  The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

  To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9).

HSDRRS borrow activity would cumulatively impact farmland and prime and unique farmland soils, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to farmland loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of farmland in the region; IER #1 – IER #17 document the impacts caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from farmland.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and farmland and prime and unique farmland soils may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact farmland.

Farmland and prime and unique farmland soils in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact farmland in the region.

- *Westbank F Access Route*

Direct Impacts
No direct impacts to farmland, or prime and unique farmland soils would occur under the no action alternative. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the approved government furnished Westbank F borrow site, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
No indirect impacts to farmland, or prime and unique farmland soils would occur under the no action alternative.

Cumulative Impacts
Cumulative impacts to farmland resources would continue in the project area under the no action alternative. There are a number of proposed and approved borrow actions in the western portion Jefferson Parish on the west bank of the Mississippi River that were approved or are being investigated for construction of the HSDRRS (figure 11). The approved Churchill Farms, Westbank G, River Birch, Westbank F, Westbank I, Westbank D, Westbank E, Willswood, and South Kenner Road sites are within the portion of the parish. The Westbank G, Westbank F, Westbank I, Westbank D, Westbank E, and Willswood sites contain prime and unique farmland soils. It is known where or not proposed sites in the vicinity contain prime and unique farmland soils. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact farmland and prime and unique farmland soils in the western portion Jefferson Parish.

Other activities in the western portion Jefferson Parish on the west bank of the Mississippi River Parish have and would continue to change land use patterns, contributing to the cumulative loss of farmland in the project area. The area was historically wetlands and forest in the southern portion, and natural levee near the Mississippi River. The area is entirely leveed and includes a mix of developed and undeveloped land. Commercial farms and residential areas are found mostly in the northern portion, and modified forested wetlands and non-jurisdictional forest are in the south.

The effects of Hurricane Katrina on Jefferson Parish were extensive, as they were in most of southeastern Louisiana. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in the project vicinity would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact farmland and prime and unique farmland soils, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to farmland loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of farmland in the region; IER #1 – IER #17 document the impacts caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from farmland.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and farmland may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact farmland.

Farmland and prime and unique farmland soils in southeastern Louisiana have historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact farmland in the region.

Proposed Action

- *Bazile*

Direct Impacts

The excavation of the Bazile site would directly impact approximately 18 acres of prime and unique farmland soils. The proposed government furnished borrow area would be cleared and excavated. Removing soils from this proposed

government furnished borrow area would result in a direct permanent loss of prime and unique farmlands, and the areas would no longer be available for farming.

Indirect Impacts
No indirect impacts to farmland, or prime and unique farmland soils would occur with implementation of the proposed action.

Cumulative Impacts
The excavation of 18 acres of prime and unique farmland soils would contribute to the cumulative loss of these resources within the project area. Additional cumulative impacts to prime and unique farmland soils and farmland would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
The excavation of the Johnson/Crovetto site would directly impact approximately 12.5 acres of prime and unique farmland soils. The proposed government furnished borrow area would be cleared and excavated. Removing soils from the proposed government furnished borrow area would result in a direct permanent loss of prime and unique farmland soils, and the area would no longer be available for farming.

Indirect Impacts
No indirect impacts to farmland, or prime and unique farmland soils would occur with implementation of the proposed action.

Cumulative Impacts
The excavation of 12.5 acres of prime and unique farmland soils would contribute to the cumulative loss of these resources within the project area. Additional cumulative impacts to prime and unique farmland soils and farmland would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
Clearing of the proposed Westbank F access route would directly impact approximately 0.29 acre of prime and unique farmland soils. The proposed access route would be cleared and used as a transportation route for trucks entering and exiting the approved Westbank F government furnished borrow area. The proposed access route would result in a direct permanent loss of prime and unique farmland soils. In addition, excavation of the approved Westbank F government furnished borrow area would also impact prime and unique farmland soils; these impacts are discussed in IER #22.

Indirect Impacts
No indirect impacts to farmland, or prime and unique farmland soils would occur with implementation of the proposed action.

Cumulative Impacts
Use of the proposed access route would contribute to the cumulative loss of prime and unique farmland soils. The access route would enable the excavation of the approved Westbank F borrow area. The excavation of approximately 148 acres of

prime and unique farmland soils from the approved Westbank F borrow area would also contribute to the cumulative loss of these resources within the project area. Additional cumulative impacts to prime and unique farmland soils and farmland would be similar to those discussed for the no action alternative.

3.2.5 Wildlife

Existing Conditions

The study area contains a great variety of mammals, birds, reptiles, and amphibians. Species inhabiting the area include nutria, muskrat, mink, otter, raccoon, white-tailed deer, skunks, rabbits, squirrels, armadillos, and a variety of smaller mammals. Wood ducks and some migratory waterfowl may be present during winter.

Non-game wading birds, shore birds, and sea birds including egrets, ibis, herons, sandpipers, willets, black-necked stilts, gulls, terns, skimmers, grebes, loons, cormorants, and white and brown pelicans are found in the project vicinity. Various raptors such as barred owls, red-shouldered hawks, northern harriers (marsh hawks), American kestrel, and red-tailed hawks may be present. Passerine birds in the areas include sparrows, vireos, warblers, mockingbirds, grackles, red-winged blackbirds, wrens, blue jays, cardinals, and crows. Many of these birds are present primarily during periods of spring and fall migrations. The areas may also provide habitat for the American alligator, salamanders, toads, frogs, turtles, and several species of poisonous and nonpoisonous snakes. The area currently provides suitable breeding habitat for various species of mosquitoes.

The bald eagle is a raptor that is found in various areas throughout the United States and Canada as well as throughout the study area. Bald eagles are Federally protected under the Bald Eagle Protection Act of 1940. The bald eagle feeds on fish, rabbits, waterfowl, seabirds, and carrion (Ehrlich et al., 1988). The main basis of the bald eagle diet is fish, but they will feed on other items such as birds and carrion depending upon availability of the various foods. Eagles require roosting and nesting habitat, which in Louisiana consists of large trees in fairly open stands (Anthony et al., 1982). Bald eagles nest in Louisiana from October through mid-May. Eagles typically nest in bald cypress trees near fresh to intermediate marshes or open water in the southeastern parishes.

Discussion of Impacts

No Action

- *Bazile*

Direct Impacts

No direct impacts to wildlife or their habitat would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts

No indirect impacts to wildlife or their habitat would occur under the no action alternative.

Cumulative Impacts

Cumulative impacts to wildlife and their habitat would continue in the project area under the no action alternative. There are several potential borrow areas in

upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS (figure 8). The approved Westbank N and Walker Road pits are within upper Plaquemines Parish and provide habitat for wildlife, as do nearby proposed sites (figure 8). It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact wildlife and their habitat in upper Plaquemines Parish.

Other activities in upper Plaquemines Parish have and would continue to change land use patterns, contributing to the cumulative loss of wildlife habitat in the project area. Most of upper Plaquemines Parish was historically marsh and cypress that provided habitat for an array of wildlife. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River because of their relatively high elevation. These natural levees were historically dominated by upland forests. Over the past 300 years portions of the area were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population in the vicinity is found on natural levees. The unleveed area to the east of the proposed project site is still dominated by marsh, cypress, and open water.

The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact wildlife and their habitat, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to wildlife loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of wildlife and their habitat in the region; IER #1 – IER #17 document the impacts to wildlife caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from wildlife habitat.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and wildlife habitat may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact wildlife and their habitat.

Wildlife and their habitat in southeastern Louisiana have historically been affected by residential, commercial, and industrial development. Land has been

converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact wildlife in the region.

- *Johnson/Crovetto*

  Direct Impacts
  No direct impacts to wildlife or their habitat would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  No indirect impacts to wildlife or their habitat would occur under the no action alternative.

  Cumulative Impacts
  Cumulative impacts to wildlife and their habitat would continue in the project area under the no action alternative. There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS (figure 10). The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. Most of these sites, as well as proposed sites in the parish, provide habitat for wildlife. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and that their use would cumulatively impact wildlife and their habitat in St. Bernard Parish.

  Other activities in St. Bernard Parish have and would continue to change land use patterns, contributing to the cumulative loss of wildlife and their habitat in the project area. Most of the area of St. Bernard Parish was historically marsh and cypress that provided habitat for a variety of wildlife species. A majority of the parish's population is concentrated along natural levees associated with the Mississippi River, Bayou La Loutre, and Bayou Terre aux Boeuf because of their relatively high elevation. These natural levees were historically dominated by upland forests that served as wildlife habitat. Over the past 300 years portions of the parish were leveed and/or developed, including the project site. Land was converted for residential, commercial, and industrial uses. Current land uses of the parish mirror historical ones; most of the population of St. Bernard Parish is found on natural levees, and the parish is still dominated by marsh, cypress, and open water.

  The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent

with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact wildlife and their habitat, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to habitat loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of habitat in the region; IER #1 – IER #17 document the impacts caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from wildlife habitat.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and wildlife and their habitat may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact wildlife and their habitat.

- *Westbank F Access Route*

Direct Impacts
No direct impacts to wildlife or their habitat would occur under the no action alternative. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the approved Westbank F borrow area, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
No indirect impacts to wildlife or their habitat would occur under the no action alternative.

Cumulative Impacts
Cumulative impacts to wildlife and their habitat would continue in the project area under the no action alternative. There are a number of proposed and approved borrow actions in the western portion Jefferson Parish on the west bank of the Mississippi River that were approved or are being investigated for construction of the HSDRRS (figure 11). The approved Churchill Farms, Westbank G, River Birch, Westbank F, Westbank I, Westbank D, Westbank E, Willswood, and South Kenner Road sites are within the portion of the parish. Most of these sites provide habitat for wildlife. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact wildlife and their habitat in the western portion Jefferson Parish.

Other activities in the western portion Jefferson Parish on the west bank of the Mississippi River Parish have and would continue to change land use patterns, contributing to the cumulative loss of wildlife and their habitat in the project area.

The area was historically wetlands and forest in the southern portion, and natural levee near the Mississippi River. The area is entirely leveed and includes a mix of developed and undeveloped land. Commercial farms and residential areas are found mostly in the northern portion, and modified forested wetlands and non-jurisdictional forest are in the south.

The effects of Hurricane Katrina on Jefferson Parish were extensive, as they were in most of southeastern Louisiana. As of June 2008 almost 95 percent of pre-Katrina residences were active (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in the project vicinity would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact wildlife and their habitat, incrementally adding to their loss in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to wildlife loss in the project area. Additionally, construction of the HSDRRS would also contribute to the destruction of wildlife and their habitat in the region; IER #1 – IER #17 document the impacts to wildlife caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, some of which may come from wildlife habitat.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and wildlife habitat may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact wildlife and their habitat.

Wildlife and their habitat in southeastern Louisiana have historically been affected by residential, commercial, and industrial development. Land has been converted for residential, commercial, and industrial uses in a significant portion of leveed areas in the region. It is expected that this historical trend would continue to impact wildlife in the region.

Proposed Action

- *Bazile*

Direct Impacts
With implementation of the proposed action, direct impacts from wildlife displacement would occur when the Bazile area is excavated. Non-mobile wildlife would be destroyed.

Indirect Impacts
The borrow area may be converted to ponds and small lakes, which could add to wildlife habitat in the vicinity. Aquatic vegetation may colonize the shallow littoral edge of the area, and wildlife (alligators, raccoons, wading birds, and ducks) adapted to an aquatic environment would be expected to expand their range into the new waterbodies. A variety of plant species may colonize adjacent to the water that could provide important wildlife habitat utilized for nesting, feeding, and cover. Any areas that remain dry would be expected to be colonized by vegetation and woody plants, which could provide habitat to wildlife. The dense vegetation could attract a variety of wildlife including birds, reptiles, amphibians, and small mammals. While the borrow areas have the potential to become mosquito breeding areas, the amount of surface acres of water is considered to be small compared to surrounding wetlands. However, local parish mosquito control programs, not the CEMVN, are responsible for mosquito control.

Cumulative Impacts
Use of the proposed site would contribute to the cumulative loss of wildlife and their habitat in the region. Because the excavated borrow site may provide habitat for wildlife, the detrimental cumulative impact to wildlife may be reduced. Additional cumulative impacts to wildlife or their habitat would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
With implementation of the proposed action, direct impacts from wildlife displacement would occur when the Johnson/Crovetto area is excavated. Non-mobile wildlife would be destroyed.

Indirect Impacts
The borrow area may be converted to ponds and small lakes, which could add to wildlife habitat in the vicinity. Aquatic vegetation may colonize the shallow littoral edge of the area, and wildlife (alligators, raccoons, wading birds, and ducks) adapted to an aquatic environment would be expected to expand their range into the new waterbodies. A variety of plant species may colonize adjacent to the water that could provide important wildlife habitat utilized for nesting, feeding, and cover. Any areas that remain dry would be expected to be colonized by vegetation and woody plants, which could provide habitat to wildlife. The dense vegetation could attract a variety of wildlife including birds, reptiles, amphibians, and small mammals. While the borrow areas have the potential to become mosquito breeding areas, the amount of surface acres of water is considered to be small compared to surrounding wetlands. However, local parish mosquito control programs, not the CEMVN, are responsible for mosquito control.

Cumulative Impacts
Use of the proposed site would contribute to the cumulative loss of wildlife and their habitat in the region. Because the excavated borrow site may provide habitat for wildlife, the detrimental cumulative impact to wildlife may be reduced. Additional cumulative impacts to wildlife and their habitat would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

  Direct Impacts
  With implementation of the proposed action, direct impacts from wildlife displacement would occur when the Westbank F access route and the approved Westbank F government furnished borrow area is cleared. Non-mobile wildlife would be destroyed.

  Indirect Impacts
  No indirect impacts to wildlife or their habitat would occur with implementation of the proposed action.

  Cumulative Impacts
  Use of the proposed site would contribute to the cumulative loss of wildlife and their habitat in the region. Use of the proposed access route would enable the excavation of the approved Westbank F government furnished borrow area, which would also contribute to the cumulative loss of wildlife habitat within the project area. Additional cumulative impacts to wildlife and their habitat would be similar to those discussed for the no action alternative.

3.2.6 Threatened and Endangered Species

Existing Conditions
Although several Federal or state-listed threatened and endangered (T&E) species are dependent on the habitat types present in the study areas, no endangered, threatened, or candidate species under USFWS jurisdiction presently occur in the proposed Bazile and Johnson/Crovetto borrow areas or the proposed Westbank F access Route. No critical habitat for any T&E species is found in any of the proposed sites.

Discussion of Impacts

No Action

- *All Sites*

  Direct Impacts
  No direct impacts to T&E species or their critical habitat would occur under the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  No indirect impacts to T&E species or their critical habitat would occur under the no action alternative.

  Cumulative Impacts
  The region's T&E species depend on a variety of habitat that includes resources previously discussed in this IER, mainly jurisdictional wetlands and non-jurisdictional BLH. A discussion on the cumulative impacts to these resources can be found in, respectively, section 3.2.1 and section 3.2.2. Cumulative impacts

to T&E species and their habitat would continue in the project area under the no action alternative.

The USFWS designates areas that have the physical and biological features that are essential to the conservation of T&E species or areas of habitat that are believed to be essential for a species' conservation as "critical habitat." Through this designation the USFWS is helping to manage the survival and proliferation of T&E species in the region.

Proposed Action
No listed endangered, threatened, or candidate species are known to exist at the proposed sites. The USFWS concurred with the CEMVN that excavation of the proposed government furnished borrow areas and use of the proposed access route are not likely to adversely affect T&E species or their critical habitat (table 4).

Table 4: USFWS T&E Concurrence

Proposed Borrow Area	USFWS Concurrence
Bazile	2 March 2009
Johnson/Crovetto	3 June 2008
Westbank F Access Route	3 March 2009

- *Bazile*

  Direct Impacts
  No direct impacts to T&E species or their critical habitat would occur with implementation of the proposed action.

  Indirect Impacts
  No indirect impacts to T&E species or their critical habitat would occur with implementation of the proposed action.

  Cumulative Impacts
  Cumulative impacts to T&E species and their habitat would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

  Direct Impacts
  No direct impacts to T&E species or their critical habitat would occur with implementation of the proposed action.

  Indirect Impacts
  No indirect impacts to T&E species or their critical habitat would occur with implementation of the proposed action.

  Cumulative Impacts
  Cumulative impacts to T&E species and their habitat would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

  Direct Impacts
  No direct impacts to T&E species or their critical habitat would occur with implementation of the proposed action.

  Indirect Impacts
  No indirect impacts to T&E species or their critical habitat would occur with implementation of the proposed action.

  Cumulative Impacts
  Cumulative impacts to T&E species and their habitat would be similar to those discussed for the no action alternative.

3.2.7 Cultural Resources

Existing Conditions
A review of cultural resource investigation reports and site forms on file at the Louisiana Division of Archaeology revealed no previously recorded prehistoric and historic sites in the proposed sites. However, previously recorded cultural resources are located in the immediate vicinity of the proposed Bazile and Johnson/Crovetto borrow areas. Prehistoric archaeological sites, such as shell middens, hunting and gathering camps, habitation sites, villages and mounds sites, tend to be located on active and abandoned distributary channel levee complexes, major beach ridges, on older stable portions of the delta, and in association with freshwater marshes. Similarly, historic period sites, such as forts, plantations, and industrial places tend to be located on levees and waterways. The geologic processes associated with the Mississippi River including delta lobe formation, meander progressions, and alluvial sedimentation from floods greatly influence site location and preservation. For example, the geologic progression of the Mississippi River delta lobes suggests that the earliest archaeological sites in the region date to the Poverty Point Phase (1700 – 500 B.C.). In addition, flood sedimentation buries and preserves some sites, while channel erosion and subsidence obliterate other sites.

In its selection of sites as potential government furnished borrow areas, the CEMVN seeks to avoid adverse impacts to historic properties. The proposed government furnished borrow areas and access route lie primarily on the lower natural levee back-slope of Bayou Terre aux Boeuf (proposed Johnson/Crovetto borrow area) and the Mississippi River (proposed Bazile borrow area and proposed Westbank F access route). While these environments were utilized for resource extraction during prehistoric and historic times, there is little evidence of occupation in these locations. Consequently, the likelihood for the presence of undiscovered cultural sites within these proposed government furnished borrow areas and proposed access route remains low. The northern portion of the Johnson/Crovetto proposed government furnished borrow area includes a higher elevation on the natural levee of Bayou Terre aux Boeuf. While natural levee soils present a high probability for the presence for prehistoric and historic sites, the cultural resource survey of Johnson/Crovetto confirms the absence of cultural sites from the proposed government furnished borrow area.

Cultural resources investigations of the two proposed government furnished borrow areas and the proposed access route included reconnaissance surveys and Phase 1 cultural resource surveys. Researchers geared their investigations toward identifying known and previously unrecorded historic properties within proposed government furnished borrow areas and proposed access route. Background research for each proposed government furnished borrow area and the proposed access route involved reviewing of known

resources within the area, identifying soil and geomorphologic characteristics, and assessing the existing conditions. This information was used to assess the likelihood that archaeological sites could be present within a proposed government furnished borrow area or the proposed access route. A reconnaissance survey (Ryan et al., 2006) and later Phase 1 archaeological survey (Harlan et al., 2008) completed the cultural resources investigation of the proposed Johnson/Crovetto borrow area. Phase 1 archaeological survey of Bazile borrow area (URS Corporation, 2008) investigates the likelihood and presence of unrecorded archaeological sites. A reconnaissance survey of the proposed access route was completed as part of the larger study conducted for the approved Westbank F borrow area (Pokrant and Harlan 2008). These investigations found no evidence of any cultural resources in the two proposed government furnished borrow areas or the proposed access route.

Section 106 of the National Historic Preservation Act of 1966, as amended, consultation included correspondence with the State Historic Preservation Officer (SHPO) and Indian Tribes that have an interest in the region (table 5). Taken together, the results of these investigations revealed that no known sites eligible for listing on or listed on the National Register of Historic Places properties exist within the proposed government furnished borrow areas and proposed access route or would be affected by the proposed development.

Discussion of Impacts

No Action

- *All Sites*

Direct Impacts
Under the no action alternative, no direct impacts to cultural resources would be anticipated. Any undiscovered or unreported cultural resources or traditional cultural properties would remain intact and in their current state of preservation. The burial or subsidence of historic land surfaces would continue in the current pattern. There is no reason to believe that the no action alternative would have any direct positive or negative impacts to cultural resources. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
Under the no action alternative, no indirect impacts to cultural resources are anticipated.

Cumulative Impacts
There is no reason to believe that the no action alternative would have any cumulative positive or negative impacts to cultural resources. Similar borrow projects have occurred in the vicinity of the project area and consideration of cultural resources under the National Historic Preservation Act provides measures to identify, evaluated, avoid, and mitigate affects to historic properties. The CEMVN is complying with the requirements of the NHPA in its analysis and utilization of all borrow sites evaluated for use in construction of the HSDRRS.

Proposed Action
The results of recent cultural resources investigations revealed that no known historic properties eligible for listing on or listed on the National Register of Historic Places

exist within the proposed government furnished borrow areas or the proposed access route or would be affected by the proposed actions. Consequently, the proposed excavation of borrow material from these two areas and use of the proposed access route would have no effect on historic properties.

- *Bazile*

  Direct Impacts
  With implementation of the proposed action, any undiscovered cultural resources may be damaged during borrow excavation and construction operations. However, it is unlikely that such direct impacts would occur because cultural resource surveys have been completed in order to identify cultural resources within the proposed government furnished borrow area.

  Indirect Impacts
  With implementation of the proposed action, no indirect impacts to cultural resources would be anticipated.

  Cumulative Impacts
  There is no reason to believe that if the proposed action is implemented any cumulative positive or negative impacts to cultural resources would occur. Similar borrow projects have occurred in the vicinity of the project area. For all proposed borrow areas for use in the HSDRRS, consideration of cultural resources under the National Historic Preservation Act including measures to identify, evaluate, avoid, and mitigate affects to historic properties is required. The CEMVN is complying with the requirements of the NHPA in its analysis and utilization of all borrow sites evaluated for use in construction of the HSDRRS.

- *Johnson/Crovetto*

  Direct Impacts
  With implementation of the proposed action, any undiscovered cultural resources may be damaged during borrow excavation and construction operations. However, it is unlikely that such direct impacts would occur because cultural resource surveys have been completed in order to identify cultural resources within the proposed government furnished borrow area.

  Indirect Impacts
  With implementation of the proposed action, no indirect impacts to cultural resources are anticipated.

  Cumulative Impacts
  There is no reason to believe that if the proposed action is implemented any cumulative positive or negative impacts to cultural resources would occur. Similar borrow projects have occurred in the vicinity of the project area. For all proposed borrow areas for use in the HSDRRS, consideration of cultural resources under the National Historic Preservation Act including measures to identify, evaluate, avoid, and mitigate affects to historic properties is required. The CEMVN is complying with the requirements of the NHPA in its analysis and utilization of all borrow sites evaluated for use in construction of the HSDRRS.

- *Westbank F Access Route*

  Direct Impacts
  With implementation of the proposed action, any undiscovered cultural resources may be damaged during clearing of the access route, use of the access route and construction operations. However, it is unlikely that such direct impacts would occur because cultural resource surveys have been completed in order to identify cultural resources within the proposed access route for the approved Westbank F borrow area.

  Indirect Impacts
  With implementation of the proposed action, no indirect impacts to cultural resources would be anticipated.

  Cumulative Impacts
  There is no reason to believe that if the proposed action is implemented any cumulative positive or negative impacts to cultural resources would occur. Similar borrow projects have occurred in the vicinity of the project area. For all proposed access routes for use in the HSDRRS, consideration of cultural resources under the National Historic Preservation Act including measures to identify, evaluate, avoid, and mitigate affects to historic properties is required. The CEMVN is complying with the requirements of the NHPA in its analysis and utilization of all borrow sites evaluated for use in construction of the HSDRRS.

