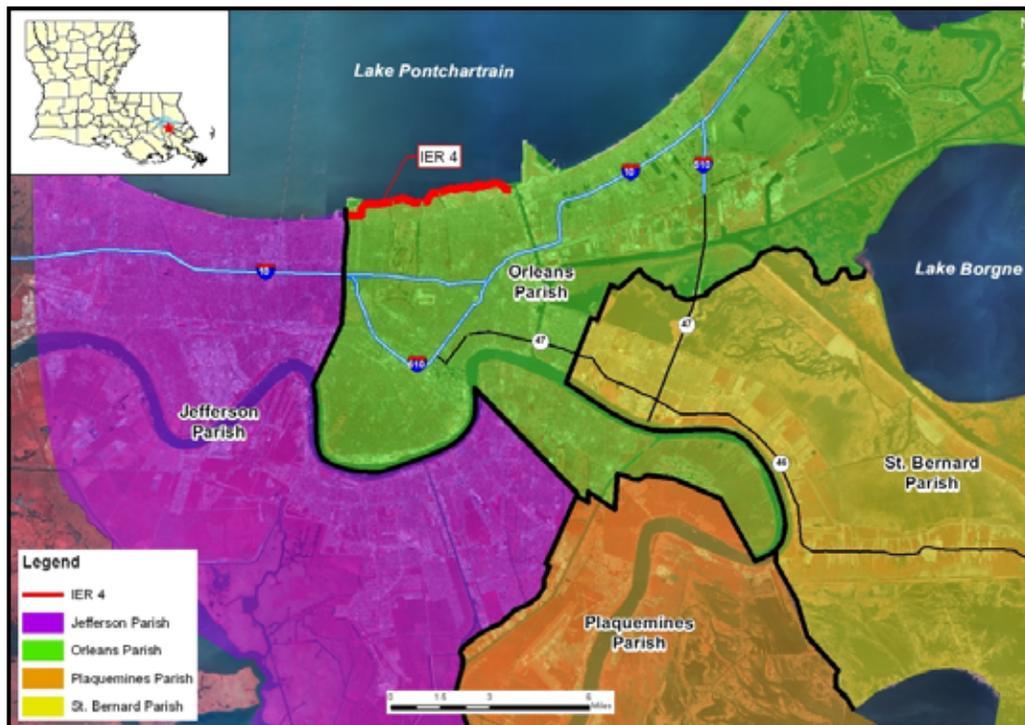


DRAFT INDIVIDUAL ENVIRONMENTAL REPORT

LPV, NEW ORLEANS LAKEFRONT LEVEE, WEST OF INNER HARBOR NAVIGATION CANAL

ORLEANS PARISH, LOUISIANA

IER # 4



**US Army Corps
of Engineers®**

February 2009

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1.0 INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Individual Environmental Report # 4 (IER # 4) to evaluate the potential impacts associated with a proposed action that would include changes involving multiple gates and ramps as well as a sector gate structure along the south shore of Lake Pontchartrain in Orleans Parish, Louisiana (figure 1). For the purposes of this IER, the Lake Pontchartrain and Vicinity (LPV) area has been divided into numerous reaches. Every reach is identified by a project identification number (e.g., LPV 101). Specifically, IER # 4 encompasses four reaches of the LPV Hurricane and Storm Damage Risk Reduction System (HSDRRS): LPV 101, 102, 103, and 104. The HSDRRS within the IER # 4 project area totals approximately 5.8 miles in length (figures 1 and 2). This IER evaluates alternatives to modify, replace, build, or rebuild 13 vehicle access gates, one pedestrian gate, one sector gate structure on Bayou St. John, several floodwall sections, and several roadway ramps that occur within LPV reaches 101, 102, 103, and 104.

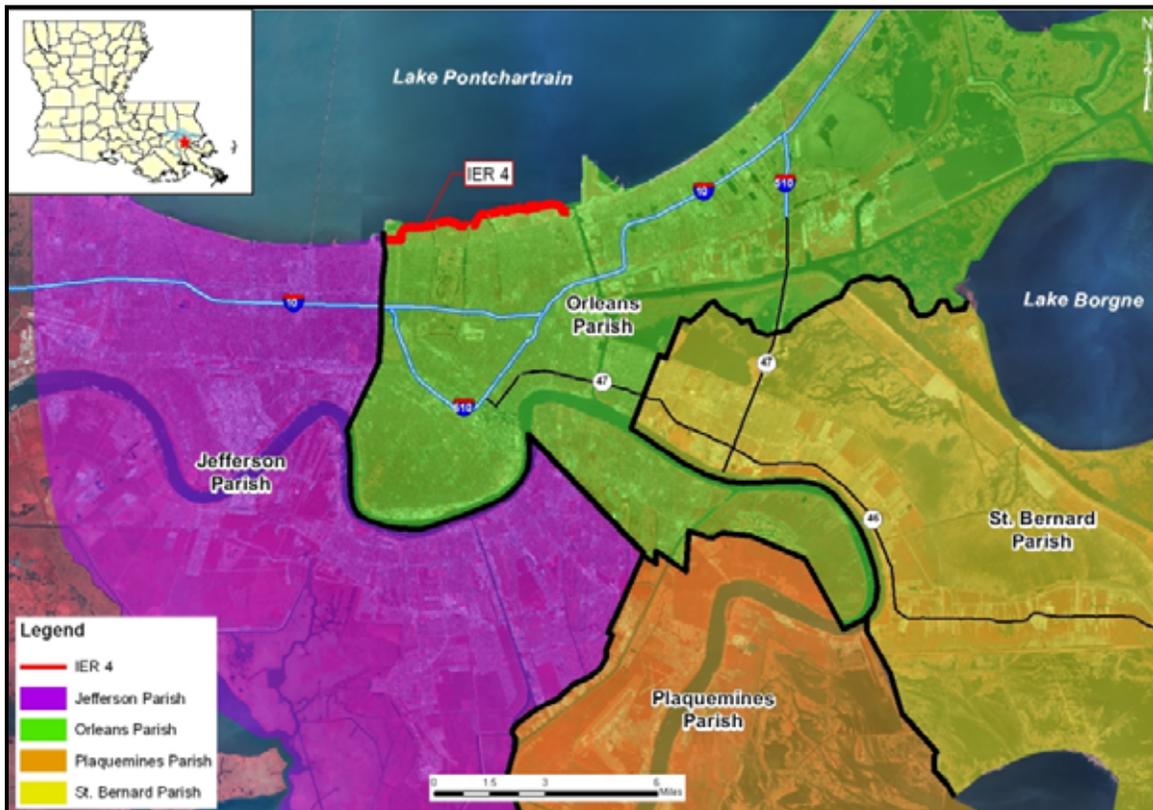


Figure 1. New Orleans Lakefront Levee - Project Vicinity Map

IER # 4 has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 Code of Federal Regulations [CFR] 1500-1508), as reflected in USACE Engineering Regulation (ER) 200-2-2. The use of alternative arrangements through 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). The CEMVN implemented alternative arrangements on 13 March 2007, under the provisions of the CEQ Regulations for Implementing the NEPA (40

CFR 1506.11). The alternative arrangements can be found at www.nolaenvironmental.gov and are incorporated herein by reference. This process was employed in order to expeditiously complete environmental analyses for any changes to the authorized system and the 100-year level of the HSDRRS, formerly known as the Hurricane Protection System, authorized and funded by Congress and the George W. Bush Administration. The proposed actions would be undertaken 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.

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 the public meeting would 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 as to whether or not they are substantive. 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 the form of an IER Decision Record. If a comment(s) is determined to be substantive, an addendum to the IER will be prepared and published for a 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.