Table 5: Summary of Section 106 of NHPA correspondence

Agency/Tribe	**Johnson/Crovetto**		**Bazile**		**Westbank F Access Route**	
	CEMVN Letter Date	*Response Date*	*CEMVN Letter Date*	*Response Date*	*CEMVN Letter Date*	*Response Date*
SHPO	8/22/2008	9/23/2008	10/16/2008	11/20/2008	1/14/2008	2/4/2008
Chitimacha Tribe of Louisiana	8/22/2008	NR	10/16/2008	NR	1/14/2008	NR
Mississippi Band of Choctaw Indians	8/22/2008	NR	10/16/2008	NR	1/14/2008	1/14/2008
Choctaw Nation of Oklahoma	8/22/2008	NR	10/16/2008	11/14/2008	1/14/2008	NR
Alabama Coushatta Tribe of TX	8/22/2008	9/10/2008	10/16/2008	11/04/2008	1/14/2008	NR
Caddo Nation of OK	8/22/2008	NR	10/16/2008	10/17/2008	1/14/2008	NR
Coushatta Tribe of LA	8/22/2008	NR	10/16/2008	NR	1/14/2008	NR
Jena Band of Choctaw Indians	8/22/2008	NR	10/16/2008	NR	1/14/2008	NR
Quapaw Tribe of OK	8/22/2008	NR	10/16/2008	NR	1/14/2008	NR
Seminole Nation of OK	8/22/2008	9/10/2008	10/16/2008	10/24/2008	1/14/2008	NR
Seminole Tribe of FL	8/22/2008	NR	10/16/2008	11/24/2008	1/14/2008	NR
Tunica-Biloxi Tribe of LA	8/22/2008	NR	10/16/2008	NR	1/14/2008	NR

NR: No response implies concurrence with a “No historic properties affected" finding as per 36 CFR 800.4(d)(1).

3.2.8 Recreational Resources

Existing Conditions

- *Bazile*
  There are no developed recreational areas directly adjacent to the proposed Bazile government furnished borrow area. All recreational areas are at a minimum of 1 mile or more from the proposed area. Some recreational uses that currently exist within the communities around the area of study include an 18 hole golf course and a 9 hole golf course located at Alvin Callendar Field (Naval Base across the Mississippi River); St. Bernard State Park located near Caernarvon; and Braithwaite Community Park, an approximately 3-acre neighborhood park located right off of Highway 39 between Caernarvon and Braithwaite. This park features open and green space, as well as, tennis courts (the tennis courts do not appear to be in use) and playground equipment. Also, attached to this community development is an abandoned 18 hole golf course that could be revitalized for future use.

  Other recreational opportunities such as ball fields and sports complexes appear to be attached to local schools only. Other local parks, open spaces, and green spaces are sparse to non-existent throughout the communities adjacent to the proposed Bazile government furnished borrow area.

  Land uses surrounding the project area for Bazile span the full range of standard use definitions, including residential, commercial, industrial, and agricultural. Residential uses are moderately dense throughout the vicinity and vary somewhere between low and medium density (approximately four to eight units per acre according to most current planning standards). There are a variety of water features scattered throughout the area, including other borrow pits (ponds), lakes, canals, tributaries, bayous, wetlands, and marshes. Areas adjacent to the areas of study appear to be open offering potential for both agricultural uses and hunting land. Along the main channel (Mississippi River), and throughout the area of study, recreational walking, nature/ecological study, and birding are activities in which residents and visitors may participate. Recreational sport fishing and boating in the waters around the areas of study is available and encouraged where public access is available.

- *Johnson/Crovetto*
  There are no developed recreational areas directly adjacent to the proposed Johnson/Crovetto government furnished borrow area. All recreational areas are at a minimum of 1 mile or more from the proposed areas of study. Some recreational uses that currently exist within the communities around the area of study include an 18 hole golf course and a 9 hole golf course located at Alvin Callendar Field (Naval Base across the Mississippi River); St. Bernard State Park located near Caernarvon; and Braithwaite Community Park, an approximately 3-acre neighborhood park located right off of Highway 39 between Caernarvon and Braithwaite. This park features open and green space, as well as, tennis courts (the tennis courts do not appear to be in use) and playground equipment. Also, attached to this community development is an abandoned 18 hole golf course that could be revitalized for future use.

  Other recreational opportunities such as ball fields and sports complexes appear to be attached to local schools only. Other local parks, open spaces, and green

spaces are sparse to non-existent throughout the communities adjacent to the proposed Johnson/Crovetto government furnished borrow area.

Land uses surrounding the project area for Johnson/Crovetto appear to be dominated by low density single-family residential. Residential uses are moderately dense throughout the vicinity and vary somewhere between low and medium density (approximately four to eight units per acre according to most current planning standards). There are a variety of water features scattered throughout the area, including other borrow pits (ponds), lakes, canals, tributaries, bayous, wetlands, and marshes. Areas adjacent to the areas of study appear to be open offering potential for both agricultural uses and hunting land. Along the main channel (Mississippi River), and throughout the area of study, recreational walking, nature/ecological study, and birding are activities in which residents and visitors may participate. Recreational sport fishing and boating in the waters around the areas of study is available and encouraged where public access is available.

- *Westbank F Access Route*
  (As previously discussed in IER #22)
  The region in which the proposed action is to take place is rich with recreational resources. The proposed access route and approved Westbank F borrow area may have some recreational potential, but contain no existing recreational infrastructure or specific features and are privately owned and not open to public access.

  Land uses surrounding the Westbank F project area are primarily low density single-family residential in nature with a variety of green spaces and local, community parks serving the pastoral recreational needs of the area. The remainder of the area appears to be agricultural in nature and/ or shows no signs of current development.

Discussion of Impacts

No Action

- *Bazile and Johnson/Crovetto Sites*

  Direct Impacts
  With the no action alternative, no direct impacts to recreational resources would occur. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  With the no action alternative, no indirect impacts to recreational resources would occur.

  Cumulative Impacts
  With the no action alternative, there are no foreseen cumulative impacts to recreational resources through the CEMVN's actions at the proposed government furnished borrow area. The site will remain intact as in its current state. Any future changes or alterations to the site will evolve in a natural process over the

course of time. The recreational environment around the areas of study would continue to flourish and expand in relation to population growth.

- *Westbank F Access Route*

  Direct Impacts
  With the no action alternative, no direct impacts to recreational resources would occur. Under the no action alternative, another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the Westbank F site other HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  With the no action alternative, no indirect impacts to recreational resources would occur.

  Cumulative Impacts
  With the no action alternative, there are no foreseen cumulative impacts to recreational resources through the CEMVN's actions at the proposed government furnished borrow area. The site will remain intact as in its current state. Any future changes or alterations to the site will evolve in a natural process over the course of time. The recreational environment around the area of study would continue to flourish and expand in relation to population growth.

Proposed Action

- *Bazile and Johnson/Crovetto Sites*

  Direct Impacts
  The excavation of the proposed government furnished borrow areas would not directly impact recreation resources in the region, including the St. Bernard State Park and Braithwaite Community Park due, primarily, to the distance between these two entities and the proposed government furnished borrow areas.

  Indirect Impacts
  The excavation of the proposed government furnished borrow areas would not indirectly impact recreation resources in the region. In some cases, depending on how the end site is left, the habitat may be suitable to support some recreational activities (e.g., wildlife viewing and fishing).

  Cumulative Impacts
  Use of the proposed sites would contribute to the cumulative loss of wildlife habitat in the region, which could affect recreational opportunities. Because the excavated borrow areas may provide habitat for wildlife, the detrimental cumulative impact to wildlife may be reduced.

- *Westbank F Access Route*

  Direct Impacts
  The use of the proposed access route to the approved government furnished Westbank F borrow area would not directly impact recreation resources in the

region. Recreational resources in the area include an 18 hole golf course (located approximately 1 mile to the east), and several small neighborhood parks (located anywhere from ½ mile to 1 mile away to the north). These recreational resources are located with enough distance from the proposed project site that there will be no direct impacts to them.

Indirect Impacts

The use of the proposed access route to the approved government furnished Westbank F borrow area would not indirectly impact recreation resources in the region. In some cases, depending on how the end site is left, the habitat may be suitable to support some recreational activities (e.g., wildlife viewing and fishing).

Cumulative Impacts

Use of the proposed site would contribute to the cumulative loss of wildlife habitat in the region, which could affect recreational opportunities. Because the excavated borrow site may provide habitat for wildlife, the detrimental cumulative impact to wildlife may be reduced.

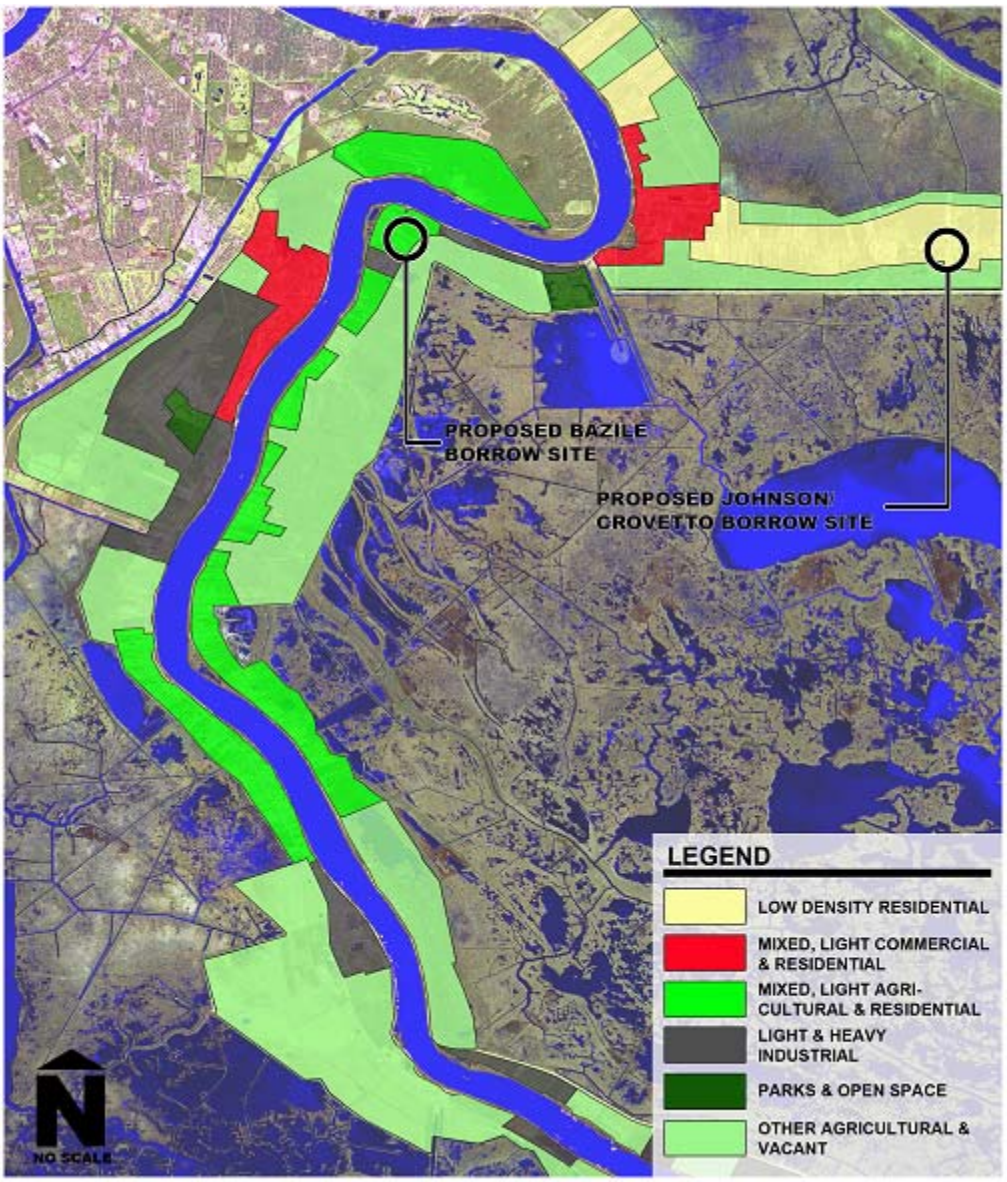

Figure 12: Existing Land Uses for the Proposed Bazile and Johnson/Crovetto Borrow Areas

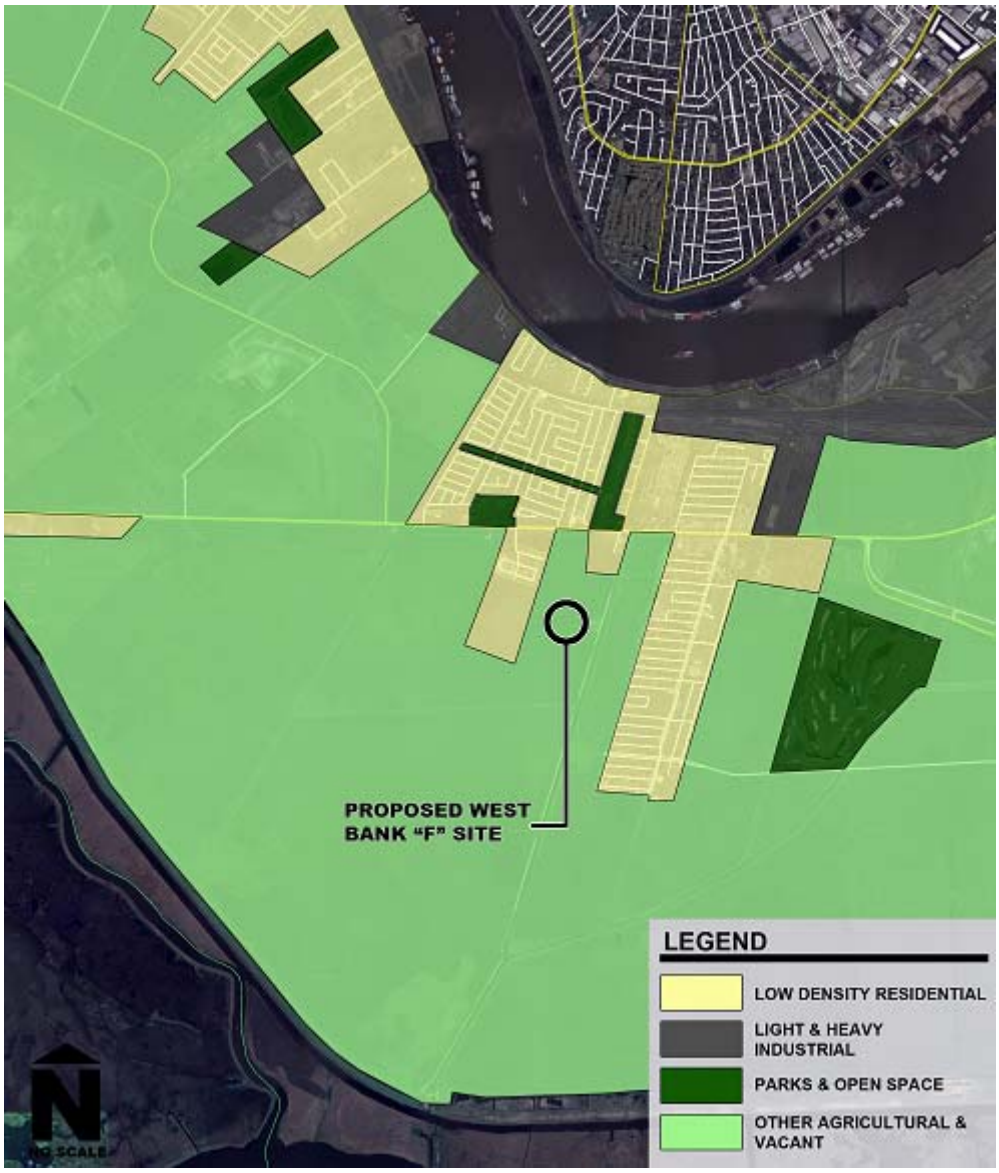

Figure 13: Existing Land Uses for the Proposed Westbank F Access Route

3.2.9 Air Quality

Existing Conditions

Under the Clean Air Act, National Ambient Air Quality Standards (NAAQS) have been established for seven pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), ozone (O_3), particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The NAAQS standards include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. The primary and secondary standards are presented in table 6.

Table 6: National Ambient Air Quality Standards

Pollutant and Averaging Time	Primary Standard		Secondary Standard	
	µg/m³	**parts per million (ppm)**	**µg/m³**	**ppm**
CO *8-hour concentration* *1-hour concentration*	10,000[1] 40,000[1]	9[1] 35[1]	N/A	N/A
NO_2 *Annual arithmetic mean*	100	0.053	same as primary standard	
SO_2 *Annual arithmetic mean* *24-hour concentration* *3-hour concentration*	80 365[1] -	0.03 0.14[1] -	- - 1300[1]	- - 0.50[1]
Pb *Quarterly arithmetic mean*	1.5	-	same as primary standard	
O_3 *8-hour concentration*	157	0.08[2]	same as primary standard	
PM_{10} *24-hour maximum*	150[1]	-	same as primary standard	
$PM_{2.5}$ *Annual arithmetic mean* *24-hour maximum*	15[3] 35[4]	- -	same as primary standard	

[1] Not to be exceeded more than once per year.
[2] 3-year average of the 4th highest daily maximum 8-hour concentration may not exceed 0.08 ppm.
[3] Based on 3-year average of annual averages.
[4] Based on 3-year average of annual 98th percentile values.
Source: *40 CFR 50*

Areas that meet the NAAQS for a criteria pollutant are designated as being "in attainment;" areas where a criteria pollutant level exceeds the NAAQS are designated as being "in "non attainment." The parishes the proposed action may occur in- Jefferson, Plaquemines, and St. Bernard- are currently in attainment of all NAAQS (EPA, 2009).

Discussion of Impacts

No Action

- *Bazile*

Direct Impacts
With the no action alternative, no direct impacts to air quality would occur. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
With the no action alternative, no indirect impacts to air quality would occur with implementation of the no action alternative.

Cumulative Impacts
With the no action alternative, cumulative impacts to air quality would continue in the project area. Other activities in the vicinity have and will continue to affect air quality in the project area. Most of these actions would be associated with emissions from vehicular traffic on local roads and the Mississippi River, and residential energy emissions.

There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS, including the approved Westbank N and Walker Road sites (figure 8). Parish. It is reasonably foreseeable that use of the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact air quality in the vicinity.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact air quality in southeastern Louisiana. Currently unidentified borrow sources may also incrementally impact air quality in the project area. Additionally, construction of the HSDRRS would also contribute to emissions in the region; IER #1 – IER #17 document the impacts to air quality caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, the excavation of which would impact air quality in the region. Cumulative impacts due to use of approved borrow areas or the construction of levees would be greatest if the actions happen concurrently.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and air quality may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact air quality.

Air quality in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. It is expected that this historical trend would continue to impact air quality in the region.

Cumulative impacts to air quality will be further discussed in the CED.

- *Johnson/Crovetto*

  Direct Impacts
  With the no action alternative no direct impacts to air quality would occur. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  With the no action alternative no indirect impacts to air quality would occur.

  Cumulative Impacts
  With the no action alternative, cumulative impacts to air quality would continue in the project area. Other activities in the vicinity have and will continue to affect air quality in the project area. Most of these actions would be associated with emissions from vehicular traffic on local roads and residential energy emissions.

  There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS (figure 10). The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. Additionally, the proposed Contreras Dirt site is also in the vicinity. It is reasonably foreseeable that use of the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact air quality in the vicinity.

  To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact air quality in southeastern Louisiana. Currently unidentified borrow sources may also incrementally impact air quality in the project area. Additionally, construction of the HSDRRS would also contribute to emissions in the region; IER #1 – IER #17 document the impacts to air quality caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, the excavation of which would impact air quality in the region. Cumulative impacts due to use of approved borrow areas or the construction of levees would be greatest if the actions happen concurrently.

  State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and air quality may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact air quality.

  Air quality in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. It is expected that this historical trend would continue to impact air quality in the region.

Cumulative impacts to air quality will be further discussed in the CED.

- *Westbank F Access Route*

Direct Impacts
With the no action alternative, no direct impacts to air quality would occur. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the Westbank F site, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
With the no action alternative, no indirect impacts to air quality would occur.

Cumulative Impacts
With the no action alternative, cumulative impacts to air quality would continue in the project area. Other activities in the vicinity have and will continue to affect air quality in the project area. Most of these actions would be associated with emissions from vehicular traffic on local roads and residential energy emissions.

There are a number of proposed and approved borrow sites in the western portion Jefferson Parish on the west bank of the Mississippi River that were approved or are being investigated for construction of the HSDRRS (figure 11). The approved Churchill Farms, Westbank G, River Birch, Westbank F, Westbank I, Westbank D, Westbank E, Willswood, and South Kenner Road sites are located on the west bank of Jefferson Parish. It is reasonably foreseeable that use of the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact air quality in the vicinity.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact air quality in southeastern Louisiana. Currently unidentified borrow sources may also incrementally impact air quality in the project area. Additionally, construction of the HSDRRS would also contribute to emissions in the region; IER #1 – IER #17 document the impacts to air quality caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, the excavation of which would impact air quality in the region. Cumulative impacts due to use of approved borrow areas or the construction of levees would be greatest if the actions happen concurrently.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and air quality may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact air quality.

Air quality in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. It is expected that this historical trend would continue to impact air quality in the region.

Cumulative impacts to air quality will be further discussed in the CED.

Proposed Action

- *Bazile*

Direct Impacts
During excavation at the proposed borrow site, an increase in air emissions is expected in the project vicinity. These emissions could include exhaust emissions from operations of diesel dump trucks, various types of construction equipment (e.g., loaders, excavators), and fugitive dust due to excavation and clearing.

The principal air quality concern associated with the proposed borrow site would be emission of fugitive dust near demolition and construction areas. The on-road trucks and private vehicles used to access the work area would also contribute to construction phase air pollution in the project vicinity when traveling along local roads and highways. Construction effects would be temporary and dust emissions would be controlled using standard best management practices, including using water hoses to prevent fugitive dust from becoming airborne. Most instances of diminished air quality associated with excavation and truck hauling would be expected to be limited to daylight hours (10-14 hours a day) seven days a week. During the excavation of the proposed borrow site, routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the appropriate design standards. It is expected that these impacts would be temporary and limited to construction hours.

Indirect Impacts
Indirect impacts to air quality are not expected to occur with implementation of the proposed action.

Cumulative Impacts
Use of the proposed Bazile site would incrementally affect air quality in the project area. Cumulative impacts to air quality would continue in the project area with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect air quality in the project area. Most of these actions would be associated with emissions from vehicular traffic on local roads and residential energy emissions. Additional cumulative impacts to air quality would be similar to those discussed for the no action alternative.

Cumulative impacts to air quality will be further discussed in the CED.

- *Johnson/Crovetto*

Direct Impacts
During excavation of the proposed borrow site, an increase in air emissions is expected in the project vicinity. These emissions could include exhaust emissions from operations of diesel dump trucks, various types of construction equipment (e.g., loaders, excavators), and fugitive dust due to excavation and clearing.

The principal air quality concern associated with the proposed borrow site would be emission of fugitive dust near demolition and construction areas. The on-road trucks and private vehicles used to access the work area would also contribute to construction phase air pollution in the project vicinity when traveling along local roads and highways. Construction effects would be temporary and dust emissions would be controlled using standard best management practices, including using water hoses to prevent fugitive dust from becoming airborne. Most instances of diminished air quality associated with excavation and truck hauling would be expected to be limited to daylight hours (10-14 hours a day) seven days a week. During the excavation of the proposed borrow site, routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the appropriate design standards. It is expected that these impacts would be temporary and limited to construction hours.

Indirect Impacts
Indirect impacts to air quality are not expected to occur with implementation of the proposed action.

Cumulative Impacts
Excavation of the proposed Johnson/Crovetto borrow site would incrementally affect air quality in the project area. Cumulative impacts to air quality would continue in the project area with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect air quality in the project area. Most of these actions would be associated with emissions from vehicular traffic on local roads and residential energy emissions. Additional cumulative impacts to air quality would be similar to those discussed for the no action alternative.

Cumulative impacts to air quality will be further discussed in the CED.

- *Westbank F Access Route*

Direct Impacts
During excavation of the Westbank F borrow site that was approved in IER #22, the proposed Westbank F access route will be used by vehicles entering and exiting the site. Use of the proposed Westbank F access road in connection with excavation of the approved Westbank F government furnished borrow site would result in an increase in air emissions in the project vicinity. These emissions could include exhaust emissions from operations of diesel dump trucks, various types of construction equipment (e.g., loaders, excavators), and fugitive dust due to excavation and clearing.

The principal air quality concern associated with the proposed access road would be emission of fugitive dust near demolition and construction areas. The on-road trucks and private vehicles used to access the work area would also contribute to construction phase air pollution in the project vicinity when traveling along local roads and highways. Construction effects would be temporary and dust emissions would be controlled using standard best management practices, including using water hoses to prevent fugitive dust from becoming airborne. Most instances of diminished air quality associated with excavation and truck hauling would be expected to be limited to daylight hours (10-14 hours a day) seven days a week. During the excavation of the Westbank F borrow site, the proposed access road would be used to access the site. Routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within

the appropriate design standards. It is expected that these impacts would be temporary and limited to construction hours.

Indirect Impacts
Indirect impacts to air quality are not expected to occur with implementation of the proposed action.

Cumulative Impacts
Use of the proposed Westbank F access road would incrementally affect air quality in the project area. Use of the proposed access route would enable the excavation of the approved Westbank F government furnished borrow area, which would contribute to the cumulative impact to air quality within the project area. Cumulative impacts to air quality would continue in the project area with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect air quality in the project area without implantation of the proposed action. Most of these actions would be associated with emissions from vehicular traffic on local roads and residential energy emissions. Additional cumulative impacts to air quality would be similar to those discussed for the no action alternative.

Cumulative impacts to air quality will be further discussed in the CED.

3.2.10 Water Quality

Existing Conditions
The Louisiana Department of Environmental Quality (LDEQ) regulates both point and nonpoint source pollution. Many of the proposed government furnished borrow areas are uplands with associated drainage features.

Discussion of Impacts

No Action

- *Bazile*

Direct Impacts
With the no action alternative, no direct impacts to water quality would occur. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
With the no action alternative, no indirect impacts to water quality would occur.

Cumulative Impacts
With the no action alternative, cumulative impacts to water quality would continue in the project area. Other activities in the vicinity have and will continue to affect water quality in the project area. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows.

There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS (figure 8). The approved Westbank N and Walker Road pits are within upper Plaquemines

Parish, as are the proposed Westbank K and Westbank L sites. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact water quality in upper Plaquemines Parish.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact water quality, incrementally impacting quality in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to a decline in water quality the project area. Additionally, construction of the HSDRRS would also contribute to the decline in water quality in the region; IER #1 – IER #17 document the impacts to water quality caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, the excavation of which may incrementally affect water quality in the region.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and water quality may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact water quality.

Water quality in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows. It is expected that this historical trend would continue to impact water quality in the region.

- *Johnson/Crovetto*

<u>Direct Impacts</u>
With the no action alternative, no direct impacts to water quality would occur with implementation of the no action alternative. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

<u>Indirect Impacts</u>
With the no action alternative, no indirect impacts to water quality would occur with implementation of the no action alternative.

<u>Cumulative Impacts</u>
With the no action alternative, cumulative impacts to water quality would continue in the project area. Other activities in the vicinity have and will continue to affect water quality in the project area. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows.

There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS (figure 10). The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. Additionally, the proposed Contreras Dirt site is also in the vicinity. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact water quality in St. Bernard Parish.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact water quality, incrementally impacting quality in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to a decline in water quality the project area. Additionally, construction of the HSDRRS would also contribute to the decline in water quality in the region; IER #1 – IER #17 document the impacts to water quality caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, the excavation of which may incrementally affect water quality in the region.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and water quality may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact water quality.

Water quality in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows. It is expected that this historical trend would continue to impact water quality in the region.

- *Westbank F Access Route*

<u>Direct Impacts</u>
With the no action alternative, no direct impacts to water quality would occur. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the Westbank F borrow site, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

<u>Indirect Impacts</u>
With the no action alternative, no indirect impacts to water quality would occur.

Cumulative Impacts

With the no action alternative, cumulative impacts to water quality would continue in the project area. Other activities in the vicinity have and will continue to affect water quality in the project area. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows.

There are a number of proposed and approved borrow actions in the western portion Jefferson Parish on the west bank of the Mississippi River that were approved or are being investigated for construction of the HSDRRS (figure 11). The approved Churchill Farms, Westbank G, River Birch, Westbank F, Westbank I, Westbank D, Westbank E, Willswood, and South Kenner Road sites are within that portion of Jefferson parish. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact water quality in the western portion Jefferson Parish.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana (figure 9). HSDRRS borrow activity would cumulatively impact water quality, incrementally impacting quality in southeastern Louisiana. Currently unidentified borrow sources may also incrementally add to a decline in water quality the project area. Additionally, construction of the HSDRRS would also contribute to the decline in water quality in the region; IER #1 – IER #17 document the impacts to water quality caused by these projects. Other authorized CEMVN projects such as the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance have an expected need for borrow material, the excavation of which may incrementally affect water quality in the region.

State and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects, and water quality may be impacted during construction of these projects. Federal and non-Federal levee construction may also impact water quality.

Water quality in southeastern Louisiana has historically been affected by residential, commercial, and industrial development. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows. It is expected that this historical trend would continue to impact water quality in the region.

Proposed Action

- *Bazile*

Direct Impacts

Despite the use of best management practices (BMPs), excavation of the proposed borrow site would result in some direct impacts from disturbances to water quality in the immediate vicinity of the Bazile proposed government furnished borrow area. Most of these impacts would be associated with sediments getting around installed silt fencing during high rain events, which would cause surface water

turbidity in the immediate vicinity. These impacts would be localized and temporary. If the borrow areas is drained by use of a sump pump during construction water would be deposited outside of the borrow site, most likely into adjacent non-construction areas. Depending on where water is directed temporary impacts to water quality in these areas may occur.

The construction contractor would be required to secure all proper Federal, state, and local permits required for potentially impacting water quality. The CEMVN requires that construction BMPs be implemented and followed during the construction phase. A sediment control plan including silt fencing and hay bales would be installed around the perimeter of the proposed government furnished borrow area to control runoff. To make optimal use of available material, excavation would begin at one end of the borrow area and be made continuous across the width of the area to the required borrow depths, to provide surface drainage to the low side of the borrow area as excavation proceeds. Excavation for semi-compacted fill would not be permitted in water nor shall excavated material be scraped, dragged, or otherwise moved through water. In some cases the borrow area may need to be drained with the use of a sump pump. Upon abandonment, site restoration would include placing the stockpiled overburden back into the area and grading the slopes to the specified cross-section figures. Abrupt changes in grade should be avoided, and the bottom of the borrow area should be left relatively smooth and sloped from one end to the other. Abrupt changes in borrow area alignment shall be avoided. With the use of BMPs, direct disturbance of water quality would be temporary, confined, and short lived.

Indirect Impacts
Indirect impacts to water quality in adjacent areas depend on where water is directed to during construction. These impacts would mostly be associated with increased turbidity, and would likely be temporary and confined to adjacent areas.

Cumulative Impacts
Excavation of the proposed Bazile government furnished borrow area would contribute to the cumulative decline of water quality within the region. Cumulative impacts to water quality would continue in the project area with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect water quality in the project area. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows. Additional cumulative impacts to water quality would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
Despite the use of BMPs, excavation of the proposed borrow site would result in some direct impacts from disturbances to water quality in the immediate vicinity of the Johnson/Crovetto proposed government furnished borrow area. Most of these impacts would be associated with sediments getting around installed silt fencing during high rain events, which would cause surface water turbidity in the immediate vicinity. These impacts would be localized and temporary. If the borrow areas is drained by use of a sump pump during construction water would be deposited outside of the borrow site, most likely into adjacent non-construction areas. Depending on where water is directed temporary impacts to water quality in these areas may occur.

The construction contractor would be required to secure all proper Federal, state, and local permits required for potentially impacting water quality. The CEMVN requires that construction BMPs be implemented and followed during the construction phase. A sediment control plan including silt fencing and hay bales would be installed around the perimeter of the proposed government furnished borrow areas to control runoff. To make optimal use of available material, excavation would begin at one end of the borrow area and be made continuous across the width of the area to the required borrow depths, to provide surface drainage to the low side of the borrow area as excavation proceeds. Excavation for semi-compacted fill would not be permitted in water nor shall excavated material be scraped, dragged, or otherwise moved through water. In some cases the borrow area may need to be drained with the use of a sump pump. Upon abandonment, site restoration would include placing the stockpiled overburden back into the area and grading the slopes to the specified cross-section figures. Abrupt changes in grade should be avoided, and the bottom of the borrow area should be left relatively smooth and sloped from one end to the other. Abrupt changes in borrow area alignment shall be avoided. With the use of BMPs, direct disturbance of water quality would be temporary, confined, and short lived.

Indirect Impacts
Indirect impacts to water quality in adjacent areas depend on where water is directed to during construction. These impacts would mostly be associated with increased turbidity, and would likely be temporary and confined to adjacent areas.

Cumulative Impacts
Excavation of the proposed Johnson/Crovetto government furnished borrow area would contribute to the cumulative decline of water quality within the region. Cumulative impacts to water quality would continue in the project area with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect water quality in the project area. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows. Additional cumulative impacts to water quality would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
Despite the use of BMPs, use of the proposed access route would result in some direct impacts from disturbances to water quality in the immediate vicinity of the proposed access route. Most of these impacts would be associated with sediments getting around installed silt fencing during high rain events, which would cause surface water turbidity in the immediate vicinity. These impacts would be localized and temporary.

Direct impacts to water quality in the vicinity would be compounded by excavation of the approved Westbank F government furnished borrow area. If the borrow area is drained by use of a sump pump during construction water would be deposited outside of the borrow site, most likely into adjacent non-construction areas. Depending on where water is directed temporary impacts to water quality in these areas may occur.

The construction contractor would be required to secure all proper Federal, state, and local permits required for potentially impacting water quality. The CEMVN requires that construction BMPs be implemented and followed during the construction phase. A sediment control plan including silt fencing and hay bales would be installed around the perimeter of the proposed government furnished borrow areas to control runoff. To make optimal use of available material, excavation would begin at one end of the borrow area and be made continuous across the width of the area to the required borrow depths, to provide surface drainage to the low side of the borrow area as excavation proceeds. Excavation for semi-compacted fill would not be permitted in water nor shall excavated material be scraped, dragged, or otherwise moved through water. In some cases the borrow area may need to be drained with the use of a sump pump. Upon abandonment, site restoration would include placing the stockpiled overburden back into the area and grading the slopes to the specified cross-section figures. Abrupt changes in grade should be avoided, and the bottom of the borrow area should be left relatively smooth and sloped from one end to the other. Abrupt changes in borrow area alignment shall be avoided. With the use of BMPs, direct disturbance of water quality would be temporary, confined, and short lived.

Indirect Impacts
Indirect impacts to water quality in adjacent areas depend on where water is directed to during construction of the approved Westbank F borrow area. These impacts would mostly be associated with increased turbidity, and would likely be temporary and confined to adjacent areas.

Cumulative Impacts
Use of the proposed Westbank F access route would contribute to the cumulative decline of water quality within the region. Use of the proposed access route would enable the excavation of the approved Westbank F government furnished borrow area, which would contribute to the cumulative impact to water quality within the project area. Cumulative impacts to water quality would continue in the project area with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect water quality in the project area. Major contributors to decreases in water quality in the region include urban stormwater runoff, pollutants, sediment loading/runoff, nutrient loading, and dry weather flows. Additional cumulative impacts to water quality would be similar to those discussed for the no action alternative.

3.2.11 Aesthetic (Visual) Resources

Existing Conditions

- *Bazile*
  The Bazile site is highly visible to the general public due to its location along Highway 39 and its abutment to a residential area. The dominant land uses in the near vicinity of the area are low density residential and agricultural/vacant. The landscape of the region is dominated by fields and marshland with a mixture of water tolerant vegetation and some forestation. The other dominant feature is citrus, built into small orchards attached to the residential uses in the area.

- *Johnson/Crovetto*
  The Johnson/Crovetto site is highly visible to the general public due to its location along Bayou Road and its abutment to a low density residential area. The dominant land uses in the near vicinity of the area are residential and

agricultural/vacant. The landscape of the region is dominated by fields and marshland with a mixture of water tolerant vegetation and some forestation. The other dominant feature is citrus, built into small orchards attached to the residential uses in the area.

- *Westbank F Access Route*
  The proposed Westbank F access route site is visible to the general public due to its location along Highway 90 and its abutment to residential areas to the north and west. The dominant land uses in the near vicinity of the area are low density residential and agricultural/vacant. The landscape of the region is dominated by fields and marshland with a mixture of water tolerant vegetation and some forestation.

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  With the no action alternative, no direct impacts to visual resources through the CEMVN's actions would occur at the proposed government furnished borrow area. Visual resources would most likely evolve from existing conditions in a natural process, or change as dictated by future land use maintenance practices. The proposed HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  With the no action alternative, no indirect impacts to visual resources through the CEMVN's actions would occur at the proposed government furnished borrow area.

  Cumulative Impacts
  With the no action alternative, there are no foreseen cumulative impacts to visual resources through the CEMVN's actions at the proposed government furnished borrow area. The site will remain intact as in its current state. View sheds from surrounding neighborhoods and from public thoroughfares will not be altered in anyway. Any future changes or alterations to the site would evolve in a natural process over the course of time.

  The visual impacts caused by multiple excavated borrow sites in the project area may cumulatively impact aesthetic quality. However, this depends on how the sites are developed following excavation.

- *Johnson/Crovetto*

  Direct Impacts
  With the no action alternative, no direct impacts to visual resources through the CEMVN's actions would occur at the proposed government furnished borrow area. Visual resources would most likely evolve from existing conditions in a natural process, or change as dictated by future land use maintenance practices. The proposed HSDRRS projects would be built to authorized levels using other

potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
With the no action alternative, no indirect impacts to visual resources through the CEMVN's actions would occur at the proposed government furnished borrow area.

Cumulative Impacts
With the no action alternative, there are no foreseen cumulative impacts to visual resources through the CEMVN's actions at the proposed government furnished borrow area. The site will remain intact as in its current state. View sheds from surrounding neighborhoods and from public thoroughfares will not be altered in anyway. Any future changes or alterations to the site would evolve in a natural process over the course of time.

The visual impacts caused by multiple excavated borrow sites in the project area may cumulatively impact aesthetic quality. However, this depends on how the sites are developed following excavation.

- *Westbank F Access Route*

Direct Impacts
With the no action alternative, no direct impacts to visual resources through the CEMVN's actions would occur at the approved Westbank F borrow area because it could not be accessed. Visual resources would most likely evolve from existing conditions in a natural process, or change as dictated by future land use maintenance practices. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the Westbank F borrow site, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
With the no action alternative, no indirect impacts to visual resources through the CEMVN's actions would occur at the proposed access route.

Cumulative Impacts
With the no action alternative, there are no foreseen cumulative impacts to visual resources through the CEMVN's actions at the proposed government furnished borrow area. The site will remain intact as in its current state. View sheds from surrounding neighborhoods and from Highway 90 will not be altered in anyway. Any future changes or alterations to the site would evolve in a natural process over the course of time.

The visual impacts caused by multiple excavated borrow sites may cumulatively impact aesthetic quality in the project area. However, this depends on how the sites are developed following excavation.

Proposed Action

- *Bazile*

  Direct Impacts
  Following excavation, the borrow site would likely fill with water and create a pond or series of small lakes. Large bodies of water serve as an important element of visual composition because of their horizontal extent, color, and texture. The sinuosity of these bodies of water provide the additional visual characteristic of surprise, especially in areas where view sheds open up to reveal water features hidden in dense vegetation. The Bazile site would be highly visible to the general public due to its location along Highway 39 and nearby residential area.

  Where it is not feasible to develop these borrow sites as positive environmental features, measures such as landscaping could be utilized to screen off negative view sheds into the borrow areas.

  The most likely scenario is that the local residents would be the primary utilizers of these borrow areas for recreational purposes and could benefit from an aesthetically pleasing recreational environment.

  Indirect Impacts
  With implementation of the proposed action, no indirect impacts to visual resources would occur at the proposed government furnished borrow areas.

  Cumulative Impacts
  Excavation of the proposed Bazile government furnished borrow area would add to the number of borrow areas in the region. Cumulative impacts to the visual character of the project area would continue with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect visual quality in the project area. Major contributors to decreases in visual quality in the region include other borrow sites and earthen levees blocking view sheds from major thoroughfares.

  The visual impacts caused by multiple excavated borrow sites may cumulatively impact aesthetic quality in the project area. However, this depends on how the sites are developed following excavation.

- *Johnson/Crovetto*

  Direct Impacts
  Following excavation the borrow site would likely fill with water and create a pond or series of small lakes. Large bodies of water serve as an important element of visual composition because of their horizontal extent, color, and texture. The sinuosity of these bodies of water provide the additional visual characteristic of surprise, especially in areas where view sheds open up to reveal water features hidden in dense vegetation. The Johnson/Crovetto site would be highly visible to the general public due to its location along Bayou Road and nearby residential area.

  Where it is not feasible to develop these borrow sites as positive environmental features, measures such as landscaping could be utilized to screen off negative view sheds into the borrow areas.

The most likely scenario is that the local residents would be the primary utilizers of these borrow areas for recreational purposes and could benefit from an aesthetically pleasing recreational environment.

Indirect Impacts
With implementation of the proposed action, no indirect impacts to visual resources would occur at the proposed government furnished borrow areas.

Cumulative Impacts
Excavation of the proposed Johnson/ Crovetto government furnished borrow area would add to the number of borrow areas in the region. Cumulative impacts to the visual character of the project area would continue with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect visual quality in the project area. Major contributors to decreases in visual quality in the region include other borrow sites and earthen levees blocking view sheds from major thoroughfares.
The visual impacts caused by multiple excavated borrow sites may cumulatively impact aesthetic quality in the project area. However, this depends on how the sites are developed following excavation.

- *Westbank F Access Route*

Direct Impacts
The proposed access area is adjacent to residential areas where its existence may not be considered as positive visual environmental feature. This proposed access road would likely result in additional trucks using roads near the residential areas. Upon completion of excavation of the approved government furnished Westbank F borrow area through use of the proposed Westbank F access road, site restoration may include placing the stockpiled overburden back into the borrow area to create islands and smooth out corners for visual enhancement. Therefore, the direct impacts from excavation of the Westbank F site may be reduced. Discussion of direct impacts from the approved Westbank F borrow site is included in IER #22.

Indirect Impacts
With implementation of the proposed action, no indirect impacts to visual resources would occur at the approved government furnished borrow area and proposed access road.

Cumulative Impacts
Use of the proposed access route would enable excavation of the approved Westbank F government furnished borrow area. Excavation of the approved Westbank F borrow area would add to the number of excavated borrow areas in the region. Cumulative impacts to the visual character of the project area would continue with implementation of the proposed alternative. Other activities in the vicinity have and will continue to affect visual quality in the project area. Major contributors to decreases in visual quality in the region include other borrow sites and earthen levees blocking view sheds from major thoroughfares.

The visual impacts caused by multiple excavated borrow sites may cumulatively impact aesthetic quality in the project area. However, this depends on how the sites are developed following excavation.

3.2.12 Noise Quality

Existing Conditions

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dBA). Sound on the decibel scale is referred to as the sound level. The threshold of human hearing is approximately 0 dBA, and the threshold of discomfort or pain is around 120 dBA.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by the EPA and has been adopted by most Federal agencies (EPA, 1974). A DNL of 65 weighted decibels is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by EPA as a level below which there is no adverse impact (EPA, 1974).

- *Bazile*
  Noise levels at and surrounding the Bazile site would be variable depending on the time of day and climatic conditions. In the vicinity of the site is the residential Bazile Road, which would be used as an access route to the site. The site is located between Highway 3137 and Highway 39, and a railway, which are traveled by, respectively, vehicular and train traffic that contribute to noise level in the area. Most times of elevated noise levels associated with traffic would be expected to be during daylight hours. Noise associated with residential areas would be expected to come from vehicular traffic, and would be mostly temporary and restricted to daylight hours.

  Local farms, forested areas, and traffic on the Mississippi River are not expected to greatly contribute to noise levels in the vicinity.

- *Johnson/Crovetto*
  Noise levels at and surrounding the Johnson/Crovetto site would be variable depending on the time of day and climatic conditions. To the east and north of the site are residential areas. To the north is Old Highway 46 (Bayou Road), which is traveled by vehicular traffic that contributes to noise level in the area. Most times of elevated noise levels associated with traffic would be expected to be during daylight hours. Noise associated with residential areas would be expected to come from vehicular traffic, and would be mostly temporary and restricted to daylight hours.

  Local farms and undeveloped areas are not expected to greatly contribute to noise levels in the vicinity.

Local farms and undeveloped areas are not expected to greatly contribute to noise levels in the vicinity.

- *Westbank F Access Route*
  Noise levels at and surrounding the Westbank F site would be variable depending on the time of day and climatic conditions. In the vicinity of the site are Highway 90, commercial development, residential housing, and undeveloped forest. Traffic to and from local commercial and residential areas are expected to impact noise levels. Noise associated with commercial and residential areas would be expected to come from vehicular traffic, and would be mostly temporary and restricted to daylight hours.

  Local undeveloped areas are not expected to greatly contribute to noise levels in the vicinity.

Discussion of Impacts

No Action

- *All Sites*

  Direct Impacts
  Under the no action alternative, there would be no direct impacts to noise quality due to the proposed Federal actions. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Major contributors to decreased noise quality in the vicinity of the proposed borrow areas and access road, such as traffic, would continue to impact noise levels.

  Indirect Impacts
  No indirect impacts to noise quality would occur without implementation of the proposed action.

  Cumulative Impacts
  No cumulative impacts to noise quality would occur without implementation of the proposed action. Noise levels would be cumulatively impacted by existing and predicted activity in the vicinity of the sites. Private construction activities would incrementally impact noise levels in the area. Additionally, construction of the HSDRRS would also cumulatively impact noise quality in the project area. Cumulative noise impacts related to the construction of the HSDRRS will be discussed in the CED.

Proposed Action

- *Bazile*

  Direct Impacts
  Under the proposed action, temporary noise would occur during construction and hauling activities. The noise would affect wildlife during construction, causing them to avoid the area and return once construction ends. Residents of Bazile

Road may be impacted by noise associated with construction equipment such as bulldozers, excavators, and dump trucks. Noise would also directly impact employees constructing the borrow area.

Table 7 describes possible noise emission levels for construction equipment expected to be used during the proposed construction activities. Typical noise levels from 80 dBA to 88 dBA at 50 foot range (FHWA, 2006). Noise levels would decrease as distance from the noise source increases.

Table 7: Possible Construction Equipment Noise Emission

Noise Source	Typical Noise Level (dBA) 50 feet from Source
Backhoe	80 dBA
Dozer	85 dBA
Dump Truck	84 dBA
Excavator	85 dBA
Truck	88 dBA

Source: *FHWA 2006. "Highway Construction Noise Handbook"*

It is assumed that excavation and hauling would be limited to daylight hours (10 – 14 hours per day) seven days a week. However, this may change due to construction schedules, weather conditions, and project borrow needs. Residents of Bazile Road and other nearby residential areas may be impacted by elevated noise elevations due to excavation and hauling. It is expected that these impacts would be temporary and limited to daylight hours during construction. Actual noise impacts depend on construction schedules, which are depended on weather conditions and project borrow needs, which are not known at this time.

Indirect Impacts
No indirect impacts to noise quality would occur with implementation of this alternative.

Cumulative Impacts
Excavation of the proposed Bazile borrow area could cumulatively impact noise levels in the vicinity. Hauling of borrow material would add to existing traffic and its related noise in the vicinity. Most times of elevated noise levels associated with traffic would be expected to be during construction hours. Cumulative noise impacts will be further discussed in the CED.

Private construction activities would incrementally impact noise levels in the area. Construction of the HSDRRS would also cumulatively impact noise quality in the project area. Cumulative noise impacts will be further discussed in the CED.

- *Johnson/Crovetto*

Direct Impacts
Under the proposed action, temporary noise would occur during construction and hauling activities. The noise would affect wildlife during construction, causing them to avoid the area and return once construction ends. In the vicinity of the site may be impacted by noise associated with construction equipment such as

bulldozers, excavators, and dump trucks. Noise would also directly impact employees constructing the borrow area.

Table 7 describes possible noise emission levels for construction equipment expected to be used during the proposed construction activities. Typical noise levels from 80 dBA to 88 dBA at 50 foot range (FHWA, 2006). Noise levels would decrease as distance from the noise source increases.

It is assumed that excavation and hauling would be limited to daylight hours (10 – 14 hours per day) seven days a week. However, this may change due to construction schedules, weather conditions, and project borrow needs. Residents in the vicinity may be impacted by elevated noise elevations due to excavation and hauling. It is expected that these impacts would be temporary and limited to daylight hours during construction. Actual noise impacts depend on construction schedules, which are depended on weather conditions and project borrow needs, which are not known at this time.