Figure 2. IER # 4 Project Area, Orleans East Bank

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose and need for the proposed action is to provide, in a timely manner, the 100-year level of risk reduction from flood damage to Orleans Parish due to flooding from hurricanes and other severe storm events. The term “100-year level of risk reduction” as it is used throughout this document refers to a level of risk reduction which reduces the risk of storm surge and wave-driven flooding that the New Orleans Metropolitan Area has a one percent chance of experiencing in any given year. The elevations of some existing levees, floodwalls, structures, and gates within the LPV project reaches included in IER # 4 are below the 100-year design elevation. The proposed action results from a defined need to reduce flood risk and storm damage to residences, businesses, and other infrastructure from hurricanes (100-year storm events) and other high water events. 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.

1.2 AUTHORITY FOR THE PROPOSED ACTION

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

The LPV project was authorized under the Flood Control Act of 1965 (Public Law [PL] 89-298, Title II, Sec. 204) as amended, which 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 Act (WRDA) of 1974 (PL 93-251, Title I, Sec. 92), 1986 (PL 99-662, Title VIII, Sec. 805), 1990 (PL 101-640, Sec. 116), 1992 (PL 102-580, Sec. 102), 1996 (PL 104-303, Sec. 325), 1999 (PL 106-53, Sec. 324), and 2000 (PL 106-541, Sec. 432); and the Energy and Water Development Appropriations Acts of 1992 (PL 102-104, Title I, Construction, General), 1993 (PL 102-377, Title I Construction, General), and 1994 (PL 103-126, Title I Construction, General).

The Department of Defense Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico and Pandemic Influenza Act of 2006 (3rd Supplemental – PL 109-148, Chapter 3, Construction, Flood Control and Coastal Emergencies) authorized accelerated completion of the project and restoration of project features to design elevations at 100 percent Federal cost. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental – PL 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized construction of a 100-year level of risk reduction, the replacement or reinforcement of floodwalls, and the construction of levee armoring at critical locations. Additional Supplemental Appropriations include the U.S. Troop Readiness, Veterans’ Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental – PL 110-28, Title IV, Chapter 3, Flood Control and Coastal Emergencies, Section 4302) and the 6th Supplemental (PL 110-252, Title III, Chapter 3).

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 summarized below:

- On 21 January 2009, the CEMVN signed a Decision Record on IER # 17 entitled “West Bank and Vicinity, Company Canal Floodwall, Jefferson Parish, Louisiana.” The document was prepared to evaluate the potential impacts associated with the proposed construction and maintenance of a 100-year level of risk reduction along the WBV, Company Canal Floodwall from the Bayou Segnette State Park to the New Westwego Pumping Station.
- 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 borrow areas for use in construction of the HSDRRS.
- On 26 August 2008, the CEMVN signed a Decision Record on IER # 14, entitled “Westwego to Harvey Levee, Jefferson Parish, Louisiana.” The proposed action includes enlarging earthen levees, rebuilding floodwalls, constructing fronting protection for three pump stations, replacing a floodgate with a swing gate, and raising an existing ramp to ensure a continuous line of risk reduction in the levee and floodwall system.
- 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 the rebuilding of 9.5 miles of earthen levees, upgrading of foreshore protection, replacement of two floodgates, and construction of fronting protection and construction or modification of breakwaters at four pumping stations along the lakefront in Jefferson Parish, Louisiana.
- On 18 July 2008, the CEMVN signed a Decision Record on IER # 2, entitled “Lake Pontchartrain and Vicinity, West Return Floodwall, Jefferson and St. Charles Parishes, Louisiana.” The proposed action includes replacing 3.4 miles of floodwall in Jefferson and St. Charles Parishes, Louisiana.
- On 12 June 2008, the CEMVN signed a Decision Record on IER # 15, entitled “Lake Cataouatche Levee, Jefferson and Plaquemines Parishes, Louisiana.” The proposed action includes constructing and maintaining a 100-year level of risk reduction along the project area in Jefferson Parish, Louisiana.
- On 9 June 2008, the CEMVN signed a Decision Record on IER # 1, entitled “Lake Pontchartrain and Vicinity, LaBranche Wetlands Levee, St. Charles Parish, Louisiana.” The proposed action includes raising approximately 9 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 # 2, Jefferson and Plaquemines Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE while excavating borrow areas for use in construction of the HSDRRS.
- On 5 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 the actions taken by commercial contractors as a result of excavating 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 (IHNC) from Lake Pontchartrain and/or the Gulf Intracoastal Waterway (GIWW)-Mississippi River Gulf Outlet (MRGO)-Lake Borgne complex. A Tier 2 document discussing alignment alternatives and designs of the navigable and structural barriers, and the impacts associated with exact footprints for the Lake Borgne area has been completed and a similar Tier 2 document will be completed for the Lake Pontchartrain area.
- 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 the actions taken by the USACE as a result of excavating 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 the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- In July 2006, the CEMVN signed a Finding of No Significant Impact (FONSI) on 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 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 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 of alternative methods of providing flood risk reduction for the 17th Street Outfall Canal in association with LPV activity. Impacts to resources were found to be minimal.
- 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 risk reduction at the Orleans Avenue Outfall Canal.

- Supplemental Information Report (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 # 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 IHNC to the London Avenue Canal.
- 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 was published in 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 February 1985. Final Supplement II to the EIS, dated August 1994, was followed by a ROD signed by 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.

1.4 INTEGRATION WITH OTHER INDIVIDUAL ENVIRONMENTAL REPORTS

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

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 be available for a 30-day public review and comment period.

1.5 PUBLIC CONCERNS

Throughout southern Louisiana, some of the greatest areas of public concern are reducing the risk of hurricane, storm, and flood damage for businesses and residences, and enhancing public safety during major storm events. Hurricane Katrina forced residents from their homes, caused extensive loss of life and property, temporarily closed businesses, and, due to extensive and prolonged flooding, prevented evacuated residents from returning to their homes in a timely manner.

In public meetings held at the University of New Orleans (UNO) Lindy Boggs Conference Center on 12 June 2007 and 27 March 2008; St. Paul's Episcopal Church on 25 September 2007 and 26 February 2008; Cabrini High School on 10 November 2008; Xavier University Center Room on 10 April 2008; Dillard University Stern Amphitheater on 13 May 2008; St. Dominic's Elementary School on 1 July 2008; and Desire Street Ministries on 15 July 2008, several public concerns were raised regarding improved risk reduction along the Orleans East Bank lakefront. Copies of public comments received are provided in appendix B.

The Greater New Orleans community expressed interest in the preservation of the ecological, cultural, recreational, aesthetic, and economic benefits of Bayou St. John and a desire for increased risk reduction from storms and flooding. Comments generated in response to the proposed alternatives for action at LPV 101, 102, 103, and 104 indicated concern over the implementation of the earthen levee alternative across Bayou St. John (LPV 103). These concerns were primarily based on potential ecological and cultural/historic impacts, but some comments also indicated that concern was based on potential socioeconomic and aesthetic impacts. The majority of the individuals opposed to the alternative to close Bayou St. John with an earthen levee indicated support for a flood gate alternative like the proposed action. Written and verbal comments received during meetings also indicated a desire for the gate structure across Bayou St. John to remain in the open position except during storm events and allow for navigable access between the bayou and the lake. Additionally, concerns were raised regarding which agency would be responsible for operation and maintenance of the levee system.