Indirect Impacts
No indirect impacts to noise quality would occur with implementation of this alternative.

Cumulative Impacts
Excavation of the proposed Johnson/Crovetto borrow area could cumulatively impact noise levels in the vicinity. Hauling of borrow material would add to existing traffic and its related noise in the vicinity. Most times of elevated noise levels associated with traffic would be expected to be during construction hours. Cumulative noise impacts will be further discussed in the CED.

Private construction activities would incrementally impact noise levels in the area. Construction of the HSDRRS would also cumulatively impact noise quality in the project area. Cumulative noise impacts will be further discussed in the CED.

- *Westbank F Access Route*

Direct Impacts
Under the proposed action, temporary noise would occur during construction and hauling activities. Use of the proposed Westbank F access route would allow for excavation of the approved Westbank F government furnished borrow area, which would add to noise levels in the vicinity. The noise would affect wildlife during construction, causing them to avoid the area and return once construction ends. In the vicinity of the site may be impacted by noise associated with construction equipment such as bulldozers, excavators, and dump trucks. Noise would also directly impact employees constructing the borrow area.

Table 7 describes possible noise emission levels for construction equipment expected to be used during the proposed construction activities. Typical noise levels from 80 dBA to 88 dBA at 50 foot range (FHWA, 2006). Noise levels would decrease as distance from the noise source increases.

It is assumed that excavation and hauling would be limited to daylight hours (10 – 14 hours per day) seven days a week. However, this may change due to construction schedules, weather conditions, and project borrow needs. Residents in the vicinity may be impacted by elevated noise elevations due to excavation and hauling. It is expected that these impacts would be temporary and limited to

daylight hours during construction. Actual noise impacts depend on construction schedules, which are depended on weather conditions and project borrow needs, which are not known at this time.

Indirect Impacts
No indirect impacts to noise quality would occur with implementation of this alternative.

Cumulative Impacts
Use of the proposed access route and excavation of the approved Westbank F government furnished borrow area could cumulatively impact noise levels in the vicinity. Hauling of borrow material would add to existing traffic and its related noise in the vicinity. Most times of elevated noise levels associated with traffic would be expected to be during construction hours. Cumulative noise impacts will be further discussed in the CED.

Private construction activities would incrementally impact noise levels in the area. Construction of the HSDRRS would also cumulatively impact noise quality in the project area. Cumulative noise impacts will be further discussed in the CED.

3.3 SOCIOECONOMIC RESOURCES

The focus of this section is to evaluate the relative socioeconomic impacts, if any, of construction activities associated with using the proposed government furnished borrow areas and proposed access route. The 'No Action' scenario would require the use of potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources as yet to be identified.

3.3.1 Population and Housing

Existing Conditions

- *Bazile*
  The proposed Bazile government furnished borrow area is located in St. Bernard Parish off English Turn Road, accessible from Highway 39, near Braithwaite, Louisiana. It is currently unmaintained agricultural land. There are several private homes located on Bazile Road in the immediate vicinity of the borrow area, but no other commercial or residential development in the immediate vicinity of the Bazile Road neighborhood.

- *Johnson/Crovetto*
  The proposed Johnson/Crovetto government furnished borrow area is located within census tract 301.042 in St. Bernard Parish, which extends from Russell Drive to Purnell Lane just south of Old LA-46 (Bayou Road). Part of the site is used for agricultural purposes. There are several private homes located in the immediate vicinity of the borrow area and along Bayou Road.

- *Westbank F Access Route*
  The proposed access route to the approved Westbank F government furnished borrow area is located within Census Tract 276.01 in Jefferson Parish, which is just south of Louisiana Highway 90. It is bordered by Lake Cataouatche Road/Interior Drainage Canal at its eastern boundary, and Main Canal at its western boundary. There are several private homes and some commercial

development located on Louisiana Highway 90 in the immediate vicinity of the borrow area.

Discussion of Impacts

No Action

- *Bazile*

Direct Impacts
There would be no direct impacts to population and housing under the no action alternative. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
There would be no indirect impacts to population and housing under the no action alternative.

Cumulative Impacts
Under the no action alternative, cumulative impacts to population and housing would continue in the project area. Cumulative impacts associated with the completion of the HSDRRS 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, 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. Upper Plaquemines Parish on the east bank of the Mississippi River, where the Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of population shifts as areas within the HSDRRS.

There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on population and housing due to their remote location and the sparse population within the immediate vicinity of the potential borrow sites.

The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded (CRS, 2005). However, as of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. Non-developed parcels may also be developed into residential neighborhoods, increasing housing in the vicinity. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area. Upper Plaquemines Parish, where the proposed Bazile site is located, is not within

the HSDRRS, and thus may not have the same projected patterns of population shifts as areas within the HSDRRS.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on population and housing are not expected due to most of the sites' remote locations and the sparse populations within their immediate vicinities.

- *Johnson/Crovetto*

Direct Impacts
There would be no direct impacts to population and housing around the proposed Johnson/Crovetto government furnished borrow area under the no action alternative. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
There would be no indirect impacts to population and housing around the proposed Johnson/Crovetto government furnished borrow area under the no action alternative.

Cumulative Impacts
Under the no action alternative, cumulative impacts to population and housing would continue in the project area. Cumulative impacts associated with the completion of the HSDRRS 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, 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.

There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS. The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. However, use of most of these sites would have no adverse impact on population and housing due to the sites' remote locations and the sparse populations within their immediate vicinities.

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an

increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on population and housing are not expected due to most of the sites' remote location and the sparse populations within their immediate vicinities.

- *Westbank F Access Route*

Direct Impacts
Under the no action alternative, there would be no direct impacts to population and housing under this alternative. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
There would be no indirect impacts to population and housing around the proposed Westbank F access route under the no action alternative.

Cumulative Impacts
Under the no action alternative, cumulative impacts to population and housing would continue in the project area. Cumulative impacts associated with the completion of the HSDRRS 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, 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.

There are several potential borrow areas in and around Jefferson Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on population and housing due to their remote location and the sparse population within the immediate vicinity.

The effects of Hurricane Katrina on Jefferson Parish were extensive, with some of the area flooded (CRS, 2005). As of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in Jefferson Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. Non-developed parcels may also be developed into residential neighborhoods, increasing housing in the vicinity. This predicted trend is not inconsistent with the development trends experienced in most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on population and housing are not expected due to the sites' remote locations and the sparse populations within their immediate vicinities.

Proposed Action

- *Bazile*

Direct Impacts
Direct impacts to residents may include increased noise and degraded air quality in the vicinity of the proposed borrow area, and increased congestion on neighboring roadways. Impacts would acutely be felt by residents along Bazile Road. All impacts would last only through the construction period. Congestion impacts will be discussed further in section 3.3.4. Crews would likely work between 10 and 14 hours a day, 7 days a week, given the urgency of the task of completing the HSDRRS by June 2011. The duration of construction is dependent on work schedules, weather conditions, and borrow need, none of which are known at this time.

The borrow area would be designed to not directly or indirectly damage nearby structures, encourage borrow site sidewall erosion, or increase flood risk in the immediate area.

Any impacts to population would last only through the excavation period, and there would be no displacement of any population. No permanent impacts to population are expected.

Indirect Impacts
There would be no indirect impacts to population and housing in the vicinity of the proposed government furnished borrow area as a result of the proposed action. No long term property value decreases because of the proposed action are expected to occur.

Cumulative Impacts
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, 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. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected patterns of economic growth as areas within the system. Additional cumulative impacts to population and housing would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
Direct impacts to residents may include increased noise and degraded air quality in the vicinity of the proposed borrow area, and increased congestion on neighboring roadways. Direct impacts to residents may include increased noise and degraded air quality in the vicinity of the proposed borrow area, and increased congestion on neighboring roadways. All impacts would last only through the construction period. Congestion impacts will be discussed further in section 3.3.4. Crews would likely work between 10 and 14 hours a day, 7 days a week, given the urgency of the task of completing the HSDRRS by June 2011. The duration of construction is dependent on work schedules, weather conditions, and borrow need, none of which are known at this time.

The borrow area would be designed to not directly or indirectly damage nearby structures, encourage borrow site sidewall erosion, or increase flood risk in the immediate area.

Any impacts to population would last only through the excavation period, and there would be no displacement of any population. No permanent impacts to population are expected.

Indirect Impacts
There would be no indirect impacts to population and housing in the vicinity of the proposed Johnson/Crovetto government furnished borrow area as a result of the proposed action. No long term property value decreases because of the proposed action are likely to occur.

Cumulative Impacts
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, 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. Additional cumulative impacts to population and housing would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

  Direct Impacts
  The proposed Westbank F access route site is a potential construction route to the existing Westbank F site, and consists of only 0.29 acres. As a result, residents near the Westbank F site should not experience any increased impacts compared to excavation of the approved Westbank F site. Direct impacts to residents may include increased noise and degraded air quality in the vicinity of the proposed borrow area, and increased congestion on neighboring roadways. All impacts would last only through the construction period. Congestion impacts will be discussed further in section 3.3.4. Crews would likely work between 10 and 14 hours a day, 7 days a week, given the urgency of the task of completing the HSDRRS by June 2011. The duration of construction is dependent on work schedules, weather conditions, and borrow need, none of which are known at this time.

  The approved Westbank F government furnished borrow area would be designed to not directly or indirectly damage nearby structures, encourage borrow site sidewall erosion, or increase flood risk in the immediate area.

  Any impacts to population would last only through the excavation period, and there would be no displacement of any population. No permanent impacts to population are expected.

  Indirect Impacts
  No indirect impacts related to displacement of population and housing are expected to occur. No long term property value decreases because of the proposed action are likely to occur.

  Cumulative Impacts
  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, 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. Additional cumulative impacts to population and housing would be similar to those discussed for the no action alternative

3.3.2 Impacts to Employment, Business, and Industry

Existing Conditions

- *Bazile*
  Bazile Road, which would be used to access the proposed Bazile government furnished borrow area, contains several homes with no private or commercial development in the immediately vicinity of the neighborhood.

- *Johnson/Crovetto*
  The area around the proposed Johnson/Crovetto government furnished borrow area contains several homes, with no private or commercial development in the immediately vicinity of the neighborhood.

- *Westbank F Access Route*
  The Westbank F proposed government furnished borrow area is currently not being used for any private commercial activity. There is some commercial development within the immediate vicinity of Highway 90.

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  There would be no direct impacts to employment, business, and industry in the vicinity of the Bazile proposed government furnished borrow area under the no action alternative. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  There will be no indirect impacts to employment, business, and industry in the vicinity of the Bazile proposed government furnished borrow area under the no action alternative.

  Cumulative Impacts
  Under the no action alternative, cumulative impacts to employment, business and industry would continue in the project area. 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. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of economic growth as areas within the HSDRRS.

  There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites will have no adverse impact on employment, business, and industry due to their remote location and the sparse population within the immediate vicinity of the potential borrow sites.

  The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded (CRS, 2005). However, as of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area. Upper Plaquemines Parish, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on population and housing are not expected due to most of the sites' remote locations and the sparse populations within their immediate vicinities.

- *Johnson/Crovetto*

Direct Impacts
There will be no direct impacts to employment, business, and industry in the vicinity of the Johnson/Crovetto proposed government furnished borrow area under the no action alternative. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
There will be no indirect impacts to employment, business, and industry in the vicinity of the Johnson/Crovetto proposed government furnished borrow area under the no action alternative.

Cumulative Impacts
Under the no action alternative, cumulative impacts to employment, business and industry would continue in the project area. 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.

There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS. The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. However, use of most of these sites would have no adverse impact on employment, business and industry due to the sites' remote locations and the sparse populations within their immediate vicinities.

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent

with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. However, adverse cumulative impacts on employment, business and industry are not expected due to most of the sites' remote locations and the sparse populations within their immediate vicinities.

- *Westbank F Access Route*

Direct Impacts
There would be no direct impacts to employment, business, and industry in the vicinity of the Westbank F proposed access route under the no action alternative. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the Westbank F borrow site, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
There would be no indirect impacts to employment, business, and industry in the vicinity of the Westbank F proposed access route under the no action alternative.

Cumulative Impacts
Under the no action alternative, cumulative impacts to employment, business or industry would continue in the project area. 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

There are several potential borrow areas in and around Jefferson Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of the proposed sites in the vicinity would have no adverse impact on employment, business, and industry due to their remote locations and the sparse population within their immediate vicinities.

The effects of Hurricane Katrina on Jefferson Parish were extensive, with some of the area flooded (CRS, 2005). As of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in Jefferson Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved

borrow sites. This predicted trend is not inconsistent with the development trends experienced in most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the Hurricane Storm Damage Risk Reduction System, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on employment, business or industry are not expected during construction of these projects due to most of the sites' remote locations and the sparse populations within their immediate vicinities.

Proposed Action

- *Bazile*

Direct Impacts
Under this alternative the proposed Bazile government furnished borrow area would be excavated. Once excavated, the proposed government furnished borrow area would likely form a lake. There is no proposed commercial development expected within the affected area, and the parcel would not be available for alternative economic use.

Indirect Impacts
There would be no indirect impacts to business, employment, or industry in the vicinity of the proposed Bazile government furnished borrow area under the proposed action.

Cumulative Impacts
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. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system. Additional cumulative impacts to population and housing would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
Under this alternative, the proposed Johnson/Crovetto government furnished borrow area would be excavated for use as borrow material. Once excavated, the proposed government furnished borrow areas will form approximately a 12.5 acre lake. There is no proposed commercial development expected within the affected area, and the parcel will not be available for alternative economic use.

Indirect Impacts
There will be no indirect impacts to business, employment, or industry in the vicinity of the proposed Johnson/Crovetto government furnished borrow area under the proposed action.

Cumulative Impacts
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. Additional cumulative impacts to population and housing would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
The proposed Westbank F access route would provide access to the Westbank F borrow site, which was analyzed in IER #22. The proposed access site would only serve the purpose of providing a means of accessing the Westbank F borrow area. There is no proposed commercial development expected within the affected area, and the parcel would not be available for alternative economic use.

Indirect Impacts
There would be no indirect impacts to business, employment, or industry in the vicinity of the proposed Westbank F access route under the proposed action.

Cumulative Impacts
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. Additional cumulative impacts to population and housing would be similar to those discussed for the no action alternative.

3.3.3 Availability of Public Facilities and Services

Existing Conditions

- *Bazile*
There are no public facilities in the vicinity of the proposed government furnished borrow area.

- *Johnson/Crovetto*
There are no public facilities in the vicinity of the proposed Johnson/Crovetto government furnished borrow area.

- *Westbank F Access Route*
There are no public facilities in the vicinity of the proposed Westbank F access route.

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts

  There would be no direct impacts to the availability of public facilities and services under the no action alternative. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts

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

  Cumulative Impacts

  Under the no action alternative, cumulative impacts to the availability of public facilities and services would continue in the project area. 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, 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 activities. An increase in the demand for public facilities and services would follow the migration patterns of residents and workers in the region. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of economic growth as areas within the system.

  There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on the availability of public facilities and services due to the sites' remote locations and sparse population within their immediate vicinities.

  The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded (CRS, 2005). However, as of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. Non-developed parcels may also be developed into residential neighborhoods. The need for public facilities and services associated with new development would likely increase with predicted growth. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the HSDRRS.

To date, there are 35 sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on the availability of public facilities and services are not expected during construction of these projects due to the sites' remote locations and sparse populations within their immediate vicinities.

- *Johnson/Crovetto*

Direct Impacts
There would be no direct impacts to the availability of public facilities and services under the no action alternative. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

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

Cumulative Impacts
Under the no action alternative, cumulative impacts to availability of public facilities and services would continue in the project area. 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, 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 activities. An increase in the demand for public facilities and services would follow the migration patterns of residents and workers in the region.
There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS. The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. However, use of most of these sites would have no adverse impact on the availability of public facilities and services due to the sites' remote locations and sparse populations within their immediate vicinities.

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be

impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Currently the cumulative impacts of unidentified borrow sources is not known. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on the availability of public facilities and services are not expected due to the sites' remote locations and sparse populations within their immediate vicinities.

- *Westbank F Access Route*

Direct Impacts
There would be no direct impacts to the availability of public facilities and services under the no action alternative. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the Westbank F borrow site, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

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

Cumulative Impacts
Under the no action alternative, cumulative impacts to the availability of public facilities and services would continue in the project area. 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, 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 activities. An increase in the demand for public facilities and services would follow the migration patterns of residents and workers in the region.

There are several potential borrow areas in and around Jefferson Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on public facilities and services due to their remote locations and the sparse populations within their immediate vicinities.

The effects of Hurricane Katrina on Jefferson Parish were extensive, with some of the area flooded (CRS, 2005). As of June 2008 almost 95 percent of pre-Katrina

residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in Jefferson Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. Non-developed parcels may also be developed into residential neighborhoods. This predicted trend is not inconsistent with the development trends experienced in most of the New Orleans metropolitan area.

To date, there are 35 sites approved for construction of the Hurricane Storm Damage Risk Reduction System, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on public facilities and services are not expected due to the sites' remote locations and the sparse populations within their immediate vicinities.

Proposed Action

- *Bazile*

Direct Impacts
There would be no direct impacts to public facilities and services under the proposed action, since there are no public facilities or services in the immediate vicinity of the proposed borrow area.

Indirect Impacts
There would be no indirect impacts to public facilities and services under the proposed action.

Cumulative Impacts
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, 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 activities. An increase in the demand for public facilities and services would follow the migration patterns of residents and workers in the region. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system. Additional cumulative impacts to public facilities and services would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

  Direct Impacts
  There would be no direct impacts to public facilities and services under the proposed action, since there are no public facilities or services in the immediate vicinity of the proposed borrow area.

  Indirect Impacts
  There would be no indirect impacts to public facilities and services under the proposed action.

  Cumulative Impacts
  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, 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 activities. An increase in the demand for public facilities and services would follow the migration patterns of residents and workers in the region. Additional cumulative impacts to public facilities and services would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

  Direct Impacts
  There would be no direct impacts to public facilities and services under the proposed action since there are no public facilities or services in the immediate vicinity of the proposed access route and the approved Westbank F government furnished borrow area.

  Indirect Impacts
  There would be no indirect impacts to public facilities and services under the proposed action.

  Cumulative Impacts
  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, 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 activities. An increase in the demand for public facilities and services would follow the migration patterns of residents and workers in the region. Additional cumulative impacts to public facilities and services would be similar to those discussed for the no action alternative.

3.3.4 Effects on Transportation

Existing Conditions

- *Bazile*
  The proposed Bazile government furnished borrow area is located between LA-39 and LA-3137 (English Turn Road). The site can only be accessed through a dirt

road leading from Bazile Drive, a residential street with approximately 30 residences located on it. Trucks entering or exiting the proposed borrow site would use the dirt road that leads to Bazile Road. The trucks would continue on Bazile Road to access LA-3137. Major roads in the vicinity include LA-46 (East St. Bernard Highway) and LA-39 (East Judge Perez Road).

- *Johnson/Crovetto*
  The proposed Johnson/Crovetto government furnished borrow area is located off Bayou Road (old Highway 46). The site is accessible from a dirt road that ties directly into Bayou Road. Major roads in the vicinity include LA-39 (St. Bernard Parkway) and LA-3137.

- *Westbank F Access Route*
  The proposed Westbank F access area is located on Highway 90 and is adjacent to an unnamed shell road on the east. Trucks entering or exiting the approved Westbank F borrow site would use the dirt road that leads to the unnamed shell road. The trucks would turn onto the shell road and proceed on that road until it ties into Highway 90. Major roads in the vicinity include Highway 90, Lapalco Boulevard, and LA-18 (River Road).

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  Under the no action alternative there would be no direct impacts to transportation in the vicinity of the proposed Bazile government furnished borrow area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER # 18, IER # 19, IER # 22, IER # 23, IER # 25, or IER # 26, or other sources yet to be identified.

  Indirect Impacts
  Under the no action alternative, there would be no indirect impacts to transportation in the vicinity of the proposed Bazile government furnished borrow area.

  Cumulative Impacts
  Under the no action alternative, cumulative impacts to transportation would continue in the project area. Cumulative impacts associated with the completion of the HSDRRS 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, or beyond, may occur. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system.

  There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS. The

approved Westbank N (containing approximately 68,000 truck loads of borrow material) and Walker Road (approximately 98,000 truck loads) borrow areas are within upper Plaquemines Parish, as are the proposed Westbank K and Westbank L sites. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact transportation quality in upper Plaquemines Parish. The cumulative impacts to transportation from use of the approved borrow areas would likely be moderate to severe congestion, decreases in levels of service, and degradation of local and major roadways around the borrow sites, including LA-23 (Belle Chasse Highway) and LA-39.

Congestion impacts to the Greater New Orleans metropolitan area would likely to be moderate to severe as a result of construction of the HSDRRS. Decreases in levels of service on local roads would be likely as a result of the high number of truck trips required to transport the required amounts of construction material. Additionally, there may be 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.

There may also be moderate to severe degradation of infrastructure as a result of wear and tear from transporting construction materials to HSDRRS construction sites. These impacts would be likely to occur on local and feeder roads, as well as on local bridges that are not designed to withstand frequent heavy truckloads. As a result of construction of the HSDRRS, rehabilitation to area infrastructure would likely be required sooner than would normally be expected.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. The transportation of construction equipment and borrow material for these projects would incrementally add to the stress on transportation resources in the project area.

- *Johnson/Crovetto*

<u>Direct Impacts</u>
Under the no action alternative there would be no direct impacts to transportation in the vicinity of the proposed Johnson/Crovetto government furnished borrow area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER # 18, IER # 19, IER # 22, IER # 23, IER # 25, or IER # 26, or other sources yet to be identified.

<u>Indirect Impacts</u>
Under the no action alternative, there would be no indirect impacts to transportation in the vicinity of the proposed Johnson/Crovetto government furnished borrow area.

Cumulative Impacts

Under the no action alternative, cumulative impacts to transportation would continue in the project area. Cumulative impacts associated with the completion of the HSDRRS 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, or beyond, may occur.

There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS. The approved Dockville (containing approximately 82,000 truck loads of borrow material), 910 Bayou Road (approximately 9,800 truck loads), 1418/1420 Bayou Road (approximately 37,000 truck loads), 1572 Bayou Road (approximately 14,000 truck loads), 4001 Florissant Highway (approximately 18,000 truck loads), Gatien Navy (approximately 21,000 truck loads), Sylvia Guillot (approximately 8,400 truck loads), DK Aggregates (approximately 118,000 truck loads), 1025 Florissant Highway (approximately 105,000 truck loads), and Acosta (approximately 52,500 truck loads) sites are located within the parish. It is reasonably foreseeable that the approved sites would be used for construction of the Hurricane Storm Damage Risk Reduction System, and their use would cumulatively impact transportation quality in St. Bernard Parish. The cumulative impacts to transportation from use of the approved borrow areas would likely be moderate to severe congestion, decreases in levels of service, and degradation of local and major roadways around the borrow sites, including Bayou Road, LA-46, and LA-39.

Congestion impacts to the Greater New Orleans metropolitan area would likely to be moderate to severe as a result of construction of the HSDRRS. Decreases in levels of service on local roads would be likely as a result of the high number of truck trips required to transport the required amounts of construction material. Additionally, there may be 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.

There may also be moderate to severe degradation of infrastructure as a result of wear and tear from transporting construction materials. These impacts would be likely to occur on local and feeder roads, as well as on local bridges that are not designed to withstand frequent heavy truckloads. As a result of construction of the HSDRRS, rehabilitation to area infrastructure would likely be required sooner than would normally be expected.

There may emerge cumulative impacts associated with the completion of the HSDRRS. The lower flood risk that accrues to much of the Greater 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

- *Westbank F Access Route*

  Direct Impacts
  Under the no action alternative there would be no direct impacts to transportation in the project area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER # 18, IER # 19, IER # 22, IER # 23, IER # 25, or IER # 26, or other sources yet to be identified.

  Indirect Impacts
  Under the no action alternative, there would be no indirect impacts to transportation in the vicinity of the proposed Westbank F access route.

  Cumulative Impacts
  Under the no action alternative, cumulative impacts to transportation would continue in the project area. Cumulative impacts associated with the completion of the HSDRRS 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, or beyond, may occur.

  There are several potential borrow areas in Jefferson Parish that were approved or are being investigated for construction of the HSDRRS. The approved Churchill Farms (containing approximately 97,000 truck loads of borrow material), Westbank G, River Birch (approximately 395,000 truck loads), Westbank F (approximately 94,000 truck loads), Westbank I (approximately 47,000 truck loads), Westbank D (approximately 53,000 truck loads), Westbank E (approximately 330,000 truck loads), Willswood (approximately 204,000 truck loads), and South Kenner Road (approximately 336,000 truck loads) sites are within the western portion of the parish. It is reasonably foreseeable that the approved sites would be used for construction of the HSDRRS, and their use would cumulatively impact transportation quality in Jefferson Parish. The cumulative impacts to transportation from use of the approved borrow areas would likely be moderate to severe congestion, decreases in levels of service, and degradation of local and major roadways around the borrow sites, including Highway 90

  Congestion impacts to the Greater New Orleans metropolitan area would likely to be moderate to severe as a result of HSDRRS construction. Decreases in levels of service on local roads would be likely as a result of the high number of truck trips required to transport the required amounts of construction material. Additionally, there may be 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.

  There may also be moderate to severe degradation of infrastructure as a result of wear and tear from transporting construction materials. These impacts would be likely to occur on local and feeder roads, as well as on local bridges that are not designed to withstand frequent heavy truckloads. As a result of construction of the HSDRRS, rehabilitation to area infrastructure would likely be required sooner than would normally be expected.

There may emerge cumulative impacts associated with the completion of the HSDRRS in its entirety. The lower flood risk that accrues to much of the Greater 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.

Proposed Action

- *Bazile*

Direct Impacts
Under the proposed action, there would be temporary congestion-related impacts to Bazile Road due to an increased presence of construction vehicles. Excavation of the proposed Bazile government furnished borrow area (approximately 498,000 cubic yards of borrow material) would require approximately 42,000 truckloads during the construction period. Bazile Road would be used as the access route for construction equipment to and from LA-3137. Congestion impacts and decreases in levels of service on Bazile Road would likely be moderate to severe. There may be temporary, congestion-related impacts to LA-3137 near the proposed Bazile government furnished borrow area due to an increased presence of construction vehicles. Congestion impacts and decreases in levels of service around the excavation area would also likely be moderate to severe.

Due to these increased levels of truck traffic, there would be increased wear and tear on these same roads. Local roadways around the project area are not designed to handle frequent heavy loads as the project necessitates, and would likely suffer degradation requiring rehabilitation than 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 Impacts
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 as borrow and other construction materials are transported to construction sites for use within the HSDRRS.

Cumulative Impacts
Use of the proposed Bazile government furnished borrow area would contribute to the cumulative impacts to transportation resources in the project area. Major sources of impacts would include 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. Additional cumulative impacts to transportation resources in the project area would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
Under the proposed action, there would be temporary congestion-related impacts in the vicinity of the Johnson/Crovetto site due to an increased presence of construction vehicles. Excavation of the proposed Johnson/Crovetto government

furnished borrow area (approximately 198,000 cubic yards of borrow material) would require approximately 17,000 truckloads during the construction period A dirt road leading to Bayou Road would be used as the access route for construction equipment to and from the site. Congestion impacts and decreases in levels of service on Bayou Road would likely be moderate to severe. There may be temporary, congestion-related impacts to Bayou Road near the proposed Johnson/Crovetto government furnished borrow area due to an increased presence of construction vehicles.

Due to these increased levels of truck traffic, there would be increased wear and tear on these same roads. Local roadways around the project area are not designed to handle frequent heavy loads as the project necessitates, and would likely suffer degradation requiring rehabilitation 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 Impacts
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 as borrow and other construction materials are transported to construction sites for use within the HSDRRS.

Cumulative Impacts
Use of the proposed Johnson/Crovetto government furnished borrow area would contribute to the cumulative impacts to transportation resources in the project area. Major sources of impacts would include 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. Additional cumulative impacts to transportation resources in the project area would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
Under the proposed action, there would be temporary congestion-related impacts in the vicinity of the proposed access route and approved Westbank F government furnished borrow area due to an increased presence of construction vehicles. Use of the proposed access route would allow excavation of the approved Westbank F government furnished borrow area. Excavation of the approved borrow area (approximately 128,000 cubic yards of borrow material) would require approximately 11,000 truckloads during the construction period. Congestion impacts and decreases in levels of service on nearby roads would likely be moderate to severe. There may be temporary, congestion-related impacts to Highway 90 near the Westbank F site due to an increased presence of construction vehicles. Congestion impacts and decreases in levels of service around the excavation area would also likely be moderate to severe.

Due to these increased levels of truck traffic, there would be increased wear and tear on these same roads. Local roadways around the project area are not designed to handle frequent heavy loads as the project necessitates, and would likely suffer degradation requiring rehabilitation 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 Impacts
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 as borrow and other construction materials are transported to construction sites for use within the HSDRRS.

Cumulative Impacts
Use of the proposed access route and excavation of the approved Westbank F government furnished borrow area would contribute to the cumulative impacts to transportation resources in the project area. Major sources of impacts would include 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. Additional cumulative impacts to transportation resources in the project area would be similar to those discussed for the no action alternative.

3.3.5 Disruption of Community and Regional Growth

Existing Conditions
Community and regional growth are generally influenced by national trends, but otherwise depend significantly upon relatively local attributes that allow the local community to be evaluated apart from the national economy. For the purposes of this 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.

- *Bazile*
  According to U.S. Census data from 1990 and 2000 the following trends were observed in Plaquemines Parish: population grew from 25,575 to 26,757 and median household income grew from $24,076 to $42,610. According to the Bureau of Labor Statistics, employment fell from 16,879 to 14,400 between January 2001 and September 2008.

  Preliminary 2010 U.S. Census data will be available in 2011 at the earliest. However, intermediate estimates by the Greater New Orleans Community Data Center suggested decline in Plaquemines Parish since the 2005 storm events: 7,504 households in the parish are actively receiving mail in April 2009, compared with 8,439 in July 2005. Population was estimated by the U.S. Census Bureau at 21,276 in 2007, as compared to 28,588 in July 2005.

- *Johnson/Crovetto*
  According to U.S. Census data from 1990 and 2000 the following trends were observed in St. Bernard Parish: population grew from 66,631 to 67,229; employment grew from 30,738 to 31,267; and median household income grew from $25,482 to $35,939.

  Preliminary 2010 Census data will be available in 2011 at the earliest. However, intermediate census estimates reported by the Greater New Orleans Community Data Center indicated a population in St. Bernard Parish of 19,826 in 2007.

- *Westbank F Access Route*
  According to U.S. Census data from 1990 and 2000 the following trends were observed in Jefferson Parish: population grew from 448,306 to 455,466 and median household income grew from $27,916 to $38,435. According to the

Bureau of Labor Statistics, employment fell from 212,473 to 194,996 between January 2001 and September 2008.

Preliminary 2010 U.S. Census data will be available in 2011 at the earliest. However, intermediate estimates by the Greater New Orleans Community Data Center suggested decline in Jefferson Parish since the 2005 storm events: 183,817 households in the parish were actively receiving mail in April 2009, compared with 187,612 in July 2005. Population was estimated by the U.S. Census Bureau at 436,181 in July 2008, as compared to 449,640 in July 2005.

Discussion of Impacts

No Action

- *Bazile*

Direct Impacts
Because the vicinity of the proposed Bazile government furnsiehd borrow area is rural, the no action alternative would have no direct impacts to community and regional growth in the vicinity. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
Under the no action alternative, there would be no indirect impacts to community and regional growth in the vicinity of the Bazile proposed government furnished borrow area.

Cumulative Impacts
Because the vicinity of the proposed Bazile government furnished borrow area is rural, no cumulative impacts to regional development and growth would occur under the no action alternative. Cumulative impacts associated with the completion of the HSDRRS 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, or beyond, may occur. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system.

There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on regional development and growth due to their remote locations.

The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded (CRS, 2005). However, as of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including

use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts to regional development and growth are not expected due to the remote locations of most of the sites.

- *Johnson/Crovetto*

Direct Impacts
Because the vicinity of the proposed Johnson/Crovetto government furnished borrow area is rural, the no action alternative would have no direct impacts to community and regional growth in the vicinity. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
Under the no action alternative, there would be no indirect impacts to community and regional growth in the vicinity of the Johnson/Crovetto proposed government furnished borrow area.

Cumulative Impacts
Because the vicinity of the proposed Johnson/Crovetoo government furnished borrow area is rural, no cumulative impacts to regional development and growth would occur under the no action alternative. Cumulative impacts associated with the completion of the HSDRRS 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, or beyond, may occur.

There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS. The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. However, use of most of these sites would have no adverse impact on regional development and growth due to the sites' remote locations.

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-

Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse impacts to regional development and growth are not expected due to the remote locations of most of the sites.

- *Westbank F Access Route*

Direct Impacts
Under the no action alternative, another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
Under the no action alternative, there would be no indirect impacts to community and regional growth in the vicinity of the proposed access route and the approved Westbank F government furnished borrow area.

Cumulative Impacts
No cumulative impacts to community and regional growth would occur under the no action alternative. 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 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, or beyond, may occur.

There are several potential borrow areas in and around Jefferson Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on community and regional growth due to their remote locations and the sparse populations within their immediate vicinities.

The effects of Hurricane Katrina on Jefferson Parish were extensive, with some of the area flooded (CRS, 2005). As of June 2008, almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in Jefferson Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the Hurricane Storm Damage Risk Reduction System, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on community and regional growth are not expected due to the fact that most of the potential sites are in remote locations with sparse populations.

Proposed Action

- *Bazile*

  Direct Impacts
  There would be no direct impacts to community and regional growth as a result of the proposed action.

  Indirect Impacts
  Future community and regional growth may be negatively impacted by use of the proposed Bazile government furnished borrow area being excavated as opposed to being used for other purposes.

  Cumulative Impacts
  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. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system. Additional cumulative impacts to community and regional growth in the project area would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

  Direct Impacts
  There would be no direct impacts to community and regional growth as a result of the proposed action.

Indirect Impacts
Future community and regional growth may be negatively impacted by use of the proposed Johnson/Crovetto government furnished borrow area being excavated as opposed to being used for other purposes.

Cumulative Impacts
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. Additional cumulative impacts to community and regional growth in the project area would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
There would be no direct impacts to community and regional growth as a result of the proposed action.

Indirect Impacts
Future community and regional growth may be negatively impacted by use of the proposed Westbank F access route and the approved Westbank F government furnished borrow area being excavated as opposed to being used for other purposes.

Cumulative Impacts
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. Additional cumulative impacts to community and regional growth in the project area would be similar to those discussed for the no action alternative.

3.3.6 Impacts to Tax Revenues and Property Values

Existing Conditions

- *Bazile*
The proposed Bazile government furnished borrow area is located in census tract 501, group 1. The median value for specified owner-occupied housing unites was $139,000 in the year 2000, as compared with a value of $110,000 for Plaquemines Parish. The site is located near the town of Poydras, where the median value was $61,100.

- *Johnson/Crovetto*
The Johnson/Crovetto proposed government furnished borrow area is located near Kenilworth, Louisiana. No economic data is available for the immediate area, but median income in St. Bernard Parish in 2000 was $35,939. The median value of homes in St. Bernard Parish in 2000 was $85,200.

- *Westbank F Access Route*
  The proposed Westbank F access route is located in census tract 276.01, group 4. The median value for specified owner-occupied housing unites was $75,000 in the year 2000, as compared with a value of $105,300 for Jefferson Parish. The site is located near the towns of Avondale and Waggaman, where the median values were $58,600 and $64,100, respectively.

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  Under the no action alternative, there would be no direct impacts to tax revenues and property values in the vicinity of the Bazile proposed government furnished borrow area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  Under the no action alternative, there would be no indirect impacts to tax revenues and property values in the vicinity of the Bazile proposed government furnished borrow area.

  Cumulative Impacts
  No cumulative impacts to tax revenue and property values would occur under the no action alternative. Cumulative impacts associated with the completion of the HSDRRS 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 reduced risk of flooding that the HSDRRS is designed to achieve would have the effect of preserving, if not enhancing, property values within the protected areas. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system.

  There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on tax revenue and property values due to their remote locations.

  The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded (CRS, 2005). However, as of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area. Upper Plaquemines Parish, in which

the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse impacts to tax revenue and property values are not expected due to the fact that most of the sites are in remote locations.

- *Johnson/Crovetto*

Direct Impacts
Under the no action alternative, there would be no direct impacts to tax revenues and property values in the vicinity of the Johnson/Crovetto proposed government furnished borrow area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
Under the no action alternative, there would be no indirect impacts to tax revenues and property values in the vicinity of the Johnson/Crovetto proposed government furnished borrow area.

Cumulative Impacts
No cumulative impacts to tax revenue and property values would occur under the no action alternative. Cumulative impacts associated with the completion of the HSDRRS 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.

There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS. The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. However, use of most of these sites is not likely to have an adverse impact on tax revenue and property values.

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent

increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on tax revenue and property values are not expected due to the remote location of most of the potential sites.

- *Westbank F Access Route*

  Direct Impacts

  Under the no action alternative, there would be no direct impacts to tax revenues and property values in the vicinity of the proposed access route and the approved Westbank F government furnished borrow area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts

  Under the no action alternative, there would be no indirect impacts to tax revenues and property values in the vicinity of the proposed access route and the approved Westbank F government furnished borrow area.

  Cumulative Impacts

  No cumulative impacts to tax revenue and property values would occur under the no action alternative. Cumulative impacts associated with the completion of the HSDRRS 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.

  There are several potential borrow areas in and around Jefferson Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on tax revenue and property values due to the sites' remote locations and the sparse populations within their immediate vicinities.

  The effects of Hurricane Katrina on Jefferson Parish were extensive, with some of the area flooded (CRS, 2005). As of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in

population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the Hurricane Storm Damage Risk Reduction System, it is reasonable to assume that remaining non-developed parcels in Jefferson Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in most of the New Orleans metropolitan area.

To date, there are borrow 35 sites approved for construction of the Hurricane Storm Damage Risk Reduction System, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts on tax revenue and property values is not expected due to the fact that most of the potential sites are located in remote areas and have sparse populations within the immediate vicinity.

Proposed Action

- *Bazile*

Direct Impacts
There may be a temporary decline in the value of homes along Bazile Road during the period of activity. Any potential decline would cease upon completion of the excavation and property values would return to pre-excavation levels. The borrow area would be designed to not directly or indirectly damage nearby structures, encourage pit sidewall erosion, or increase flood risk in the immediate area.

Indirect Impacts
Tax revenues for Plaquemines Parish may marginally increase in the future as a result of the property value for the site being possibly higher given the market response to a relatively higher amenity value associated with a lake.

Cumulative Impacts
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. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected patterns of growth as areas within the system. Additional cumulative impacts to tax revenues and property values in the project area would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

Direct Impacts
There may be a temporary decline in the value of homes near the Johnson/Crovetto proposed government furnished borrow area during the period of activity. Any potential decline would cease upon completion of the excavation and property values would return to pre-excavation levels. The borrow area would be designed to not directly or indirectly damage nearby structures, encourage pit sidewall erosion, or increase flood risk in the immediate area.

Indirect Impacts
Tax revenues for St. Bernard Parish may marginally increase in the future as a result of the property value for the site being possibly higher given the market response to a relatively higher amenity value associated with a lake.

Cumulative Impacts
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. Additional cumulative impacts to tax revenues and property values in the project area would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

Direct Impacts
There may be a temporary decline in property values near the proposed access route and approved Westbank F government furnished borrow area during the period of activity. Any potential decline would cease upon completion of the excavation and property values would return to pre-excavation levels. The borrow area would be designed to not directly or indirectly damage nearby structures, encourage pit sidewall erosion, or increase flood risk in the immediate area.

Indirect Impacts
Tax revenues for Jefferson Parish may marginally increase in the future as a result of the property value for the site being possibly higher given the market response to a relatively higher amenity value associated with a lake.

Cumulative Impacts
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. Additional cumulative impacts to tax revenues and property values in the project area would be similar to those discussed for the no action alternative.

3.3.7 Changes in Community Cohesion

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.

- *Bazile*
  The proposed Bazile government furnished borrow area is located in Plaquemines Parish off English Turn Road, accessible from Highway 39, near Braithwaite, Louisiana. It is currently unmaintained agricultural land. There are several private homes located on Bazile Road in the immediate vicinity of the borrow area, but no other commercial or residential development in the immediate vicinity of the Bazile Road neighborhood. Residents have resided in the area for several years, and the community values have become well established.

- *Johnson/Crovetto*
  The proposed Johnson/Crovetto government furnished borrow area is located within census tract 301.042 in St. Bernard Parish, which extends from Russell Drive to Purnell Lane just south of Old LA-46 (Bayou Road). Part of the site is used for agricultural purposes. There are several private homes located in the immediate vicinity of the borrow area and along Bayou Road. Residents have resided in the area for several years, and the community values have become well established.

- *Westbank F Access Route*
  The proposed access route to the approved Westbank F government furnished borrow area is located within Census Tract 276.01 in Jefferson Parish, just south of Highway 90. It is bordered by Lake Cataouatche Road/Interior Drainage Canal at its eastern boundary, and Main Canal at its western boundary. It is currently unmaintained agricultural land. There are several private homes and some commercial development located on Highway 90 in the immediate vicinity of the borrow area. Residents have resided in the area for several years, and the community values have become well established.

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  Under the no action alternative, there would be no direct impacts to community cohesion in the vicinity of the Bazile proposed government furnished borrow area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
Under the no action alternative, there would be no indirect impacts to community cohesion in the vicinity of the proposed Bazile government furnished borrow area.

Cumulative Impacts
Under the no action alternative, no cumulative impacts to community cohesion would occur. 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. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected changes as areas within the system.

There are several potential borrow areas in upper Plaquemines Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact to community cohesion due to their remote locations.

The effects of Hurricane Katrina on Plaquemines Parish were extensive, with most of the parish flooded (CRS, 2005). However, as of June 2008 almost 95% of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in upper Plaquemines Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in the parish, as well as most of the New Orleans metropolitan area. Upper Plaquemines Parish on the east bank of the Mississippi River, where the proposed Bazile site is located, is not within the HSDRRS, and thus may not have the same projected changes as areas within the system.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse impacts to community cohesion are not expected due to the fact that most of the potential sites are in remote locations.

- *Johnson/Crovetto*

Direct Impacts
Under the no action alternative, there would be no direct impacts to community cohesion in the vicinity of the Johnson/Crovetto proposed government furnished borrow area. HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER

#18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

Indirect Impacts
Under the no action alternative, there would be no indirect impacts to community cohesion in the vicinity of the Johnson/Crovetto proposed government furnished borrow area.

Cumulative Impacts
Under the no action alternative, no cumulative impacts to community cohesion would occur. 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.

There are several potential borrow areas in St. Bernard Parish that were approved or are being investigated for construction of the HSDRRS. The approved Dockville, 910 Bayou Road, 1418/1420 Bayou Road, 1572 Bayou Road, 4001 Florissant Highway, Gatien Navy, Sylvia Guillot, DK Aggregates, 1025 Florissant Highway, and Acosta sites are located within the parish. However, use of most of these sites would have no adverse impact to community cohesion due to the sites' remote locations.

The effects of Hurricane Katrina on St. Bernard were extensive, with most of the parish heavily flooded (CRS, 2005). As of June 2008 less than 50 percent of pre-Katrina residences were active (GNOCDC, 2009). The parish experienced an increase in population growth during the latter part of 2008, a trend that is expected to continue in the near future (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in St. Bernard Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in St. Bernard, as well as most of the New Orleans metropolitan area.

To date, there are 35 borrow sites approved for construction of the HSDRRS, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse impacts to community cohesion are not expected due to the fact that most of the potential sites' are in remote locations.

- *Westbank F Access Route*

  Direct Impacts
  Under the no action alternative, there would be no direct impacts to community cohesion in the vicinity of the proposed access route and the approved Westbank F government furnished borrow area. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be found for the Westbank F borrow area, HSDRRS projects would be built to authorized levels using other potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  With implementation of the no action alternative, there would be no indirect impacts to community cohesion in the vicinity of the proposed access route and the approved Westbank F government furnished borrow area.

  Cumulative Impacts
  Under the no action alternative, no cumulative impacts to community cohesion would occur. Cumulative impacts associated with the completion of the HSDRRS 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.

  There are several potential borrow areas in and around Jefferson Parish that were approved or are being investigated for construction of the HSDRRS. However, use of most of these sites would have no adverse impact on community cohesion due to the sites' remote locations and the sparse populations within their immediate vicinities.

  The effects of Hurricane Katrina on Jefferson Parish were extensive, with some of the area flooded (CRS, 2005). As of June 2008 almost 95 percent of pre-Katrina residences were repopulated (GNOCDC, 2009). Because of the recent increase in population to the area, and the lower flood risk to the New Orleans metropolitan area with completion of the HSDRRS, it is reasonable to assume that remaining non-developed parcels in Jefferson Parish would probably be impacted by new commercial or industrial activity, including use of the aforementioned approved borrow sites. This predicted trend is not inconsistent with the development trends experienced in most of the New Orleans metropolitan area.

  To date, there are 35 borrow sites approved for construction of the Hurricane Storm Damage Risk Reduction System, and more than 20 sites under investigation in southeastern Louisiana. Other authorized CEMVN projects include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. In addition, state and local levee systems are continuously being repaired, maintained, and upgraded. It is expected that borrow material would be needed for a majority of these projects. Adverse cumulative impacts to community cohesion are not expected due to the fact that most of the potential sites are located in remote areas with sparse populations.

Proposed Action

- *Bazile*

  Direct Impacts
  There would be no direct impacts to community cohesion as a result of the proposed action.

  Indirect Impacts
  There would be no indirect impacts to community cohesion as a result of the proposed action.

  Cumulative Impacts
  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. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected changes as areas within the system. Additional cumulative impacts to community cohesion in the project area would be similar to those discussed for the no action alternative.

- *Johnson/Crovetto*

  Direct Impacts
  There would be no direct impacts to community cohesion as a result of the proposed action.

  Indirect Impacts
  There would be no indirect impacts to community cohesion under the proposed action.

  Cumulative Impacts
  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. Additional cumulative impacts to community cohesion in the project area would be similar to those discussed for the no action alternative.

- *Westbank F Access Route*

  Direct Impacts
  There would be no direct impacts to community cohesion as a result of the proposed action.

  Indirect Impacts
  There would be no indirect impacts to community cohesion under the proposed action.

Cumulative Impacts

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. Additional cumulative impacts to community cohesion in the project area would be similar to those discussed for the no action alternative.

3.4 ENVIRONMENTAL JUSTICE

Environmental Justice (EJ) is important because of Executive Order 12898 of 1994 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. The Environmental Protection Agency (EPA) defines environmental justice (EJ)as 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.

In accordance with these directives, this analysis identifies and addresses, as appropriate, disproportionately high, and adverse human health or environmental effects of the IER project on minority and low-income populations. The methodology to accomplish this includes identifying low-income and minority populations within the study area using up to date economic statistics, aerial photographs, the 2000 U.S. Census, Environmental Systems Research Institute (ESRI) estimates, as well as conducting community outreach activities such as small neighborhood focus meetings.

For purposes of analyzing potential impacts to minority and/or low-income population, the smallest political unit(s) containing an EJ study area is/are considered the reference community of comparison, whose population is therefore considered the reference population for comparison purposes. A potential disproportionate impact may occur when the percent minority and/or percent low-income 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 1-mile radius of the project footprint are defined as the EJ study area.

The sources for the data used in the analysis include the 2000 U.S. Census and estimates from Environmental Systems Research Institute, Inc. (ESRI). Despite the 2000 U.S. Census being eight years old, it serves as a logical baseline of information 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.

Due to the considerable impact of Hurricane Katrina upon the New Orleans metropolitan area, and the likely shift in demographics and income, the 2000 Census data is supplemented with more current data, including 2008 estimates and 2013 projections provided by ESRI.

Existing Conditions

- *Johnson/Crovetto*
  The proposed Johnson/Crovetto government furnished borrow area is located within Block Group 301.042 in St. Bernard Parish, which extends from Russell Drive to Purnell Lane just south of Bayou Road. St. Bernard Parish is considered the reference community for impact analysis for the proposed borrow area.

  According to the U.S. Census, the community surrounding the proposed Johnson/Crovetto government furnished borrow area was not a low-income or minority area in 2000, with 12.3 percent of the population a minority and 10.9 percent of the population low-income. These figures are less than parish or state figures. The estimated low-income population decreased from 2000 to 2008, while the estimated minority population increased from 2000 to 2008. Since estimated changes to the low-income and minority population was nominal during this period, the area's low-income and minority population remains below parish and state figures. Therefore, the Johnson/Crovetto study area is not considered a low-income or minority community.