The community expressed interest in having more interaction and communication with the CEMVN regarding the proposed alternatives and potential impacts from those alternatives. Specifically, the Bancroft Park Civic Association urged the USACE to coordinate with the Southeast Louisiana Flood Protection Authority (SLFPA) East and invited the USACE to meet with the Association's Board of Directors to explain the proposed alternatives in greater detail. The Lake Terrace Property Owners Association also requested a meeting with USACE due to concerns regarding raising the elevation of Pratt Drive and the potential for USACE to acquire portions of properties from adjacent homeowners. The Lake Terrace Association also expressed concern over the lack of communication between the USACE and the homeowners potentially affected. The Lakeshore Property Owner's Association presented multiple areas of concern regarding the current conditions of the outflow canals along the lakeshore, and suggested participation of the Orleans Levee District at public meetings. The Bayou St. John Conservation Alliance provided a resolution urging the USACE, Coastal Restoration Authority, and SLFPA East to work with the Orleans Levee District to keep the sector gate open as often as possible, remove the "waterfall dam" at Robert E. Lee Boulevard, and assist them in "managing the bayou ecosystem based on science and storm protection."

Other comments received by the CEMVN offered suggestions for USACE's consideration, including construction of a lakefront barrier for the Rigolets Strait, Chef Menteur Pass, and

Industrial Canal; moving the control structure for Bayou St. John to Lake Pontchartrain; and removing the levees along the bayou to enhance the view. A request was made for access to USACE slides presented at community meetings; specifically, the slides from the 13 May 2008 presentation for the Bancroft Civic Association. One individual suggested following an angled system similar to the delta dike design that has been constructed in the Netherlands. The present condition of termite infestation and its effects on the current levee system was mentioned by an attendee, and constructing the levees above the water line was suggested. Requests were also made that a more detailed description of the alternatives be provided to the public.

1.6 DATA GAPS AND UNCERTAINTY

The potential impacts on society (people and property, historical and cultural resources) make hurricane and storm damage risk reduction in the New Orleans Metropolitan Area a critical necessity. Therefore, construction of this HSDRRS project is not being delayed pending future refinements in available information. The analysis provided in this IER is based on preliminary designs and best professional judgment by technical experts. However, details of the final engineering design for the proposed action and alternatives could differ from the estimates. At the time of submission of this report, engineering evaluations and detailed transportation analyses had not been completed; only limited environmental justice (EJ) information, including racial, ethnic, and socioeconomic data, was available; and estimates of materials necessary to construct the project were preliminary.

Uncertainty associated with final engineering design and construction, as well as slight changes to existing conditions in the future, could affect the assessment of impacts as presented in this document. For example, access routes to the construction areas are dependent on many variables that frequently change (weather, traffic conditions, road conditions, construction materials, fuel prices, etc). Large quantities of construction materials would be delivered to the project area, as well as to other 100-year level of risk reduction projects in the New Orleans Metropolitan Statistical Area. The sources for these materials and the transportation routes for delivering them have not been fully determined. Transportation of materials to construction sites could have localized short-term impacts on transportation corridors; long-term impacts on road surfaces cannot be fully quantified until the sources of all materials and transportation routes have been defined. The CEMVN is currently completing a system-wide transportation analysis to better quantify these impacts.

As a result of uncertainties such as these, many of the estimates of environmental impacts described in this document utilized assumptions that would account for possible design or alignment changes, allowing the project to proceed without compromising the integrity of the assessment. Any design or alignment change that would substantially alter the assessment would be evaluated in a supplement to this IER. New data relevant to design, transportation, EJ, or other aspects of the project will be reviewed as they become available. These data and any resulting changes to the assessment will be incorporated into future documents, including the draft CED.

2.0 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 (PL 93-251) requires Federal agencies to give consideration to non-structural measures to reduce or prevent flood damage. The CEMVN Project Delivery Team (PDT) considered a no action alternative and non-structural measures in this IER, and these are discussed in sections 2.4 and 2.5, respectively.

In addition to these mandated alternatives, a range of reasonable alternatives was formulated through input by the CEMVN PDT, Value Engineering Team, engineering and design consultants, as well as local government, the public, and resource agencies, for each of the reaches described in this IER. The “action” alternatives formulated are composed of alternative alignments for each flood risk reduction corridor. Within each of these alignment alternatives, several scales were considered to encompass various flood risk reduction design alternatives that could be utilized within that alignment.

The following standard set of alignment alternatives and scales within these alignments were initially considered for each reach:

Alternatives:

- Existing alignment with straddle
- Flood-side shift (all toe-to-toe growth occurs on flood-side of levee)
- Protected-side shift (all toe-to-toe growth occurs on protected side of levee)

Alternative Scales:

- Earthen levee
- T-wall floodwall
- Earthen levee with T-wall floodwall cap
- Earthen levee using deep soil mixing

In addition to this standard set of action alternatives common to all reaches, other alternatives were formulated to address reach-specific opportunities and constraints, all of which are described in detail in the following section. Once a full range of alternatives was established for each reach, a preliminary screening was conducted to identify alternatives that would proceed through further analysis. The criteria used to make this determination included engineering effectiveness, economic efficiency, and environmental and social acceptability. Those alternatives that did not adequately meet these criteria were considered infeasible and, therefore, were eliminated from further study in this IER.

2.2 DESCRIPTION OF THE ALTERNATIVES

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

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

Accordingly, the alternatives description that follows is organized by reach, noting those alternatives that are common among all reaches. As stated previously, each reach is identified by a project identification number (e.g., LPV 101). The alternatives descriptions also state how each alternative relates to the range of alternatives for adjacent reaches to insure awareness of the HSDRRS as a whole. All elevations are given in North American Vertical Datum 1988 (NAVD88). The IER # 4 alternatives would occur in the following LPV project reaches (figure 2):

- **LPV 101** extends from the east bank of the 17th Street Canal on the west to just south of the intersection of Topaz Street and Lakeshore Drive on the east (figure 3). The existing risk reduction system consists of earthen embankments (levees) on the east and west ends of the reach and concrete floodwalls in between. The existing floodwalls are a combination of I-wall, L-wall, and T-wall designs. There are six vehicular gates through the line of risk reduction (L1 through L5 and L1A) and one pedestrian gate (L1B). The elevations of the existing risk reduction system components range from 12 ft to approximately 13 ft. The required 100-year level of risk reduction for the levees, gates, and floodwalls in this reach is 16 ft.