- *Bazile*
  The proposed Bazile government furnished borrow area is located within Block Group 501.01 in Plaquemines Parish, which extends from East Park Boulevard south to Becs Place, along the East Bank of Plaquemines Parish. Plaquemines Parish is considered the reference community for impact analysis for the proposed borrow area.

  According to the 2000 Census, the community around the proposed Bazile government furnished borrow area was not a low-income or minority area in 2000, with 25.4 percent of the population a minority and 11.5 percent of the population low-income. These figures are less than parish or state figures. Similarly, while the estimated low-income and minority population increased slightly from 2000 to 2008, the area's low-income and minority population remains below parish and state figures. Therefore, the Bazile study area is not considered a low-income or minority community.

- *Westbank F Access Route*
  The proposed Westbank F access route is located within census tract 276.01 in Jefferson Parish, which is just south of Highway 90. It is between Lake Cataouatche Road/Interior Drainage Canal at its eastern boundary and Main canal at its western boundary. Jefferson Parish is considered the reference community for impact analysis for the proposed access route.

  According to the U.S. Census, the community surrounding the proposed access route was not a low income or minority area in 2000, with 24.5 percent of the population a minority and 11.2 percent of the population low income. These figures are less than parish or state figures. The estimated low income population decreased from 2000 to 2008, while the estimated minority population increased from 2000 to 2008. Since estimated changes to the low

income and minority population was nominal during this period, the area's low income and minority population remains below parish and state figures. Therefore, the study area is not considered a low income or minority community.

Discussion of Impacts

No Action

- *Bazile*

  Direct Impacts
  Under the no action alternative, the proposed Bazile government furnished borrow area would not be excavated, and there would be no disproportionate direct impacts on any minority or low-income populations. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  Under the no action alternative, there would be no disproportionate indirect impacts on any minority or low-income populations.

  Cumulative Impacts
  Under the no action alternative, there would be no cumulative disproportionate cumulative impacts on any minority or low-income populations.

- *Johnson/Crovetto*

  Direct Impacts
  Under the no action alternative, the proposed Johnson /Crovetto government furnished borrow area would not be excavated, and there would be no disproportionate direct impacts on any minority or low-income populations. The proposed HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas described in IER #18, IER #19, IER #22, IER #23, IER #25, or IER #26, or other sources yet to be identified.

  Indirect Impacts
  Under the no action alternative, there would be no disproportionate indirect impacts on any minority or low-income populations.

  Cumulative Impacts
  Under the no action alternative, there would be no disproportionate cumulative impacts on any minority or low-income populations.

- *Westbank F*

  Direct Impacts
  Under the no action alternative, the proposed access route would not be used and the approved Westbank F borrow site could not be excavated; therefore, there would be no disproportionate direct impacts to minority or low-income populations. Another access route to the approved Westbank F borrow area would be needed in order to excavate the site. If an access route could not be

found for the approved Westbank F borrow area, HSDRRS projects would be built to authorized levels using potential government furnished and/or contractor furnished borrow areas.

Indirect Impacts
Under the no action alternative, there would be no disproportionate indirect impacts on any minority or low-income populations.

Cumulative Impacts
Under the no action alternative, there would be no disproportionate cumulative impacts on any minority or low-income populations.

Proposed Action

- *Johnson/Crovetto*

Direct Impacts
With implementation of the proposed action a 12.9-acre borrow area would be excavated at the Johnson/Crovetto site, which is located on uninhabited land. Field analysis of the area shows that no minority and/or low income communities are located within 1 mile of the proposed borrow location. Direct adverse impacts from borrow site activities such as air quality, noise, traffic, etc. are usually limited to within 1 mile of project area and would be equally borne by all population groups in the proposed project vicinity. Therefore, adverse human health and environmental impacts from the proposed action would not disproportionately affect minority and/or low-income populations.

Indirect Impacts
Field analyses of the area show that no minority and/or low income communities are located within one mile of the proposed borrow location. These indirect impacts would not exert disproportionately high adverse human health and environmental impacts on minority and/or low-income communities.

With implementation of the proposed action, indirect impacts may include the creation of ponds and small lakes in the area, thus increasing the desirability for the area to be developed for community use. With the continued completion of the HSDRRS after Hurricane Katrina, the area would continue to experience significant population growth as more residents and commercial businesses return to develop the area. It is reasonable to assume that, as the population increases, so too will property values. The increase in property values would continue to generate economic growth and be beneficial to all community groups in the area.

Cumulative Impacts
Cumulative impacts of implementing the proposed alternative would be the additive combination of impacts to minority and/or low-income communities by this and other Federal, state, local, and private efforts. Field analysis of the area show that no minority and/or low income communities exist within one mile of the proposed borrow location. With implementation of the proposed action, future borrow construction would provide potentially unforeseen cumulative impacts on community development in the area. These impacts may occur in increments such as increases in demand for waterfront properties or potential safety hazards should the borrow sites remain undeveloped after use. However, these impacts would be equally borne by all population groups in the proposed project vicinity. Thus, disproportionate adverse cumulative human health and

environmental impacts are not anticipated on minority and/or low income communities from the proposed alternative.

- *Bazile*

Direct Impacts
With implementation of the proposed action a 19.1-acre borrow site would be excavated at the Bazile site, which is located on uninhabited land. Field analysis of the area show that no minority and/or low-income communities are located within 1 mile of the proposed borrow location. Direct adverse impacts from borrow site activities such as air quality, noise, traffic, etc. are usually limited to within 1 mile of project area and are equally borne by all population groups in the proposed project vicinity. Therefore, adverse human health and environmental impacts from the proposed action would not disproportionately affect minority and/or low-income populations.

Indirect Impacts
Field analyses of the area show that no minority and/or low income communities are located within one mile of the proposed borrow location. These indirect impacts would not exert disproportionately high adverse human health and environmental impacts on minority and/or low-income communities.

With implementation of the proposed action, indirect impacts may include the creation of ponds and small lakes in the area, thus increasing the desirability for the area to be developed for community use. With the continued completion of the HSDRRS after Hurricane Katrina, the area would continue to experience significant population growth as more residents and commercial businesses return to develop the area. It is reasonable to assume that, as the population increases, so too will property values. The increase in property values would continue to generate economic growth and be beneficial to all community groups in the area. The proposed Bazile site is not within the HSDRRS, and thus may not have the same projected changes as areas within the system.

Cumulative Impacts
Cumulative impacts of implementing the proposed alternative would be the additive combination of impacts to minority and/or low-income communities by this and other Federal, state, local, and private efforts. Field analysis of the area show that no minority and/or low income communities exist within one mile of the proposed borrow location. With implementation of the proposed action, future borrow construction would provide potentially unforeseen cumulative impacts on community development in the area. These impacts may occur in increments such as increases in demand for waterfront properties or potential safety hazards should the borrow sites remain undeveloped after use. However, these impacts will be equally borne by all population groups in the proposed project vicinity. Thus, disproportionate adverse cumulative human health and environmental impacts are not anticipated on minority and/or low income communities from the proposed alternative.

- *Westbank F*

Direct Impacts
With implementation of the proposed action, a 0.29-acre access route would be created near the approved Westbank F borrow area, which would be used to access the approved Westbank F government furnished borrow area. Both the

proposed access route and approved borrow area are located on uninhabited land. Field analysis of the area show that no minority and/or low-income communities are located within 1 mile of the proposed access route and approved Westbank F borrow area. Direct adverse impacts from borrow site activities such as air quality, noise, traffic, etc. are usually limited to within one mile of project area and are equally borne by all population groups in the proposed project vicinity. Therefore, adverse human health and environmental impacts from the proposed action would not disproportionately affect minority and/or low-income populations.

Indirect Impacts

Field analyses of the area show that no minority and/or low income communities are located within one mile of the proposed access route and approved Westbank F borrow area. These indirect impacts would not exert disproportionately high adverse human health and environmental impacts on minority and/or low-income communities.

With implementation of the proposed action, indirect impacts may include the creation of ponds and small lakes in the area, thus increasing the desirability for the area to be developed for community use. With the continued completion of the HSDRRS after Hurricane Katrina, the area would continue to experience significant population growth as more residents and commercial businesses return to develop the area. It is reasonable to assume that, as the population increases, so too will property values. The increase in property values would continue to generate economic growth and be beneficial to all community groups in the area.

Cumulative Impacts

Cumulative impacts of implementing the proposed alternative would be the additive combination of impacts to minority and/or low-income communities by this and other Federal, state, local, and private efforts. Field analysis of the area show that no minority and/or low income communities exist within one mile of the proposed access route and approved Westbank F borrow area. With implementation of the proposed action, future borrow construction would provide potentially unforeseen cumulative impacts on community development in the area. These impacts may occur in increments such as increases in demand for waterfront properties or potential safety hazards should the borrow sites remain undeveloped after use. However, these impacts will be equally borne by all population groups in the proposed project vicinity. Thus, disproportionate adverse cumulative human health and environmental impacts are not anticipated on minority and/or low income communities from the proposed alternative.

3.5 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

The USACE is obligated under Engineer Regulation 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of the proposed action. ER 1165-2-132 identifies the USACE 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 for Testing and Materials (ASTME) 1527-05 Phase I

Environmental Site Assessment (ESA) was completed for each proposed government furnished borrow area and the proposed access route. The Phase I ESA documented the Recognized Environmental Conditions (REC) for the proposed project areas. If a REC cannot be avoided, due to the necessity of construction requirements, the CEMVN may further investigate the REC to confirm presence or absence of contaminants, actions to avoid possible contaminants. Federal, State, or local coordination may be required. Because the CEMVN plans to avoid RECs the probability of encountering HTRW in the project area is low.

A copy of the Phase I ESA referenced below will be maintained on file at the CEMVN office, and is incorporated herein by reference. Copies of these reports are available by requesting them from the CEMVN, or accessing them at www.nolaenvironemtal.gov.

HTRW Land Use Histories and Phase I HTRW ESAs have been completed for the proposed government furnished borrow areas:

- *Bazile*
  The property is located in Plaquemines Parish, Louisiana, near Braithwaite, Louisiana. CEMVN contractors made a site visit to the area on 24 September 2008. No indicators of HTRW were found at the site. According to the standard for these investigations (ASTM E 1527-05) a Phase I ESA is presumed to be valid for six months after completion. Since eight months have passed, an addendum to update the original Phase I ESA will be completed by CEMVN before excavation.

- *Johnson/Crovetto*
  The site is located on Francis Carroll Drive in Kenilworth, St. Bernard Parish, Louisiana. A Phase I ESA was completed on 30 May 2008. This investigation did not reveal any REC on the site. According to the standard for these investigations (ASTM E 1527-05) a Phase I ESA is presumed to be valid for six months after completion. Since one year has passed, an addendum to update the original Phase I ESA will be completed by CEMVN before excavation.

- *Westbank F Access Route*
  The Phase I ESA for the approved Westbank F borrow area, including the area of the proposed access route, was completed on 10 October 2007. Two RECs were noted at the site:

  1. Eight discarded automobile fuel tanks; all tanks appeared empty.

  2. Three rusty metal drums containing unknown materials. These RECs were associated with illegal dumping along the gravel, road at the east side of the property. The RECs were physically very close to each other and could easily be removed for safe disposal. The contractor recommends that the soil in these areas should be sampled and analyzed to ensure that there is no contamination present. The locations of the drums were mapped and are outside of the proposed construction footprint.

  Because 18 months have passed since the initial site visit, an addendum to update the original Phase I ESA will be completed by CEMVN before excavation.

At all of these sites, any suspected REC would be avoided, if possible. If engineering considerations mandate that a REC be disturbed, then additional investigation would be made of the REC, including toxicological testing, if indicated, before any suspected REC would be disturbed. If undiscovered HTRW should be found during the course of the

construction, a similar process would be followed: avoid if possible, but if avoidance is not possible then investigation of the situation would follow, including chemical testing of the material in question and evaluation of the test results by a Certified Industrial Hygienist.

4. CUMULATIVE IMPACTS

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. A cumulative impact is defined as the "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 projects conducted by government agencies, businesses, or individuals that are within the spatial and temporal boundaries of the actions that are considered in this IER.

As indicated previously, in addition to this IER, the CEMVN is preparing a draft CED that will describe all the HSDRRS work completed and the work remaining to be constructed, including borrow sources for the system. 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 IER 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 operations and maintenance requirements will also be included.

The discussion provided below describes an overview of Federal and non-Federal actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed as it relates to matters of borrow source excavation. Projects that occur within the greater New Orleans area and southeastern Louisiana were considered collectively (as appropriate) for the evaluation of cumulative impacts. For a more in-depth discussion of cumulative impacts from the structural HSDRRS projects (i.e., levee, floodwall, and pumping stations) please refer to IER #1 through #17, and the CED.

<u>Cumulative Impacts due to HSDRRS Projects</u>

Borrow material has been obtained in the past by the CEMVN for the HSDRRS and other projects in southeastern Louisiana. The CEMVN has been working at an accelerated rate to rehabilitate and complete the HSDRRS after Hurricanes Katrina and Rita in 2005, and has a goal of building the system to authorized levels by June 2011. Over 60,000,000 cubic yards of borrow material is estimated to be needed to complete authorized levels of protection. Borrow material will also be needed to perform levee lifts and maintenance for at least 50 years after construction is completed. The CEMVN is in the process of implementing construction projects to raise the levees associated with the Federal LPV, WBV, and New Orleans to Venice (NOV) projects to authorized elevations. This includes modifications to projects covered in IER #1 through #17. Levee and floodwall improvements throughout the area would require substantial amounts of borrow material, and some of the borrow areas needed have been identified in this document to provide adequate material in proximity to proposed projects. Other potential borrow areas were identified and approved for use in IER #18, IER #19, IER #22, IER #23, #25, and IER #26 (figure 14). Depending on time, cost, and other factors, these and other potential borrow sources not yet identified may or may not be used for construction of the HSDRRS.

Cumulative Impacts due to Borrow Needs for Other CEMVN Projects
Multiple current and upcoming CEMVN projects are expected to need suitable borrow material. Major civil works projects that may have a great requirement for borrow material include the Morganza to the Gulf project, Donaldsonville to the Gulf project, Larose to Golden Meadow project, Alexandria to the Gulf project, Plaquemines Parish West Bank non-Federal levee construction, Grand Isle non-Federal levee construction, and Mississippi River levee maintenance. Furthermore, additional projects authorized by the Water Resources Development Act (WRDA) of 2007 could contribute to resource impacts, either adversely or with long-term positive impacts. It is expected that borrow material would be needed for a majority of these projects. However, needed quantities and location of potential borrow areas are not know at this time.

Other CEMVN projects, including most coastal restoration and mitigation projects, should not require "levee grade" borrow material from terrestrial sources.

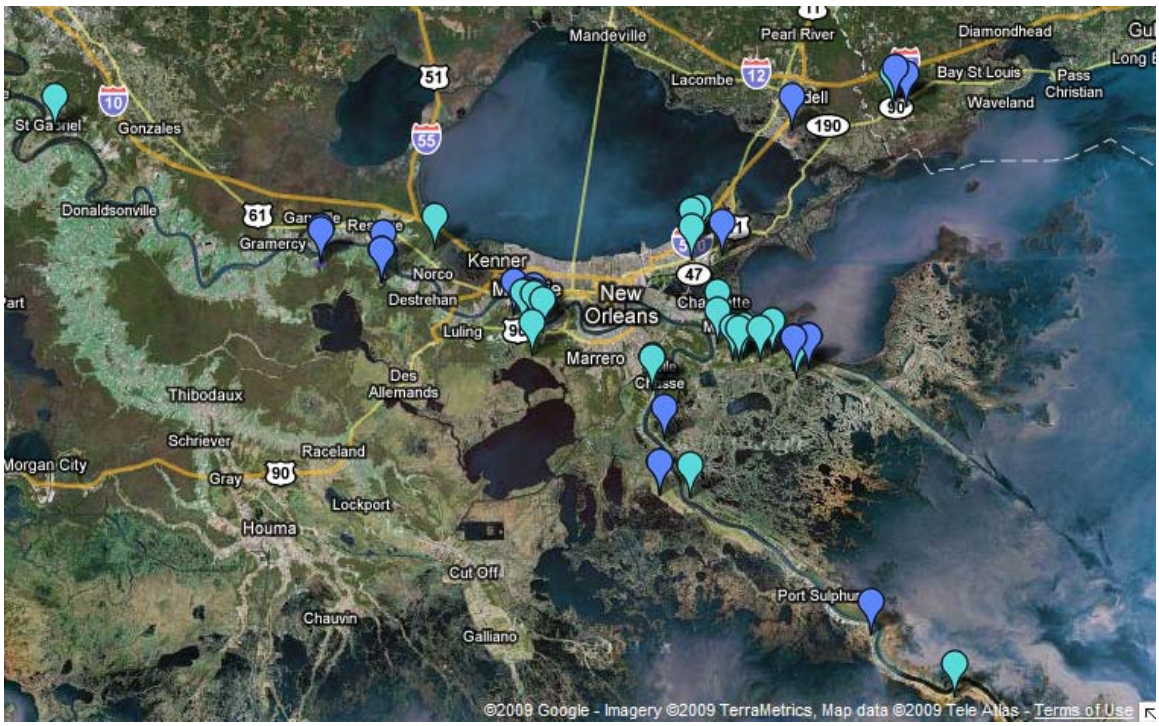

Figure 14: Approved government furnished and contractor furnished HSDRRS borrow areas

IERs #18, IER #19, IER #22, IER #23, #25, and IER #26. IER #28 also shown on this map.

Cumulative Impacts due to Borrow Needs for Non-Federal Projects
State and local levee and floodwall construction efforts are continuously being repaired, maintained, and upgraded. These include most of the local levee systems found in southeast Louisiana. It is expected that borrow material would be needed for a majority of these projects. However, needed quantities and location of potential borrow areas are not know at this time.

4.1 SUMMARY OF CUMULATIVE IMPACTS

The magnitude and significance of cumulative impacts were evaluated by comparing the existing environment with the expected impacts of the proposed action when combined with the impacts of other proximate actions. As stated previously, various Federal, state,

and local ongoing and proposed actions may increase the need for borrow excavation in the study area. The potential borrow areas approved for use in IER #18, IER #19, IER #22, IER #23, #25, and IER #26 (figure 14), and proposed for use in this IER could cumulatively impact land use patterns and transportation resources in southeastern Louisiana. Use of these potential borrow areas should not cumulatively impact jurisdictional wetlands, cultural resources, or T&E species and their critical habitat, as the CEMVN is currently avoiding direct or indirect impacts to these resources. The extent of potential cumulative impacts to other resources due to construction of the HSDRRS are not known at this time, and may be discussed in the CED.

The extent of land directly and indirectly affected by previous development activities, in combination with the excavation and use of the proposed government furnished borrow material for construction of the HSDRRS, would contribute cumulatively to land alteration and loss in southeastern Louisiana. Most of the proposed government furnished borrow areas described in IER #18, IER #22, and IER #25 are upland areas. Over 1,500 acres of non-jurisdictional BLH, which provides habitat for a variety of wildlife, may be impacted due to the HSDRRS borrow activities.

After borrow area excavation, land may be converted to ponds and small lakes if not backfilled. If not backfilled, the land would be made unsuitable for farming, forestry, or urban development in the reasonably foreseeable future. Habitat would be changed to favor aquatic and semi-aquatic species over the terrestrial ones that now occupy the areas. Borrow areas that do not retain water would be colonized by vegetation and woody plants, which would favor terrestrial species. This would attract the same species that are currently found in the areas.

The construction of the proposed government furnished borrow areas would have short-term cumulative effects on transportation. It is anticipated that over 60,000,000 cubic yards of material would be needed to raise levee elevations regionally to meet the needs of the HSDRRS. The total number of truck trips required or haul routes for the movement of this quantity of material is currently unknown, but cumulative short-term impacts to transportation would be expected to occur. Additional information related to transportation impacts is being collected and will be discussed in the CED.

Based on historical human activities and land use trends in southeastern Louisiana, it is reasonable to anticipate that future activities would further contribute to cumulative degradation of land resources. It is anticipated that through the efforts taken to avoid and minimize effects on the project area and the mandatory implementation of a mitigation plan that functionally compensates unavoidable remaining impacts, the proposed government furnished borrow areas would not result in substantial direct, secondary or cumulative adverse impact on the environment. Mitigation is discussed in section 7 and will also be discussed in upcoming mitigation IERs.

Quantitative cumulative impacts to recreational resources, noise quality, air quality, water quality, and aesthetic resources are not fully known at this time, and will be discussed in the CED. Additionally, details on cumulative environmental justice impacts will be analyzed at the conclusion of environmental justice small-group meetings and will be included in the CED.

5. SELECTION RATIONALE

The proposed action consists of excavating the proposed Bazile and Johnson/Crovetto government furnished borrow areas, and utilizing the proposed access to the approved Westbank F borrow site. There is an identified need for over 60,000,000 cubic yards of

borrow material to complete the HSDRRS, and the proposed action meets some of this demand. Because of this need, the CEMVN will need to investigate all potentially viable borrow areas for the next few years. Other government furnished borrow areas were analyzed in IER #18, IER #22, and IER #25, and more potential areas may be analyzed in future IERs. Contractor furnished borrow areas were investigated in IER #19, IER #23, IER #26, and more potential sites may be analyzed in future IERs. Supply contract borrow options will be analyzed in IER #30. All approved borrow material may potentially be used to complete the HSDRRS, which would lower the risk of harm to citizens and damage to infrastructure.

6. COORDINATION AND CONSULTATION

6.1 PUBLIC INVOLVEMENT

Extensive public involvement has been sought in preparing this IER. The HSDRRS projects, including the proposed government furnished borrow areas and proposed access route analyzed in this IER, were publicly disclosed and described in the Federal Register on 13 March 2007 and on the website www.nolaenvironmental.gov. Scoping for the HSDRRS projects was initiated on 12 March 2007, by placing advertisements and public notices in *USA Today* and *The New Orleans Times-Picayune*. Nine public scoping meetings were held throughout the New Orleans Metropolitan Area to explain the scope and process of the Alternative Arrangements for implementing NEPA between 27 March 2007 and 12 April 2007, after which a 30-day scoping period was open for public comment submission. Additionally, the CEMVN is hosting monthly public meetings to keep the stakeholders advised of project status. Public input is contained in appendix B.

Public meetings related to borrow started in July 2007, and will be continuing until the borrow quantities needed are fulfilled.

6.2 AGENCY COORDINATION

Preparation of this IER has been coordinated with appropriate 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 C, and correspondence between governmental agencies and the CEMVN can be found in appendix D. This interagency environmental team was integrated with the CEMVN PDT 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 proposed IER projects. 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
Louisiana 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 LDNR reviewed the proposed action for consistency with the Louisiana Coastal Resource Program (LCRP). All proposed government furnished borrow activities discussed in this document were found by the LDNR to be consistent with the LCRP (table 8).

Table 8: LDNR Coastal Zone Consistency Determination Concurrence

Proposed Borrow Area	LDNR LCRP Consistency Number
Bazile	C20080700
Johnson/Crovetto	C20080336
Westbank F Access Route	C20070200

The CEMVN received a draft Coordination Act Report (CAR) from the USFWS on 8 May 2009 (appendix D). Positions and recommendations of the USFWS, in accordance with the Fish and Wildlife Coordination Act, include:

Recommendation 1: "[The CEMVN] and local sponsor shall provide 8.45 AAHUs to compensate for the unavoidable, project-related loss of forested lands. [USFWS], National Marine Fisheries Service [NMFS], Louisiana Department of Wildlife and Fisheries [LDWF], and [LDNR] should be consulted regarding the adequacy of any proposed alternative mitigation sites."

CEMVN Response 1: Concur.

Recommendation 2: "The protocol to identify and prioritize borrow sources provided in our August 7, 2006, Planning-aid letter should be utilized as a guide for contractors locating future borrow-sites."

CEMVN Response 2: Concur.

Recommendation 3: "Any proposed change in borrow site features, locations or plans shall be coordinated in advance with [USFWS], NMFS, LDWF, and LDNR."

CEMVN Response 3: The CEMVN will coordinate with these agencies.

Recommendation 4: "If a proposed government furnished borrow site is changed significantly or excavation is not implemented within one year… we recommend that [the CEMVN] reinitiate coordination with this office to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat."

CEMVN Response 4: Concur.