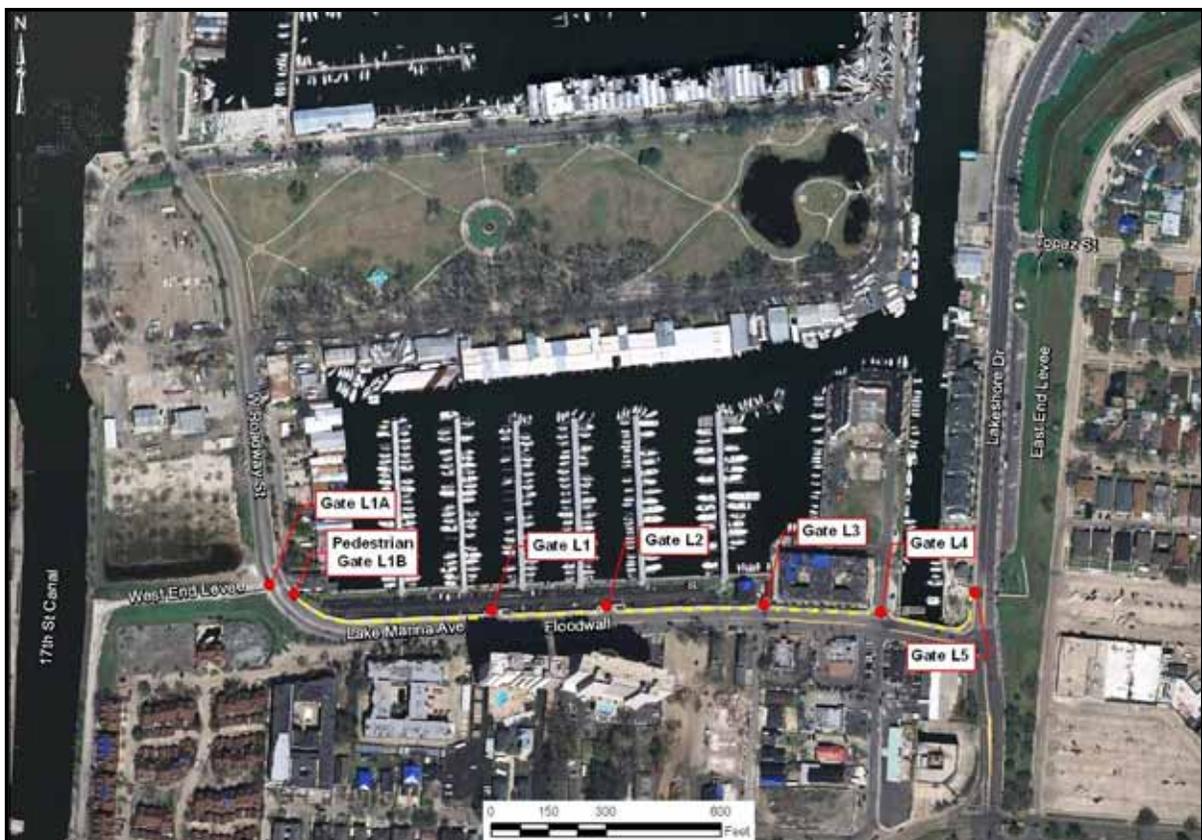


Figure 3. LPV 101 Components Evaluated in IER # 4

- LPV 102** starts its west end near the intersection of Topaz Street and Lakeshore Drive and proceeds easterly to the west side of the Orleans Canal (figure 4). The features of LPV 102 include lakefront levees, one miter gate closure, and an asphalt-paved ramp where Canal Boulevard crosses the levee. The authorized elevations for the levees in this reach range from 15 ft to 19 ft, which are at or above the required 100-year level of risk reduction elevations. The current elevation of the existing Canal Boulevard ramp is 13.5 ft. As part of Phase 1 construction (work to bring the risk reduction system to previously authorized heights) in LPV 102, gate L6 at Topaz Street was removed and a levee embankment was constructed in its place. At the end of Phase 1 construction, the levee at Topaz Street, including overbuild, was at an elevation of 17.5 ft.



Figure 4. LPV 102 Components Evaluated in IER # 4

- LPV 103** extends from the east side of the Orleans Canal east to the floodwall on the west side of the London Avenue Canal (figure 5). This reach includes Bayou St. John from Lake Pontchartrain to the existing sector gate closure structure located approximately 1,000 ft south of the lakefront. The existing Bayou St. John sector gate is currently maintained in the closed position and is the active part of the HSDRRS in this reach.

The existing risk reduction system consists of earthen levees, I-walls, ramps, and gates. The existing lakefront levees and levee sections along Bayou St. John were modified during Phase I construction to bring them to previously authorized heights of 16.5 ft to 18.5 ft plus required overbuild, which will provide the 100-year level of risk reduction. I-walls are present at the lakefront along the north side of Lakeshore Drive just west of Rail Street and adjacent to the gate closure at Marconi Drive. Ramp crossings of the levee are located on

Lakeshore Drive near the London Avenue Canal, at Rail Street, at a shell-surfaced ramp near Park Shelter # 3, and on Lake Terrace Drive near Bayou St. John. The elevations of the existing floodwalls range from 13.3 ft to 17.3 ft. Although some of the existing floodwall elevations are currently below the 100-year level of risk reduction, the authorized heights (which will be achieved during Phase I construction) for these sections are at or above the 100-year level of risk reduction. The section of floodwall on the western bank of Bayou St. John, north of Lakeshore Drive, is at an existing height of 16.6 ft with an authorized height of 17.1 ft. This section of floodwall needs to be brought to a height of 18.5 ft to provide the required 100-year level of risk reduction.



Figure 5. LPV 103 Components Evaluated in IER # 4

- LPV 104** extends from the east side of the London Avenue Canal to the west side of the IHNC (figure 6). The existing risk reduction system consists of earthen levees, floodwalls, gates, I-walls, T-walls, and several ramp crossings. Levees and floodwalls are located along Pontchartrain Beach and four roadway ramps and seven gated closures are within this reach. The levees have an average elevation of 19 ft, the floodwalls have an average elevation of 18.3 ft, and the seven gated closures have heights ranging between 14 ft and 19.5 ft. The Lakeshore Drive ramps east and west of the UNO Research Park have elevations of 14.7 ft and 14.6 ft, respectively; the Franklin Avenue ramp is at 13.7 ft; and the Leroy Johnson Drive ramp is at 13.4 ft. The majority of this LPV reach is currently at the 100-year level of risk reduction or has been brought to the 100-year level of risk reduction during Phase 1 (previously authorized) construction activities. However, the required 100-year level of risk reduction elevations are 21.7 ft for both of the Lakeshore Drive ramps, 22.6 ft for the Franklin Avenue ramp, and 22.1 ft for the Leroy Johnson Drive

ramp (all built to the elevation of the adjacent levees plus overbuild base course and pavement thickness).



Figure 6. LPV 104 Components Evaluated in IER # 4

2.3 PROPOSED ACTION

The proposed action would provide 100-year level of flood and storm risk reduction for Orleans Parish. The elevations of the existing HSDRRS would be raised to heights ranging from 16 ft to just over 21 ft. The proposed action for the IER # 4 project area consists of rebuilding and/or modifying earthen levees and floodwalls, replacing or adding new floodgates, modifying the Bayou St. John sector gate structure, and rebuilding roadway ramps. No additional action is proposed as part of this IER in specific areas where the existing authorized height already is at or higher than the 100-year level of risk reduction and no additional right-of-way (ROW) clearances are required, including areas where Phase 1 construction to achieve previously authorized levels is planned or underway. Any construction that already has been performed to bring the levee system to the previously authorized heights has been evaluated in previous environmental documents. Following is a detailed description by reach of the activities that would take place under the proposed action.

LPV 101

The proposed action for providing the required 100-year level of risk reduction is to replace existing I-walls, L-walls, and T-walls with new T-walls and to construct floodwalls to an elevation of 16 ft on top of the existing levees at the east and west ends of the reach.

The proposed action for the I-walls, L-walls, T-walls, and gates in LPV 101 is to demolish the existing wall segments and gates, which are at a height of approximately 12.5 ft, and replace them with new T-walls and/or gates to a height of 16 ft. The proposed action for the west and east end levees is to construct new floodwalls on top of the existing west end levee (currently at 12 ft) and the existing east end levee (currently at 12.5 ft) to bring these to a height of 16 ft. The proposed action for the east and west end levees would involve driving precast concrete piles through the existing levee embankments to support the floodwall. Steel sheet pile would then be driven to form a cut-off wall. On the east end, the concrete wall would continue north from gate L5 to the point where the top of the wall (16 ft) would meet the existing grade of the levee. North of this point, the top of the floodwall elevation would increase for the transition into the LPV 102 Phase 1 embankment.

In areas where the adjacent walls are being raised, the corresponding gates (figure 3) would be demolished and replaced. Specifically, the following actions would be taken:

- The existing gates L1 and L2, which provide marina parking lot access, would be demolished and replaced with new gates to a height of 16 ft.
- Gate L3, which is rarely used, would be demolished and replaced with a floodwall to a height of 16 ft.
- The pedestrian gate, L1B, which is set into the top of the wall, would also be eliminated and replaced with the new wall at a height of 16 ft (Pedestrians would be able to gain access through gate L1A, which is immediately adjacent).
- Gate L1A across Lake Marina Avenue would be replaced with a similar gate at a height of 16 ft.
- Gate L4 would be replaced, raised to 16 ft, and relocated closer to Lake Marina Avenue.
- Gate L5 would be replaced and raised to 16 ft.
- The existing floodwall between gates L1A and L5 would be demolished and replaced with a new floodwall to a height of 16 ft.

Figure 7 indicates the location of the staging area and temporary construction area that would be required to complete the proposed action for LPV 101. Staging areas in LPV 101 would be approximately 1.3 acres and the temporary construction easement would be approximately 4.7 acres. A “no work zone” has also been established for the existing parking lot adjacent to Lakeshore Drive on the eastern side of the marina to allow for parking for commercial businesses and residents.

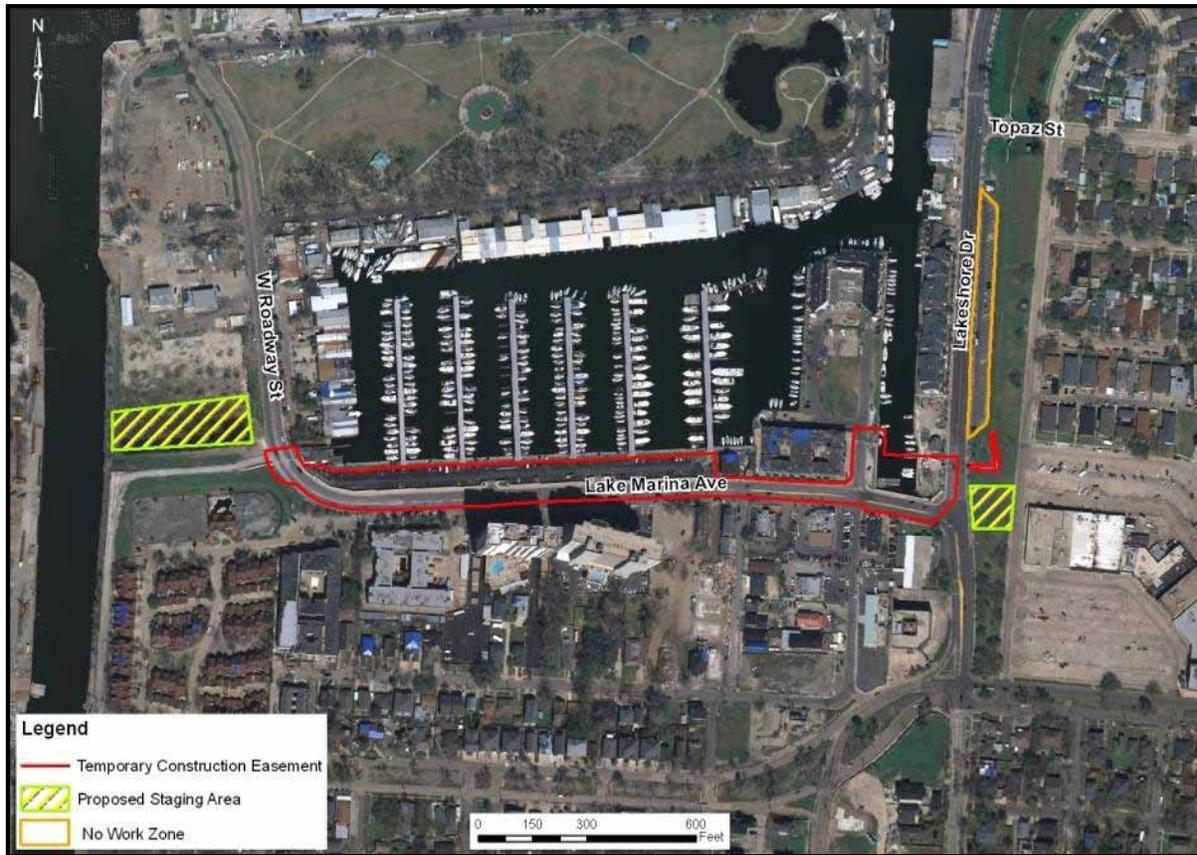


Figure 7. Proposed Staging Areas and Temporary Construction Easement for LPV 101

LPV 102

The proposed action for the existing roadway ramp on Canal Boulevard (figure 8) is to raise the ramp from its current elevation of 13.5 ft to an elevation of 21.1 ft (19 ft plus overbuild). The footprint of the raised ramp could vary slightly from existing conditions to account for construction using current design requirements. Figure 8 also indicates a temporary staging area (approximately 1.2 acres) and easement (approximately 19 acres) that would be required during construction.



Figure 8. Proposed Staging Area and Temporary Construction Easement for LPV 102

LPV 103

The proposed action for the LPV 103 reach includes the following:

- Constructing a new T-wall to replace the existing I-wall on the western bank of Bayou St. John, north of Lakeshore Drive. The required elevation of 18.5 ft for this section of floodwall is above the previously authorized height of 17.1 ft.
- Constructing new gates across Lakeshore Drive at Rail Street and at Lake Terrace Drive west of the London Avenue Canal. The current elevations of the Lakeshore Drive ramps at Rail Street (15 ft) and at Lake Terrace Drive (13.8 ft) are below both the 100-year risk reduction level and the previously authorized elevations. Gates would be constructed on top of the existing ramps at the previously authorized elevations of 18.0 ft for the Lakeshore Drive ramp at Lake Terrace Drive and 18.5 ft for the Lakeshore Drive ramp at Rail Street. The 100-year risk reduction level for gates and walls at these locations is elevation 16.0 ft.
- Strengthening of the floodwalls along Bayou St. John through demolition of the existing I-walls and their replacement with T-walls. The T-walls lakeward of the Lakeshore Drive bridges would be constructed to an elevation of 18.5 ft, which is the previously authorized height for this floodwall. The T-walls between and on the protected side of the Lakeshore Drive bridges would be constructed to an elevation of 16 ft, which is below previously authorized heights for these floodwall sections of 18-19 ft. The small

existing segments of T-walls (at the interface of the existing I-walls and the sector gate structure) also would be demolished and replaced with new T-walls at an elevation of 16 ft. The existing sector gate closure structure would be retrofitted by the addition of 6 inches of new steel or concrete to raise it to an elevation of 16 ft.

- Strengthening of the Marconi Drive gate by the addition of steel plates to the top of the gate and through the conversion of the adjacent I-walls to L-walls. The existing gate structure and adjacent walls would remain at their present elevation since they are higher than the required elevation of 16 ft. An armored transition (scour protection) would be installed between the Marconi Drive gate structure and the levee to the east.
- Strengthening of the existing I-walls by converting them to L-walls behind two electrical transformers on the east bank of the Orleans Canal, and installation of a water stop (rubber membrane) between the existing floodwall and concrete seepage protection on the flood side of the wall.

Figure 5 illustrates the location of elements considered in this IER for LPV 103, and figure 9 shows the staging areas and easements required for the proposed modifications and during construction.



Figure 9. Proposed Staging Areas and Required Easements for LPV 103

Staging areas in LPV 103, including proposed and possible additional staging areas, would total approximately 12 acres, the temporary construction easements would total approximately 16.5 acres, and the new permanent easements would total approximately 4 acres.