7. MITIGATION

Mitigation for unavoidable impacts to the human and natural environment described in this and other IERs will be addressed in separate mitigation IERs. The CEMVN has partnered with Federal and state resource agencies to form an interagency mitigation team that is working to assess and verify these impacts, and to look for potential mitigation sites in the appropriate hydrologic basin. This effort is occurring concurrently with the IER planning process in an effort to complete mitigation work and construct mitigation projects expeditiously. As with the planning process of all other IERs, the

public will have the opportunity to give input about the proposed work. These mitigation IERs will, as described in section 1 of this IER, be available for a 30-day public review and comment period.

All potential areas described in this IER were assessed by the USFWS and the CEMVN under NEPA, the Fish and Wildlife Coordination Act, and under Section 906(b) WRDA 1986 requirements. It has been determined that use of the proposed government furnished borrow areas and proposed access route contain, at most, 8.45 acres of non-jurisdictional BLH (table 9). The amount of BLH impacted is expected to decrease as geotechnical results are finalized. Compensatory mitigation for these impacts will be completed, as described in future mitigation IERs.

Table 9: BLH Impacts from Proposed Action

Proposed Borrow Area	Parish	Total Site Area (acres)	BLH Impacted (acres)	AAHUs Lost
Bazile	Plaquemines	19.1	11.6	3.93
Johnson/Crovetto	St. Bernard	12.9	8.05	4.35
Westbank F Access Route	Jefferson	0.29	0.29	0.17
Total		32.29	19.94	8.45

Table 10 shows the cumulative impacts of all IERs which have been completed as of the date of publication. Further information on mitigation efforts will be available in forthcoming IERs.

Table 10. HSDRRS Impacts and Compensatory Mitigation to be Completed

IER	Parish		Non-wet	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	EFH
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
1 LPV, La Branch Wetlands Levee	St. Charles	Protected Side	-	-	-	-	137.05	73.99	-	-	-
		Flood Side	-	-	11.33	8.09	143.57	110.97	-	-	-
2 LPV, West Return Floodwall	St. Charles, Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	33.40	9.00	-	-	-
3 LPV, Jefferson Lakefront Levee	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	26.00
4 LPV, Orleans Lakefront Levee	Orleans	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
10 LPV, Chalmette Loop	St. Bernard	Protected Side	-	-	38.32	16.44	-	-	106.55	57.31	-
		Flood Side	-	-	35.31	15.22	-	-	323.04	209.94	-
11 Tier 2 Borgne IHNC Protection	Orleans, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	15.00	2.59	-	-	186.00	24.33	-
12 GIWW, Harvey, Algiers	Jefferson, Orleans, Plaquemines	Protected Side	-	-	251.70	177.3	-	-	-	-	-
		Flood Side	-	-	2.30	1.90	74.90	38.50	-	-	-
14 WBV, Westwego to Harvey Levee	Jefferson	Protected Side	-	-	45.00	30.00	-	-	-	-	-
		Flood Side	-	-	45.50	18.58	29.75	17.02	-	-	-
15 WBV, Lake Cataouatche Levee	Jefferson	Protected Side	-	-	23.50	6.13	-	-	-	-	-
		Flood Side	-	-	3.60	1.35	-	-	-	-	-
17 Company Canal Floodwall	Jefferson	Protected Side	-	-	5.50	2.69	-	-	-	-	-
		Flood Side	-	-	-	-	19.00	17.09	-	-	-
18 GFBM	Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles	Protected Side	461.3	197.84	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
19 CFBM	Hancock County, MS; Iberville, Jefferson, Orleans, Plaquemines, St. Bernard	Protected Side	-	-	-	-	-	-	-		-
		Flood Side	-	-	-	-	-	-	-	-	-
22 GFBM	Jefferson, Plaquemines	Protected Side	244.69	118.54	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
23 CFBM	Hancock County, MS; Plaquemines, St. Bernard, St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
25 GFBM	Jefferson, Orleans, Plaquemines	Protected Side	946.00	262.00	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
26 CFBM	Jefferson, Plaquemines, St. John the Baptist; Hancock County, MS	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-

IER	Parish		Non-wet	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	EFH
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
28 GFBM	Jefferson, Plaquemines, St. Bernard	Protected Side	19.94	8.45	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
Totals		Protected Side	1671.93	586.83	364.02	232.56	137.05	73.99	106.55	57.31	00.00
		Flood Side	-	-	113.04	47.73	300.62	192.58	509.04	234.27	26.00
		Both	1671.93	586.83	477.06	280.29	437.67	266.57	615.59	291.58	26.00

- Not applicable to the IER or number impacted is 0
GFBM: Government furnished borrow material // CFBM: Contractor furnished borrow material

8. COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Implementation 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 will be achieved upon coordination of this IER with appropriate agencies, organizations, and individuals for their review and comments; USFWS and National Marine Fisheries Service confirmation that the proposed action would not adversely affect any T&E species or completion of Endangered Species Act Section 7 consultation (table 4); Louisiana Department of Natural Resources concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LCRP (table 8); coordination with the SHPO (table 5); receipt and acceptance or resolution of all Fish and Wildlife Coordination Act recommendations; and receipt and acceptance or resolution of all Louisiana Department of Environmental Quality comments on the air quality impact analysis documented in the IER. USFWS has determined that no T&E species, or their habitat, would be adversely affected by the proposed action. The Louisiana SHPO has determined that cultural resources would not be adversely impacted by the proposed action.

9. CONCLUSIONS

9.1 INTERIM DECISION

The proposed action consists of approving the proposed Bazile government furnished borrow area, Johnson/Crovetto government furnished borrow area, and Westbank F access route for use in construction of the HSDRRS. This office has assessed the environmental impacts of the proposed action upon jurisdictional wetlands, non-jurisdictional BLH, non-wetland/upland resources, fisheries, wildlife, recreational resources, aesthetics, noise, air quality, prime and unique farmland, water quality, and socioeconomic resources. The interim decision is to approve the use the Bazile and Johnson/Crovetto sites as government furnished borrow sources or stockpile areas, and the Westbank F access route as a way of access to the approved government furnished Westbank F borrow area.

9.2 PREPARED BY

IER #28 was prepared by the following individuals. The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Planning, Programs, and Project Management Division, CEMVN-PM; P.O.Box 60267; New Orleans, Louisiana 70160-0267.

Preparer	Title	Topic
Michael Brown	Environmental Manager/Biologist	NEPA Compliance
Danielle Tommaso	Environmental Manager/ Environmental Resources Specialist	Document Preparation

Preparer	Title	Topic
Gib Owen	HSDRRS Environmental Team Leader	Project Coordination
Christopher Brown, Ph.D.	Botanist	HTRW
Jennifer Darville	Technical Reviewer	Document Review
Thomas Keevin, Ph.D.	Chief, Environmental Branch, St. Louis District, USACE	Internal Technical Review
Joseph Mann	Regional Economist	Socioeconomic Resources
Kelly McCaffrey	Landscape Architect	Aesthetic (Visual) Resources, Recreational Resources
Jerica Richardson	Archaeologist	Environmental Justice
Michael Swanda	Archaeologist	Cultural Resources
Rita Trotter	Assistant District Counsel	Document Review

Ph.D.: Doctor of Philosophy

In addition to the above list of preparers, the Borrow PDT consists of the following individuals:

Team Member	Title	CEMVN Office
Soheila Nazarian Holley, P.E.	Senior Project Manager	Protection & Restoration Office
Tutashinda Salaam	Project Manager	Protection & Restoration Office
Michael Bourgeois	Supervisory Civil Engineer	Construction Division
Louis Britsch, P.G.	Supervisory Geologist	Geotechnical Branch
Amy Goodlett	Technician	Protection & Restoration Office
Michael Grzegorzewski	Project Engineer	Hurricane Protection Office
Brett Herr	Chief, Regional Projects Branch	Protection & Restoration Office
Maurya Kilroy	Assistant District Counsel	Office of Counsel
Linda Labure	Chief, Real Estate Division	Real Estate Division
John B. Petitbon, E.I.T.	Civil/Cost Engineer	Cost Engineering Branch
Danny Thurmond	Engineer	Levees Branch
Kim Tullier	Geotechnical Engineer	Geotechnical Branch
Thomas Waguespack	Civil Engineering Senior Technician	Geotechnical Branch

E.I.T.: Engineer in Training
P.E.: Professional Engineer
P.G.: Professional Geologist

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APPENDIX A: LIST OF ACRONYMS AND DEFINITIONS OF COMMON TERMS

AAHU	Average Annualized Habitat Unit
ASTM	American Society of Testing and Materials
BLH	Bottomland Hardwood (Forest)
BMP	Best Management Practice
BUDMAT	Beneficial Use of Dredged Material
CAR	Coordination Act Report
CED	Comprehensive Environmental Document
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Clay Classifications	CH: Fat clay CL: lean clay ML: Silt
CWPPRA	Coastal Wetlands Planning, Protection and Restoration Act
CZM	Coastal Zone Management
dBA	Decibel
DNL	Day-night average sound level
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
ER	Engineering Regulation
ESA	Environmental Site Assessment
ESRI	Environmental Systems Research Institute
FONSI	Finding of No Significant Impact
GIWW	Gulf Intracoastal Waterway
HSDRRS	Hurricane and Storm Damage Reduction System (formerly known as the Hurricane Protection System)
HPS	Hurricane Protection System (see HSDRRS)
HTRW	Hazardous, Toxic, and Radioactive Waste
HU	Habitat Unit
IER	Individual Environmental Report
IPET	Interagency Performance Evaluation Team
LCA	Louisiana Coastal Area
LCRP	Louisiana Coastal Resource Program
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LPV	Lake Pontchartrain and Vicinity Project
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NO_x	Nitrogen oxides
NOV	New Orleans to Venice Project
NPDES	National Pollutant Discharge Elimination System
O_3	Ozone
Pb	Lead
PDT	Project Delivery Team
PI	Plasticity index

PL	Public Law
PM	Particulate matter
PPM	Parts per million
P.L.	Public Law
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
ROD	Record of Decision
ROE	Right of Entry
Section 404 (of the Clean Water Act)	The Section 404 program for the evaluation of permits for the discharge of dredged or fill material was originally enacted as part of the Federal Water Pollution Amendments of 1972. The Secretary of Army acting through the Chief of Engineers may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites.
SHPO	State Historic Preservation Officer
SIR	Supplemental Information Report
SPH	Standard Project Hurricane
SO_x	Sulfur oxides
T&E	Threatened or Endangered Species
USACE	U.S. Army Corps of Engineers CEMVN: Mississippi Valley Division, New Orleans District
USDA	U.S. Department of Agriculture NRCS: Natural Resources Conservation Service
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile organic compound
WBV	West Bank and Vicinity Project
WRDA	Water Resources Development Act

APPENDIX B: PUBLIC COMMENT AND RESPONSES SUMMARY

Comments received during the public review period will be added to the Final IER.

APPENDIX C: MEMBERS OF 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
Kevin Roy	U.S. Fish and Wildlife Service
Manuel Ruiz	Louisiana Dept. of Wildlife and Fisheries
Renee Sanders	Louisiana Dept. of Wildlife and Fisheries
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

APPENDIX D: INTERAGENCY CORRESPONDENCE

Agency correspondence received during the public review and comment period will be released with the Final IER.

United States Department of the Interior

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

August 7, 2006

Colonel Richard P. Wagenaar
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Wagenaar:

As you know, the U.S. Fish and Wildlife Service (Service) is assisting the U.S. Army Corps of Engineers (Corps) in assessing impacts of, and mitigation requirements for, borrow sites which are needed to complete authorized improvements, and to construct Federal and non-Federal hurricane/flood protection levees in southern Louisiana. Those improvements to hurricane and flood control projects are authorized by the Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico (Public Laws 109-148, PL 84-99 and PL 109 234 (4th supplemental)). This letter is provided in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), but it does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act.

Through the efforts of Task Force Guardian, the Corps has restored Hurricane Katrina-damaged hurricane/flood protection projects to their authorized or previously permitted/constructed protection levels. Identification of borrow areas needed to complete those repairs utilized a protocol that prioritized selection of those sites in the following order: existing commercial pits, upland sources, previously disturbed/manipulated wetlands within a levee system, and low-quality wetlands outside a levee system. The Service supports the use of such protocols to avoid and minimize impacts to wetlands and bottomland hardwoods within project areas. Avoidance and minimization of those impacts helps to provide consistency with restoration strategies and compliments the authorized hurricane protection efforts. Such consistency is also required by Section 303(d)(1) of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA).

Accordingly, the Service recommends that prior to utilizing borrow sites every effort should be made to reduce impacts by using sheetpile and/or floodwalls to increase levee heights wherever feasible. In addition, the Service recommends that the following protocol be adopted and utilized to identify borrow sources in descending order of priority:

1. Permitted commercial sources, authorized borrow sources for which environmental clearance and mitigation have been completed, or non-functional levees after newly constructed adjacent levees are providing equal protection.

2. Areas under forced drainage that are protected from flooding by levees, and that are:

   a) non-forested (e.g., pastures, fallow fields, abandoned orchards, former urban areas) and non-wetlands;

   b) wetland forests dominated by exotic tree species (i.e., Chinese tallow-trees) or non-forested wetlands(e.g., wet pastures), excluding marshes;

   c) disturbed wetlands (e.g., hydrologically altered, artificially impounded).

3. Sites that are outside a forced drainage system and levees, and that are:

   a) non-forested (e.g., pastures fallow fields, abandoned orchards, former urban areas) and non-wetlands;

   b) wetland forests dominated by exotic tree species (i.e., Chinese tallow-trees) or non-forested wetlands(e.g., wet pastures), excluding marshes;

   c) disturbed wetlands (e.g., hydrologically altered, artificially impounded).

Notwithstanding this protocol, the location, size and configuration of borrow sites within the landscape is also critically important. Coastal ridges, natural levee flanks and other geographic features that provide forested/wetland habitats and/or potential barriers to hurricane surges should not be utilized as borrow sources, especially where such uses would diminish the natural functions and values of those landscape features.

To assist in expediting the identification of borrow sites, the Service recommends that immediately after the initial identification of a new borrow site the Corps should initiate informal consultation with the Service regarding potential impacts to federally listed threatened or endangered species. To aid you in complying with those proactive consultation responsibilities, the Service has enclosed a list of threatened and endangered species and their critical habitats within the coastal parishes of the New Orleans District.

The Service offers the following additional recommendations for reducing borrow site impacts on fish and wildlife resources and, where feasible, enhancing those resources. However, these additional recommendations should not be implemented if they would result in the expansion of existing borrow pits or construction of new borrow pits in wetlands or bottomland hardwoods.

1. A minimum of 30 percent of the borrow pits' edge should slope no greater than 5 horizontal (H):1 vertical (V), starting from the water line down to a depth of approximately 5 feet.

2. Most of the woody vegetation removed during clearing and grubbing should be placed into the deepest parts of the borrow pits and the remaining debris should be placed in the water along the borrow pit shorelines, excluding those areas where the 5H:1V slope, per recommendation 1, have been constructed.

3. Following construction, perimeter levees (if constructed) around each borrow pit should be gapped at 25-foot intervals with an 8-foot-wide breach, the bottom elevation of which should be level with the adjacent natural ground elevation.

When avoidance and minimization of bottomland hardwood and wetland impacts is not practicable, all unavoidable net losses of those habitats should be fully offset via compensatory mitigation. Such compensatory mitigation should sited within the watershed and/or hydrologic unit where the impact occurred, and should be completed concurrently with borrow operations, or as soon thereafter as possible.

The combined need for borrow necessary to complete authorized improvements to and construction of Federal and non-Federal hurricane/flood protection levees, and the potential construction of levees capable of withstanding a category 5 hurricane, will require substantial amounts of borrow. It is highly likely such amounts would exceed local availability. In the case of ongoing hurricane/flood protection projects (e.g., Morganza to the Gulf) the search for levee-building material has been conducted primarily on project-by-project basis. In the context of such project-by-project searches for borrow material, the least-expensive and easiest sources of borrow material are usually located within wetlands and/or bottomland hardwoods, adjacent to the proposed levee. Such on-site sources, however, often involve adverse impacts to wetlands, thus exacerbating the overall wetland loss problem in all coastal basins, especially those in the deltaic plain of southeast Louisiana. In short, while such on-site sources are relatively inexpensive, they will frequently be inconsistent with coastal restoration efforts and, to the extent that wetlands will be adversely impacted, use of those sites will be counterproductive with respect to minimizing wetland impacts and attaining the goal of increasing non-structural hurricane protection within a sustainable ecosystem.

Large-scale, off-site borrow sources could have the potential to reduce environmental impacts from levees and expedite project-by-project environmental review. Such potential "programmatic" borrow sources could include uplands along the Mississippi River, beneficial use of sediments dredged for navigation purposes (including the mining of disposal sites), the Mississippi River, and offshore deposits (e.g., Ship Shoal). As part of the planning process, we recommend that the Corps begin investigating the practicability of various large-scale, off-site borrow sources and actively involve all resource agencies with the Protection and Restoration Office's Borrow Team efforts.

Programmatic planning would be essential to identify borrow sites of acceptable quantity and quality, while avoiding and/or minimizing adverse environmental impacts. We therefore recommend that a plan be developed that integrates borrow resources, uses, and needs for various programs and activities. Guiding principles should be developed to identify borrow resources, borrow-site designs, and prioritize uses to avoid competing for resources, maximize benefits with those resources, and avoid adverse environmental impacts.

We appreciate the opportunity to provide this planning-aid letter and would be pleased to assist your agency in further identification of potential borrow sources. Should you or your staff have any questions regarding this letter, please contact David Walther (337/291-3122) of this office.

Sincerely,

Russell C. Watson
Supervisor
Louisiana Field Office

Enclosure

cc: National Marine Fisheries Service, Baton Rouge, LA
EPA, Dallas, TX
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources, CMD, Baton Rouge, LA
LA Dept. of Natural Resources, CRD, Baton Rouge, LA

Threatened and Endangered Species in Coastal Louisiana – FWS Responsibility

MAMMALS		GENERAL DISTRIBUTION IN LOUISIANA
Bear, Louisiana* (*Ursus americanus luteolus*)	T	Entire state
Manatee, West Indian (*Trichechus manatus*)	E	Lake Pontchartrain & tributaries on North shore; rare along Gulf coast
BIRDS		
Eagle, bald (*Haliaeetus leucocephalus*)	T	Entire state
Pelican, brown (*Pelecanus occidentalis*)	E	Coast
Plover, piping** (*Charadrius melodus*)	T	Coast
Woodpecker, red-cockaded (*Campephilus principalis*)	E	Entire state except Delta
REPTILES		
Tortoise, gopher (*Gopherus polyphemus*)	T	Washington, St. Tammany, and Tangipahoa Parishes
Turtle, ringed map (=sawback) (*Graptemys oculifera*)	T	Pearl and Bogue Chitto Rivers
Turtle, loggerhead sea (*Caretta caretta*)	T	Potential Nesting on Chandeleuer Is.
FISH		
Sturgeon, Gulf** (*Acipenser oxyrhynchus desotoi*)	T	Pearl River & Lake Pontchartrain tributaries
Sturgeon, pallid (*Scaphirhynchus albus*)	E	Mississippi River & tributaries
INVERTEBRATES		
Mussel, inflated heelsplitter (*Potamilus inflatus*)	T	Amite River
PLANTS		
Louisiana quillwort (*Isoetes louisianensis*)	E	Washington and St. Tammany Parishes

*Indicates proposed critical habitat
**Indicates designated critical habitat

Enclosure

United States Department of the Interior

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

November 1, 2007

Colonel Alvin B. Lee
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

Please reference the Individual Environmental Report (IER) 19, entitled Contractor Furnished Borrow Material Jefferson, Orleans, St. Bernard, Iberville, and Plaquemines Parishes, Louisiana, and Hancock County, Mississippi. That IER addresses impacts resulting from the excavation of contractor-furnished borrow sites which will be used to increase hurricane protection within the Greater New Orleans area located in southeast Louisiana. Work associated with that IER is being conducted in response to Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps of Engineers (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 to provide protection against a 100-year hurricane event. This draft report contains an analysis of the impacts on fish and wildlife resources that would result from excavation of those borrow sites and provides recommendations to minimize and/or mitigate project impacts on those resources.

The proposed project was authorized by Supplemental 4 which directed the Corps to proceed with engineering, design, and modification (and construction where necessary) of the Lake Pontchartrain and Vicinity and the West Bank and Vicinity Hurricane Protection Projects so those projects would provide 100-year 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 prevented our agencies from following 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 individual IERs.

This draft report incorporates and supplements our Fish and Wildlife Coordination Act Reports that addressed impacts and mitigation features for the Westbank and Vicinity of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the Lake Pontchartrain and Vicinity Hurricane (dated July 25, 1984, and January 17, 1992) Protection projects. It also supplements our August 7, 2006, Planning-aid Letter to the Corps providing recommendations for minimizing impacts to fish and wildlife resources from borrow site selection and use. This report,

however, 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 into our final report.

DESCRIPTION OF THE STUDY AREA

The study area is primarily located within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Portions or all of Jefferson, Orleans, St. Charles, St. Bernard and Plaquemines Parishes are included in the study area. Higher elevations occur on the natural levees of the Mississippi River and its distributaries. Developed lands are primarily associated with 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. Navigation channels such as the Gulf Intracoastal Waterway and the Mississippi River – Gulf Outlet are also prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals. Extensive wetlands and associated shallow open waters dominate the landscape outside the flood control levees. Major waterbodies include Lake Pontchartrain located north of the project area, the Mississippi River which bisects the project area, and Lake Borgne which is located on the eastern edge of the project area.

A borrow pit was located outside of southeast Louisiana in Hancock County which is in the southwest corner of Mississippi. Commercial and residential development in that area has reduced wildlife habitat. Conversion of forested lands to loblolly pine plantations or farm land has also resulted in decreased wildlife habitat in the area.

FISH AND WILDLIFE HABITATS AND RESOURCES

Habitat types at and in the vicinity of the borrow sites include forested wetlands (i.e., bottomland hardwoods and/or swamps), non-wet bottomland hardwoods, upland forests, scrub-shrub, marsh, open water, and developed areas. Due to urban development and a forced-drainage system with the levee system, the hydrology of much of the forested habitat has been altered. The forced-drainage system has been in operation for many years, and subsidence is evident throughout the area.

Wetlands (forested, marsh, and scrub-shrub) within the study area provide plant detritus to adjacent coastal waters and thereby contribute to the production of commercially and recreationally important fishes and shellfishes. Wetlands in the project area also provide valuable water quality functions such as reduction of excessive dissolved nutrient levels, filtering of waterborne contaminants, and removal of suspended sediment. In addition, coastal wetlands buffer storm surges reducing their damaging effect to man-made infrastructure within the coastal area.

Factors that will strongly influence future fish and wildlife resource conditions include freshwater input and loss of coastal wetlands. Depending upon the deterioration rate of marshes, the frequency of occasional short-term saltwater events may increase. Under that scenario, tidal action in the project area may increase gradually as the buffering effect of marshes is lost, and use of that area by estuarine-dependent fishes and shellfish tolerant of saltwater conditions would likely increase. Regardless of

which of the above factors ultimately has the greatest influence, freshwater wetlands within and adjacent to the project area will probably experience losses due to development, subsidence, and erosion.

Forested wetlands in the area are divided into two major types; bottomland hardwood forests and cypress-tupelo swamps. Bottomland hardwood forests found in the project area occur primarily on the natural levees of the Mississippi River or former distributary channels and in the transition areas between swamps and upland hardwood forests. Cypress-tupelo swamps are located along the flanks of larger distributary ridges as a transition zone between bottomland hardwoods and lower-elevation marsh, scrub-shrub habitats, or open water. Cypress swamps that are within a levee system and under forced drainage are often dominated by bald cypress, but vegetative species more typical of bottomland hardwoods will dominate the under- and mid-story vegetation. Because of their altered hydrology, these areas can potentially convert to sites dominated by bottomland hardwood species and will often have ecological functions closer to those of a bottomland hardwood.

Non-wet bottomland hardwoods within the project area also provide habitat for wildlife resources. Between 1932 and 1984, the acreage of bottomland hardwoods in Louisiana declined by 45 percent (Rudis and Birdsey 1986). By 1970, Jefferson Parish was classified as entirely urban or nonforested in the U.S. Forest Service's forest inventory with most of this loss resulting from development within non-wet areas inside the hurricane protection levees. A large percentage of the original bottomland hardwoods within the Mississippi River floodplain acreage in the Deltaic Plain are located within a levee system, especially those at higher elevations. However, losses of that habitat type are not regulated or mitigated with the exception of impacts resulting from Corps projects as required by Section 906(b) of the Water Resources Development Act of 1986.