LPV 104

The proposed action for the LPV 104 reach includes the following:

- Replacement of gate L10 (currently at elevation 16.7 ft) with a levee to an elevation of 19 ft.
- Strengthening of gate L11 with a steel plate along the top to stiffen the girder to meet current design standards.
- Strengthening of the Pontchartrain Beach floodwalls by conversion of the I-walls to L-walls in their existing alignments, maintaining current heights of 18.5 ft to 19 ft.
- Removal of the American Standard floodwall (the portion of which is I-wall) along Franklin Ave. The fill from raising Franklin Ave. would provide a higher level of risk reduction than the adjacent I-wall.
- Reconstruction of gate W39 (across the railroad tracks) to an elevation of 18 ft with a 60 ft floodside shift. The old gate (currently at elevation 14 ft) would be left in place to provide interim protection during construction. The final disposition of the old gate would be the responsibility of the local sponsor.
- Reconstruction of gate W40 (across Leroy Johnson St.) to an elevation of 16.5 ft with a 60 ft floodside shift. The old gate (currently at elevation 14 ft) would be left in place to provide interim protection during construction. The final disposition of the old gate would be the responsibility of the local sponsor.
- Demolition of the Seabrook I-wall (currently at elevation 14 ft) and construction of a new T-wall to the 100-year design elevation of 16.5 ft. The floodwall would be shifted approximately 6 ft to 7 ft toward the floodside for the northwestern portion that runs parallel to Lakeshore Drive and 60 ft toward the floodside for the portion of the floodwall that runs south under the Senator Ted Hickey Bridge and across the Norfolk Southern railway. The T-wall would tie back into the IHNC levee embankment just south of the railroad tracks.
- Raising of the ramps at Leroy Johnson Drive and Franklin Avenue and two ramps at Lakeshore Drive (east and west of the UNO Research Park) from existing elevations of 14 ft to 15 ft to final elevations (constructed to the height of adjacent levees plus overbuild) ranging from 21.7 ft to 22.6 ft. The footprint of the raised ramps could vary slightly from existing conditions to account for current design requirements. The new ramp at Franklin Avenue would also require the UNO perimeter road to be relocated 85 ft to the east.

Figure 6 illustrates the location of elements considered in this IER for LPV 104, and figure 10 indicates the locations of a staging area and temporary easements required for project construction. The staging area in LPV 104 would be approximately 2.3 acres, and the temporary construction easements would be approximately 13.4 acres.



Figure 10. Proposed Staging Area and Temporary Construction Easement for LPV 104

Armoring of Levees and Floodwalls

Armoring could be incorporated as an additional feature to protect against erosion and scour on the protected, flood, or both sides of critical portions of levees and floodwalls. These critical areas include: transition points (where levees transition into any hardened features such as other levees, floodwalls, and pump stations), utility pipeline crossings, floodwall-protected side slopes, and earthen levees that are exposed to wave and surge overtopping during a 500-year hurricane storm event. The proposed method of armoring could be one of the following: cast-in-place reinforced concrete slabs; articulated concrete blocks (ACB) covered with soil and grass; turf reinforcement mattress (TRM); ACB/TRM; TRM/grass; or good grass cover. The armoring would be incorporated into the existing levee or floodwall footprint and no additional environmental impacts would be anticipated.

Construction-Related Information for Proposed Action

Construction of the proposed action could begin in early 2009, and the construction activities would be expected to last for 18 months to 36 months (approximately 1.5 years to 3 years). A significant amount of construction equipment would be required to conduct the work, including bulldozers, hydraulic cranes, mechanical cranes, hydraulic excavators, welders, 45,000-lb trucks, concrete pump trucks, rollers, pile hammers, graders, tractors, front-end loaders, flatbed trucks, and pickup trucks.

Clearing and grubbing activities would be completed before construction of the proposed action could begin. Clearing would consist of the complete removal of all trees, stumps, downed timber snags, brush, vegetation, asphalt, loose stone, abandoned structures, fencing, and similar debris. Trees would be felled in such a manner as to avoid damage to trees left standing or to existing structures. Grubbing would consist of the removal of all stumps, roots, buried logs, old piling, old paving, old foundations, pipes, drains, and other unsuitable matter. All holes caused by grubbing operations would be backfilled with suitable material in 12-inch layers to the elevation of the adjacent ground surface, and each layer would be compacted to a density at least equal to that of the adjoining undisturbed material. All debris resulting from clearing and grubbing operations at the construction site would be removed from the site. Reasonable efforts would be made to channel merchantable material into the commercial market to make beneficial use of materials resulting from clearing and grubbing operations. Remaining debris, including asphalt and crown surfacing from the site, would be disposed of in compliance with all applicable Federal, state, and local laws.

Table 1 provides information on the approximate volumes of materials that would be required for construction of the proposed action at each LPV reach.

**Table 1.
Approximate Volumes of Construction Materials for Proposed Action**

LPV	Earthen Fill (cubic yards)	Concrete (cubic yards)	Sheet Piling (square feet)	H-Piling (linear feet)	Pre-Cast Concrete Pile (linear feet)	Surfacing (cubic yards)	Rock (tons)
101	11,054	9,629	103,077	124,621	12,156	-	1,766
102	20,000	500	-	-	-	1,574	-
103	1,530	6,700	77,000	37,700	6,200	-	-
104	85,000	5,500	10,500	102,000	NA	5,515	-

- Not applicable

For all construction under the proposed action, earthen fill material would be obtained from the Bonnet Carré Spillway, which is located approximately 25 miles to 30 miles from the IER # 4 project area, or from one or more of the borrow areas evaluated in IER # 18, # 19, # 22, # 23, #25, or # 26. Borrow material would be stockpiled as needed along the protected-side of the levee alignment for each reach included in the proposed action. Concrete would likely be transported to the site via mixing truck and pumped on-site. Steel sheet piling, H-piling, and pre-cast concrete pile would likely be shipped into the city from the manufacturer by rail or by barge. Roadway surfacing material and rock would likely be provided by a local supplier and transported via truck to the project site.

Staging areas for the proposed action were indicated in figures 7, 8, 9, and 10. Two staging areas would be utilized for LPV 101 (figure 7). One staging area, of approximately 1 acre, would be near the 17th Street Canal on a vacant sandy lot that has been used for construction-related activities since Hurricane Katrina. A second staging area for LPV 101 of approximately 0.3 acre would be located on the eastern side of Topaz Street in an area covered with turf grass within the existing ROW for the current risk reduction system. LPV 102 would have one staging location (figure 8) of approximately 1.2 acres located on an open area of sand and grass near Lakeshore Drive on the eastern side of Canal Boulevard. Several staging areas totaling approximately 12 acres are proposed for LPV 103 (figure 9). The staging areas for LPV 103 are located on the

north side of Lakeshore Drive and adjacent to Bayou St. John in between Robert E. Lee Boulevard and Lakeshore Drive. One staging area of about 2.3 acres would be located on an asphalt paved parking lot on the eastern end of the LPV 104 reach (figure 10).

Truck access to the project sites would be via Interstate 10 (I-10) or Interstate 610 (I-610) to a variety of north/south roads (e.g., Fleur de Lis Drive, Pontchartrain Boulevard, Canal Boulevard, Wisner Boulevard, St. Bernard Avenue, Paris Avenue, Elysian Fields Avenue, Franklin Avenue, Press Drive, etc.) to Lakeshore Drive.

2.4 ALTERNATIVES TO THE PROPOSED ACTION

No Action Alternative

For each levee reach, floodwall, flood gate, and ramp within the IER # 4 project area, the no action alternative was evaluated. Under the no action alternative, the current levee reaches, floodwalls, floodgates, associated structures, and ramps would remain at, or be brought to, the previously authorized heights. No increases above the previously authorized heights would occur. Certain components of the IER # 4 HSDRRS could be raised to previously authorized heights under the no action alternative; however, these changes would require additional ROW (not previously authorized) to meet current design specifications.