Upland forests in the area are primarily comprised of pine forests. An ongoing trend within those forested areas is their conversion to loblolly pine plantations; such plantations provide lower quality wildlife habitat as compared to naturally regenerated pine forests.

Scrub-shrub habitat is often found along the flanks of distributary ridges and in marshes altered by spoil deposition or drainage projects. Typically it is bordered by marsh at lower elevations and by developed areas, cypress-tupelo swamp, or bottomland hardwoods at higher elevations.

Open-water habitat within the project area consists of ponds, lakes, bays, canals, and bayous. Natural marsh ponds and lakes are typically shallow, ranging in depth from 6 inches to over 2 feet. Typically, the smaller ponds are shallow and the larger lakes or bays are deeper. In fresh and low-salinity areas, ponds and lakes may support varying amounts of submerged and/or floating-leaved aquatic vegetation.

Dead-end canals and small bayous are typically shallow and their bottoms may be filled in to varying degrees with semi-fluid organic material. Drainage canals enclosed within the hurricane protection projects or within developed areas are stagnant except when pumps are operating to remove rain water. Runoff from developed areas has likely reduced the habitat value of that aquatic habitat by introducing various urban pollutants, such as oil, grease, and excessive nutrients. Clearing and development has eliminated much of the riparian habitat that would normally provide shade and structure for many

aquatic species.

Some of the waterbodies in the project area meet criteria for primary and secondary contact recreation and partially meet criteria for fish and wildlife propagation; while others do not meet the latter criteria. Causes for not fully meeting fish and wildlife propagation criteria include excessive nutrients, organic enrichment, low dissolved oxygen levels, flow and habitat alteration, pathogens and noxious aquatic plants. Sources of those problems include hydromodification, habitat modification, recreational activities, and unspecified upstream inputs. Municipal point sources, urban runoff, storm sewers, and onsite wastewater treatment systems are also known contributors to poor water quality in the area.

Developed habitats in the study area include residential and commercial areas, as well as roads and existing levees. Those habitats do not support significant wildlife use. Most of the development is located on higher elevations of the project area; however, vast acreages of swamp and marsh have been placed under forced drainage systems and developed. A smaller acreage of wetlands has been filled for development. Agricultural lands occur throughout the area; agriculture includes sugarcane farming, cattle production, and haying.

Endangered and Threatened Species

To aid the Corps in complying with their proactive consultation responsibilities under the Endangered Species Act (ESA), the Service provided a list of threatened and endangered species and their critical habitats within the coastal parishes of the New Orleans District (see Attachment). The Corps has conducted ESA consultation on each borrow site. No known threatened or endangered species or their critical habitat were located at any borrow site. If a proposed borrow site is changed significantly or relocated, or excavation is not implemented within 1 year, we recommend that the Corps require contractors to reinitiate coordination with this office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

National Wildlife Refuges, Wildlife Management Areas and Parks

Located within the area are the Bayou Segnette and the St. Bernard State Parks, which are operated by the Louisiana Department of Culture, Recreation and Tourism, Office of State Parks. The Barataria Unit of Jean Lafitte National Historical Park and Preserve is located on the west bank of the Mississippi River and managed by the National Park Service. The Service's Bayou Sauvage National Wildlife Refuge is located in the east of New Orleans. The Pearl River Wildlife Management Area is located on the western edge of Hancock County and is managed by the Louisiana Department of Wildlife and Fisheries.

Future Fish and Wildlife Resources

The combination of subsidence and sea level rise results in higher water levels, stressing most non-fresh marsh plants and forested wetlands leading to plant death and conversion to open water. Other major causes of wetland losses within the study area include altered hydrology, storms, saltwater intrusion (caused by marine processes invading fresher wetlands), shoreline erosion, herbivory, and

development activities including the direct and indirect impacts of dredge and fill (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). The continued conversion of wetlands and forested habitats to open water or developed land represents the most serious fish and wildlife-related problem in the study area. Habitat losses could be expected to cause declines in the area's carrying capacity for migratory waterfowl, wading birds, other migratory birds, alligators, furbearers, and game mammals.

ALTERNATIVES UNDER CONSIDERATION

The proposed borrow sites have been located in areas that minimize impacts to wetlands and impacts to non-wet bottomland hardwoods have also been avoided to the extent practicable. Use of adjacent borrow, the typical construction method, has been limited because of soil conditions (i.e., insufficient clay content), thus impacts resulting from expansion of borrow sites into wetlands has been avoided in some areas. The Service provided an August 7, 2006, Planning-aid Letter to the Corps proposing a protocol to identify borrow sites thereby minimizing impacts to fish and wildlife resources. The Corps has used that protocol as a guideline in identifying potential government-furnished borrow sites.

PROJECT IMPACTS

Excavation of borrow sites will result in the conversion of terrestrial habitat into open-water areas. Because pasture, open water, cleared land and pine plantation habitats have a reduced value to fish and wildlife resources and are not a declining or limited habitat type, impacts associated with conversion of those habitats to open-water were quantified only by acreage (Table 1). Wetland impacts were determined by the Corps regulatory program. That program was also responsible for overseeing mitigation determination and implementation. Approximately 5.4 acres of non-wet bottomland hardwoods were impacted at the Kimble 2 borrow site, impacts and mitigation needs have not been assessed.

Table 1: Impacts from Contractor-furnished Borrow Sites

Site	Parish/ County	Acres	Habitat
River Birch Phase 1	Jefferson	41	pasture, 0.6 acres wetlands
River Birch Phase 2	Jefferson	109	pasture, 6 acres wetlands
Pearlington Dirt Phase 1	Hancock County	45	loblolly plantation
Eastover	Orleans	65	open water, golf course
Kimble 2	Plaquemines	10.5	agriculture, 5.4 acres non-wet bottomland hardwoods
Gatien –Navy Camp Hope	St. Bernard	7.5	pasture
DK Aggregates	Orleans		pasture, open water
St. Gabriel Redevelopment	Iberville		cleared land, approximately 27 acres wetland
Sylvia Guillot	St. Bernard	10.7	cleared land, open water

FISH AND WILDLIFE CONSERVATION MEASURES

The President's Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process. Based on current and expected future without-project conditions, the planning goal of the Service is to develop a balanced project, i.e., one that is responsive to demonstrated hurricane protection needs while addressing the co-equal need for fish and wildlife resource conservation.

The Service's Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of forested wetlands and marsh for fish and wildlife and the relative scarcity of that habitat type, those wetlands are usually designated as Resource Category 2 habitats, the mitigation goal for which is no net loss of in-kind habitat value. The degraded (i.e., non-wet) bottomland hardwood forest and any wet pastures that may be impacted, however, are placed in Resource Category 3 due to their reduced value to wildlife, fisheries and lost/degraded wetland functions. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value.

To minimize wetland and bottomland hardwood impacts, the Service recommends that prior to utilizing borrow sites, every effort should be made to reduce impacts by using sheetpile and/or floodwalls to increase levee heights wherever feasible. In addition, the Service recommends that the previous mentioned protocol to identify and prioritize borrow sources provided in our August 7, 2006. Planning-aid letter (attached) should continue to be utilized to guide contractors in locating future borrow-sites.

SERVICE POSITION AND RECOMMENDATIONS

The Service does not object to the use of the proposed borrow sites provided the following fish and wildlife conservation recommendations are implemented concurrently with project implementation:

1. Approximately 5.4 acres of non-wet bottomland hardwoods that have been impacted needs to be assessed for mitigation Subsequent to that assessment, adequate mitigation should be implemented.

2. The Corps provide to the Service verification that wetland impacts and impacts to non-wet

bottomland hardwoods, present and future, have been mitigated.

3. The Corps provide to the Service maps, descriptions of habitats and impacts for all future contractor-furnished borrow sites.

4. The protocol to identify and prioritize borrow sources provided in our August 7, 2006, Planning-aid letter (attached) should be utilized as a guide for contractors locating future borrow-sites.

5. Any proposed change in borrow site features, locations or plans shall be coordinated in advance with the Service, NMFS, LDWF, and LDNR.

6. Forest clearing associated with borrow site preparation should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

7. If a proposed borrow site is changed significantly or excavation is not implemented within one year, we recommend that the Corps notify the contractor to reinitiate coordination with this office to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

Sincerely,

James F. Boggs
Acting Supervisor
Louisiana Field Office

Attachment

cc: EPA, Dallas, TX
NMFS, Baton Rouge, LA
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources (CMD/CRD), Baton Rouge, LA

LITERATURE CITED

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. Coast 2050: Towards a Sustainable Coastal Louisiana. Louisianan Department of Natural Resources. Baton Rouge, LA. 161 p.

Rudis, V. A., and Birdsey, R. A. 1986 Forest Resources and Current Conditions in the Lower Mississippi Valley. Resour. Bull. SO-116. New Orleans, La: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 7 p.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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Suite 400
Lafayette, Louisiana 70506

May 8, 2009

Colonel Alvin B. Lee
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

Please reference the Individual Environmental Report (IER) 28, entitled "Government Furnished Borrow Material #4, Jefferson, Plaquemines, and St. Bernard Parishes, Louisiana". That IER addresses impacts resulting from the excavation of government-furnished borrow sites which will be used to increase hurricane protection within the Greater New Orleans area located in southeast Louisiana. Work associated with that IER is being conducted in response to Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps of Engineers (Corps) to upgrade the Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity hurricane protection projects in the Greater New Orleans area to provide protection against a 100-year hurricane event. This draft report contains an analysis of the impacts on fish and wildlife resources that would result from excavation of those borrow sites and provides recommendations to minimize and/or mitigate project impacts on those resources.

The proposed project was authorized by Supplemental 4 which directed the Corps to proceed with engineering, design, and modification (and construction where necessary) of the Lake Pontchartrain and Vicinity and the West Bank and Vicinity Hurricane Protection Projects so those projects would provide 100-year 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 prevented our agencies from following 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 U.S. Fish and Wildlife Service (Service) will be providing post-authorization 2(b) reports for individual IERs.

This draft report incorporates and supplements our FWCA Reports that addressed impacts and mitigation features for the Westbank and Vicinity of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the Lake Pontchartrain and Vicinity Hurricane (dated July 25, 1984, and January 17, 1992) Protection projects. It also supplements our August 7, 2006, Planning-aid Letter to the Corps providing recommendations for minimizing impacts to fish and

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wildlife resources from borrow site selection and use. This report, however, does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. This draft report has been provided to the Louisiana Department of Wildlife and Fisheries (LDWF) and the National Marine Fisheries Service (NMFS); their comments will be incorporated into our final report.

DESCRIPTION OF THE STUDY AREA

The study area is primarily located within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Portions of Jefferson, St. Bernard, and Plaquemines Parishes are included in the study area. Higher elevations occur on the natural levees of the Mississippi River and its distributaries. Developed lands are primarily associated with 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. Navigation channels such as the Gulf Intracoastal Waterway and the Mississippi River – Gulf Outlet are also prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals. Extensive wetlands and associated shallow open waters dominate the landscape outside the flood control levees. Major waterbodies include Lake Pontchartrain located north of the project area, the Mississippi River which bisects the project area, and Lake Borgne which is located on the eastern edge of the project area.

FISH AND WILDLIFE HABITATS AND RESOURCES

Habitat types at and in the vicinity of the borrow sites include forested wetlands (i.e., bottomland hardwoods and/or swamps), non-wet bottomland hardwoods, upland forests, scrub-shrub, marsh, open water, and developed areas. Due to urban development and a forced-drainage system within the levee system, the hydrology of much of the forested habitat has been altered. The forced-drainage system has been in operation for many years, and subsidence is evident throughout the area.

Wetlands (forested, marsh, and scrub-shrub) within the study area provide plant detritus to adjacent coastal waters and thereby contribute to the production of commercially and recreationally important fishes and shellfishes. Wetlands in the project area also provide valuable water quality functions such as reduction of excessive dissolved nutrient levels, filtering of waterborne contaminants, and removal of suspended sediment. In addition, coastal wetlands buffer storm surges reducing their damaging effect to man-made infrastructure within the coastal area.

Factors that will strongly influence future fish and wildlife resource conditions include freshwater input and loss of coastal wetlands. Depending upon the deterioration rate of marshes, the frequency of occasional short-term saltwater events may increase. Under that scenario, tidal action in the project area may increase gradually as the buffering effect of marshes is lost, and use of that area by estuarine-dependent fishes and shellfish tolerant of saltwater conditions would likely increase. Regardless of which of the above factors ultimately has the greatest influence, freshwater wetlands within and adjacent to the project area will probably experience losses due to development, subsidence, and erosion.

Forested wetlands in the area are divided into two major types; bottomland hardwood forests and cypress-tupelo swamps. Bottomland hardwood forests are found at higher elevations (Mississippi River and former distributary channel levees) in the project area, while cypress-tupelo swamps are located along the flanks of larger distributary ridges as a transition zone between bottomland hardwoods and lower-elevation marsh, scrub-shrub habitats, or open water.

Non-wet bottomland hardwoods within the project area also provide habitat for wildlife resources. Between 1932 and 1984, the acreage of bottomland hardwoods in Louisiana declined by 45 percent (Rudis and Birdsey 1986). By 1970, Jefferson Parish was classified as entirely urban or nonforested in the U.S. Forest Service's forest inventory with most of this loss resulting from development within non-wet areas inside the hurricane protection levees. A large percentage of the original bottomland hardwoods within the Mississippi River floodplain acreage in the Deltaic Plain are located within a levee system, especially those at higher elevations. However, losses of that habitat type are not regulated or mitigated with the exception of impacts resulting from Corps projects as required by Section 906(b) of the Water Resources Development Act of 1986.

Upland forests in the area are primarily comprised of pine forests. An ongoing trend within those forested areas is their conversion to loblolly pine plantations; such plantations provide lower quality wildlife habitat as compared to naturally regenerated pine forests.

Dead-end canals and small bayous are typically shallow and their bottoms may be filled in to varying degrees with semi-fluid organic material. Drainage canals enclosed within the hurricane protection projects or within developed areas are stagnant except when pumps are operating to remove rain water. Runoff from developed areas has likely reduced the habitat value of that aquatic habitat by introducing various urban pollutants, such as oil, grease, and excessive nutrients. Clearing and development has eliminated much of the riparian habitat that would normally provide shade and structure for many aquatic species.

Some of the waterbodies in the project area meet criteria for primary and secondary contact recreation and partially meet criteria for fish and wildlife propagation; while others do not meet the latter criteria. Causes for not fully meeting fish and wildlife propagation criteria include excessive nutrients, organic enrichment, low dissolved oxygen levels, flow and habitat alteration, pathogens and noxious aquatic plants. Sources of those problems include hydromodification, habitat modification, recreational activities, and unspecified upstream inputs. Municipal point sources, urban runoff, storm sewers, and onsite wastewater treatment systems are also known contributors to poor water quality in the area.

Developed habitats in the study area include residential and commercial areas, as well as roads and existing levees. Those habitats do not support significant wildlife use. Most of the development is located on higher elevations of the project area; however, vast acreages of swamp and marsh have been placed under forced drainage systems and developed. A smaller acreage of wetlands has been filled for development. Agricultural lands occur throughout the area; agriculture includes sugarcane farming, cattle production, and haying.

Endangered and Threatened Species

To aid the Corps in complying with their proactive consultation responsibilities under the Endangered Species Act (ESA), the Service provided a list of threatened and endangered species and their critical habitats within the coastal parishes of the New Orleans District. The Corps has conducted ESA consultation on each borrow site as they were identified and determined that, at this time, no threatened or endangered species or their critical habitat were located within any proposed borrow site. If a proposed borrow site is changed significantly or relocated, or excavation is not implemented within 1 year of the date of this report, we recommend that the Corps reinitiate coordination with this office to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

Future Fish and Wildlife Resources

The combination of subsidence and sea level rise results in higher water levels, stressing most non-fresh marsh plants and forested wetlands leading to plant death and conversion to open water. Other major causes of wetland losses within the study area include altered hydrology, storms, saltwater intrusion (caused by marine processes invading fresher wetlands), shoreline erosion, herbivory, and development activities including the direct and indirect impacts of dredge and fill (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). The continued conversion of wetlands and forested habitats to open water or developed land represents the most serious fish and wildlife-related problem in the study area. Habitat losses would be expected to cause declines in the area's carrying capacity for migratory waterfowl, wading birds, other migratory birds, alligators, furbearers, and game mammals.

ALTERNATIVES UNDER CONSIDERATION

The proposed borrow sites have been located in areas that minimize impacts to wetlands and impacts to non-wet bottomland hardwoods have also been avoided to the extent practicable. Use of adjacent borrow, the typical construction method, has been limited because of soil conditions (i.e., insufficient clay content), thus impacts resulting from expansion of borrow sites into wetlands has been avoided in some areas.

PROJECT IMPACTS

Excavation of borrow sites will result in the conversion of terrestrial habitat into open-water areas. Because agricultural, pasture, cleared land habitats have a reduced value to fish and wildlife resources and are not a declining or limited habitat type, impacts associated with conversion of those habitats to open-water were quantified only by acreage (Table 1). Wetland impacts were determined by the Corps regulatory program. The land type and acreage of each proposed borrow site is listed below (Table 1).

It has been determined that the borrow sites of IER 28 do not contain any jurisdictional wetlands, but they do have non-wet bottomland hardwood (BLH); therefore, mitigation will be required. The Service used the Habitat Assessment Methodology (HAM), a community-level evaluation, to quantify the impacts to forested habitats. Impacts to bottomland hardwood were quantified by acreage and habitat quality (i.e., average annual habitat unit or AAHUs). Further explanation of how impacts/benefits are assessed and an explanation of the assumptions affecting habitat suitability (i.e., quality) are available for review at Service's Lafayette, Louisiana, field office.

Table 1: Government-furnished Borrow Sites

Site	Parish	Total Site area (acres)	BLH Habitat Impacted (acres)	AAHUs Lost
Bazile	Plaquemines	19.1	11.6	3.93
Crovetto / Kenilworth	St. Bernard	12.9	8.05	4.35
Westbank F revised access area	Jefferson	0.29	0.29	0.17
Total		32.29	19.94	8.45

FISH AND WILDLIFE CONSERVATION MEASURES

To minimize wetland and bottomland hardwood impacts, the Service recommends that prior to utilizing borrow sites, every effort should be made to reduce impacts by using sheetpile, floodwalls, geotextile, or some combination thereof, to increase levee heights wherever feasible. In addition, the Service recommends that the previous protocol to identify and prioritize borrow sources provided in our August 7, 2006, Planning-aid letter should continue to be utilized as a guide in locating future borrow-sites.

SERVICE POSITION AND RECOMMENDATIONS

Excavation of borrow sites results in the loss of 19.94 acres of bottomland hardwoods for a total loss of 8.45 AAHUs. The Service does not object to the use of the proposed borrow sites provided the following fish and wildlife recommendations are implemented concurrently with project implementation:

1. The Corps and local sponsor shall provide 8.45 AAHUs to compensate for the unavoidable, project-related loss of forested lands. The Service, NMFS, LDWF, Environmental Protection Agency (EPA), and the Louisiana Department of Natural Resources should be consulted regarding the adequacy of any proposed alternative mitigation sites.

2. The protocol to identify and prioritize borrow sources provided in our August 7, 2006, Planning-aid letter should be utilized as a guide for locating future borrow-sites and expanding existing sites.

3. Any proposed change in borrow site features, locations or plans shall be coordinated in advance with the Service, NMFS, LDWF, and LDNR.

4. If a proposed borrow site is changed significantly or excavation is not implemented within one year of the date of this report, we recommend that the Corps reinitiate coordination with David Castellanos (337/291-3112) of this office to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

Sincerely,

for

James F. Boggs
Supervisor
Louisiana Field Office

cc: CEMVN-PM-R, New Orleans, LA
EPA, Dallas, TX
NMFS, Baton Rouge, LA
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources (CMD/CRD), Baton Rouge, LA

LITERATURE CITED

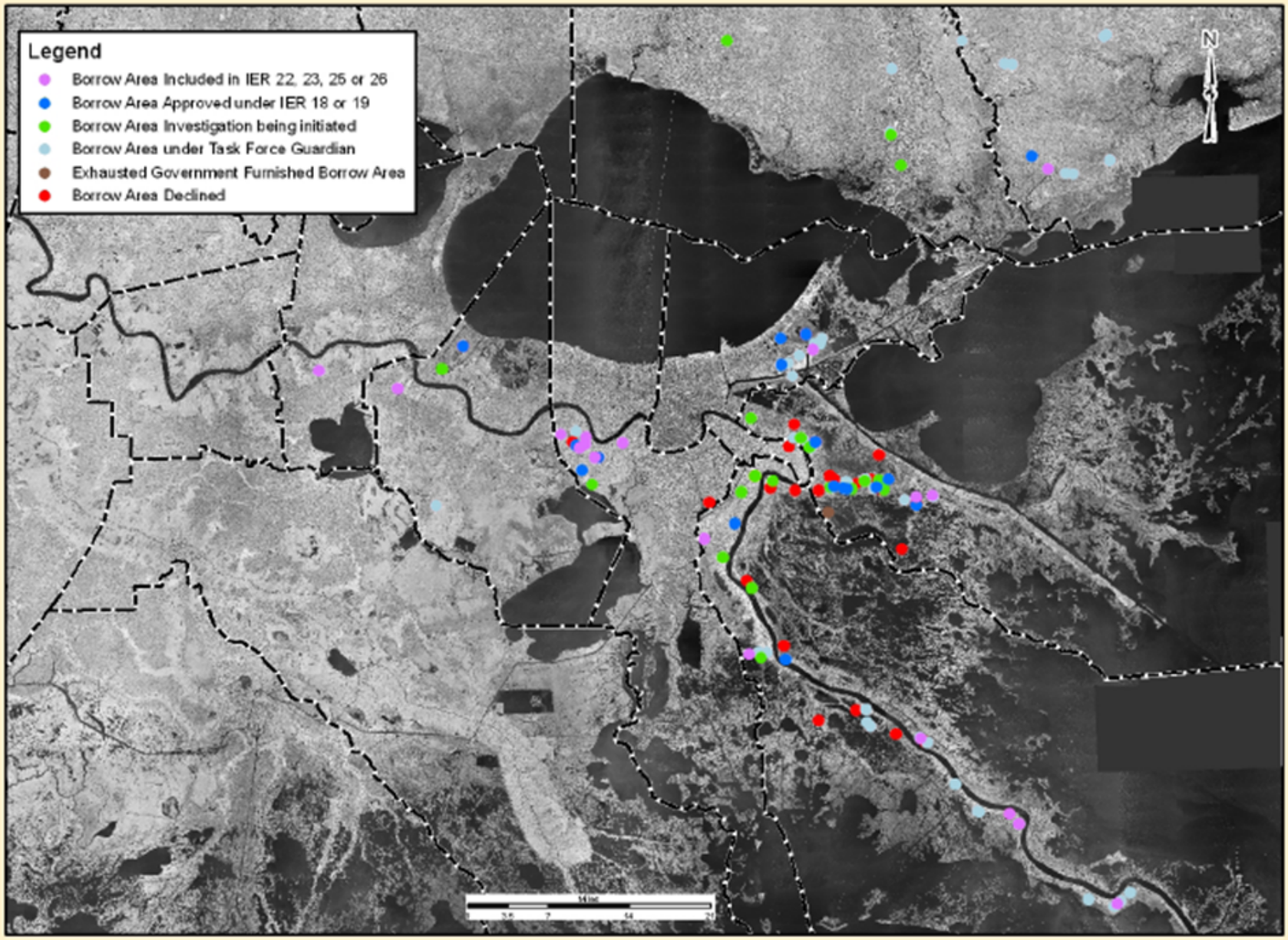
Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. Coast 2050: Towards a Sustainable Coastal Louisiana. Louisianan Department of Natural Resources. Baton Rouge, LA. 161 p.

Rudis, V. A., and Birdsey, R. A. 1986 Forest Resources and Current Conditions in the Lower Mississippi Valley. Resour. Bull. SO-116. New Orleans, La: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 7 p.

APPENDIX E: CEMVN BORROW AREA INDEX MAP

The most up to date version of this and other borrow maps can be found at www.nolaenvironmental.gov.

Borrow Areas



Updated on 7/30/2008

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