Alternatives for LPV 101

Alternative 1a and 1b LPV 101 – West End Levee

Two additional alternatives were considered for the west end levee. Under these alternatives, (1a) the existing levee would be raised to an elevation of 18.5 ft plus overbuild, with a flood side shift or (1b) the existing levee would be raised to an elevation of 18.5 ft plus overbuild in a straddle configuration (levee footprint growth would be equally distributed on both the flood and protected sides of the levee).

Alternative 2 LPV 101 – Gate L4

Under this alternative, gate L4 would be demolished and replaced in its current location to an elevation of 16 ft. The existing floodwalls adjacent to gate L4 (running along both sides of Pontchartrain Boulevard.) also would be demolished and replaced with new T-walls to an elevation of 16 ft.

Alternative 3 LPV 101 – Levee Reach South of Topaz Street to Gate L5

Under this alternative, the existing levee embankment would be increased from an elevation of 12.5 ft to 17.5 ft plus overbuild in a straddle configuration; no additional ROW would be required and retaining walls would likely be constructed to minimize the levee footprint due to space restrictions.

Alternatives for LPV 102

Alternative 1 LPV 102 – Gate across Canal Boulevard

Under this alternative, new miter gates would be constructed across Canal Boulevard for a total elevation of 19 ft; however, the gate itself would be approximately 6 ft high. The northwest closure structure would consist of a T-wall with two gates.

Alternatives for LPV 103

Alternative 1 LPV 103 – Raise Lakeshore Drive Ramps

Under this alternative, the Lakeshore Drive ramps west of Rail Street and west of London Avenue Canal would be raised to an elevation high enough that the entire paved section, including base course, would be above the required levee elevation of 19 ft, plus overbuild at the gutter of the road, the lowest point on the top of the ramp (figure 11). The centerline elevation at the crest of each ramp as it crosses the centerline of the risk reduction system would be 21.3 ft. The footprint length of the raised ramps would increase in length 300 ft to 600 ft from existing conditions to account for construction using current design requirements and the required increase in height. The increased height of the Lakeshore Drive ramp at Rail Street would require Rail Street to be raised from the entrance of the residential neighborhood to its intersection with Lakeshore Drive. Similarly, the increased height of the Lakeshore Drive ramp west of London Canal would require both Lake Terrace Drive and Pratt Drive to be raised adjacent to Lakeshore Drive. The changes in the footprints to these ramps would require that additional ROW be acquired.

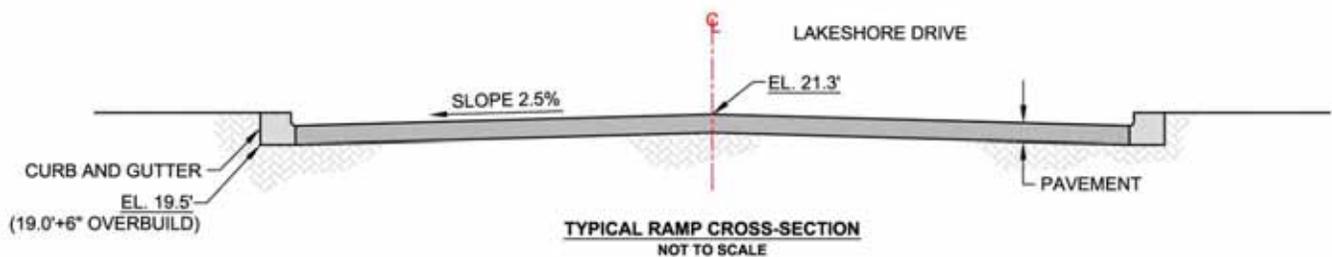


Figure 11. Alternative 1 LPV 103

Alternative 2 LPV 103 – Levee with Sluice Gate at Bayou St. John

Under this alternative, a 26.5 ft levee with a culvert and sluice gate (for control of flow) would be constructed across Bayou St. John on the lake side of Lakeshore Drive. The existing gate and associated features would be left in place. The extent of the levee and location of the sluice gate across Bayou St. John is shown in figure 12.

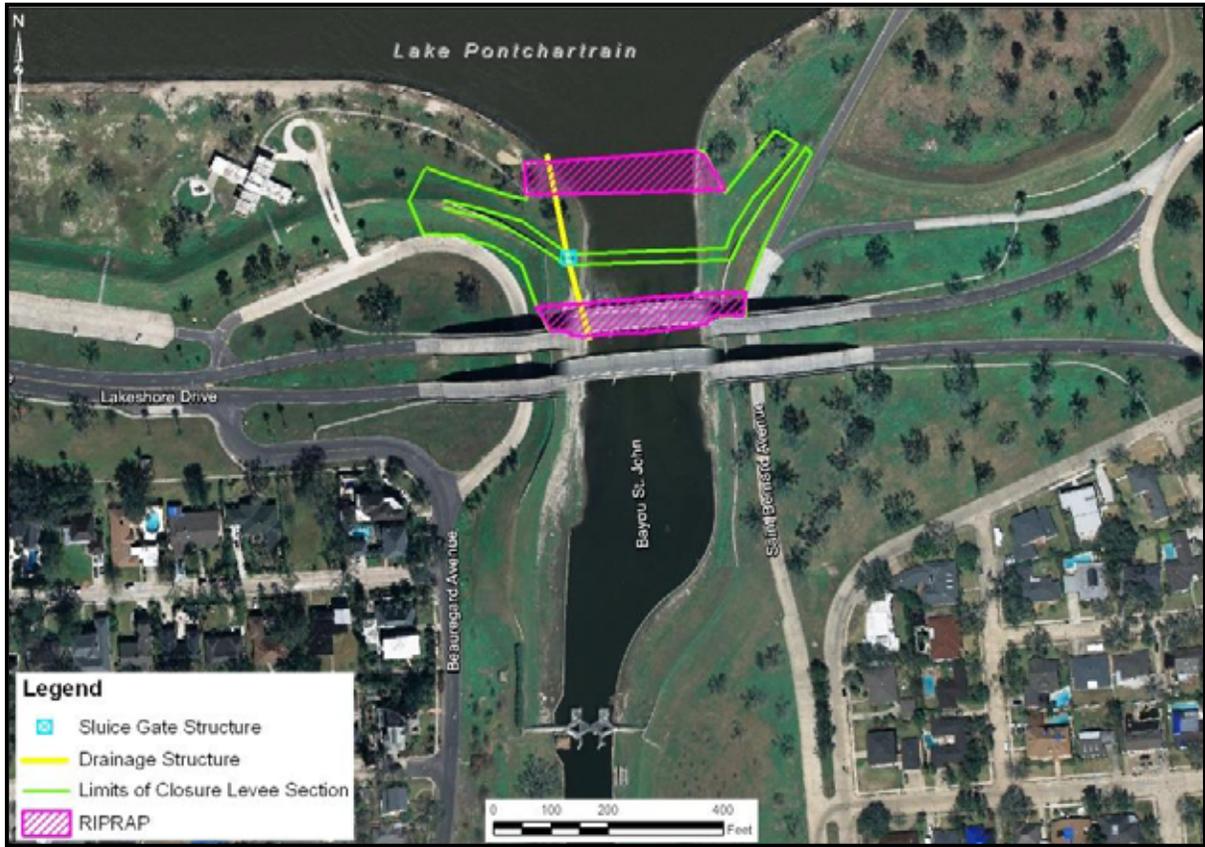


Figure 12. Alternative 2 LPV 103

Alternative 3 LPV 103 – Sector Gate across Bayou St. John

Under this alternative, a 20-ft-wide sector gate, with an adjacent sluice gate (for control of flow) and T-wall tie-ins to the levee system, would be constructed across Bayou St. John on the north side of Lakeshore Drive (figure 13). The existing gate and associated features would be left in place

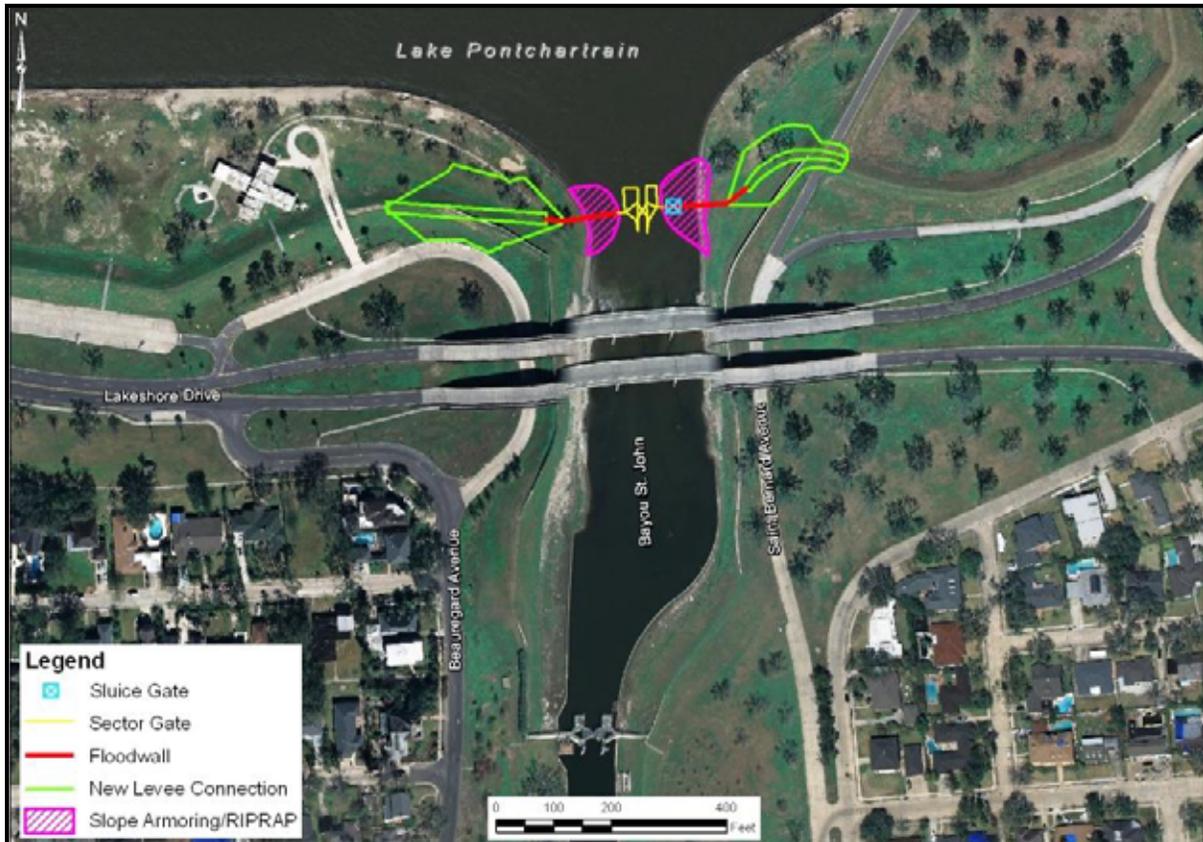


Figure 13. Alternative 3 LPV 103

Alternatives for LPV 104

Alternative 1 LPV 104 – Gates Along Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive

Under this alternative, new gates would be constructed at the Franklin Avenue ramp and also across Lakeshore Drive, east and west of the UNO Research Park and Leroy Johnson Drive. The new structures on the ramps would have a completed total elevation of 19 ft; however, the gates themselves would be approximately 4 ft high.

Alternative 2 LPV 104 – Modification of Gate L10

Under this alternative, gate L10 would be modified with a steel plate along the top to stiffen the girder to meet current design standards.

Alternative 3 LPV 104 – Modification of Gate L11

Under this alternative, gate L11 would be demolished and reconstructed in its original location to an elevation of 16.5 ft.

Alternative 4 LPV 104 – Reconstruction of Gate W39

Under this alternative, gate W39 (across railroad tracks) would be demolished and reconstructed in its original location to an elevation of 18 ft.

2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The following alternatives were eliminated from further consideration because they did not adequately meet the screening criteria.

Hollow Core Levee – LPV 101, 102, 103, and 104

A hollow core levee was considered as a replacement for all of the existing levees within each LPV reach, but was eliminated from further consideration. The concept of the hollow concrete levee system is such that the section fills with water from the bottom as the storm surge rises. The combined weight of the concrete frame and its water filled voids inside the frame result in a gravity structure that is designed to resist hydrostatic forces and impact forces from vessel collision.

The hollow concrete levees would be comprised of trapezoidal shapes similar to that of earthen levees. The levee superstructure sections would be comprised of sloped side walls with a flat bottom slab with access to the interior via steel grating or manholes in the crest. Water inlets or ports would be incorporated into the cross section near the levee base on the flood side to allow the section to flood with water to contribute to the overall weight for stability purposes. Shear keys in the base were designed to protect against sliding under design loading conditions. The substructure consists of a concrete base slab or pad that would be supported by steel pipe piles. Excavation and granular backfill would be required to construct the pile supported concrete pad. The concrete base slab serves a two-fold purpose. It distributes loads to the pile foundations as well as serves as a “roadway” for cast-in-place construction. A typical section is shown in figure 14.

The incorporation of a hollow core levee was eliminated from further consideration because it would not be advantageous to use in lieu of a traditional reinforced levee section. The existing (authorized) levees in this part of Orleans Parish are deficient by only about 3.5 ft. Therefore, degrading an existing levee and replacing it with a concrete levee section would not be cost effective. A concrete levee section would be considered in areas in which obtaining borrow material is a concern. However, in Orleans Parish, borrow material can be easily obtained from the Bonnet Carré Spillway. A concrete levee would also be more beneficial in areas in which the levee height (25 ft to 40 ft) and wave/stability berms produce a very large footprint.

Relocation of a Portion of the Floodwall to the Marina Harbor Seawall – LPV 101

As part of the initial engineering evaluations, relocation of a portion of the floodwall along Lake Marina Avenue to the marina harbor seawall was considered, but eliminated from detailed impact analysis. The new T-wall would be constructed to an elevation of 16 ft and would serve the dual purpose of raising the hurricane risk reduction level and replacing the deteriorating seawall. However, this alternative was eliminated from further consideration based on engineering complexity, excessive costs, and the impacts to the marina and associated parking lots.

Raising Lake Marina Avenue – LPV 101

As part of the initial evaluations, raising Lake Marina Avenue to the required risk reduction level on fill was considered. This alternative was considered in order to reduce the cost of demolishing and rebuilding the floodwall. However, this alternative was eliminated due to additional ROW acquisition needs and problems with access to properties adjacent to the existing avenue.

Maintain Current Floodwall and Gate L4 Alignment at Pontchartrain Boulevard – LPV 101

As part of the initial evaluations, removal and replacement of the floodwalls along Pontchartrain Boulevard and gate L4 on the existing alignment was considered. This alternative was considered in order to preserve the original risk reduction alignment. However, this alternative was eliminated due to excessive cost, greater impacts during construction on traffic and adjacent property, and increased maintenance requirements.

Breakwater at Bayou St. John – LPV 103

As part of the initial evaluations, in conjunction with the proposed action (demolish the I-walls along the canal and replace them with T-walls at an elevation of 18.5 ft and retrofit the existing closure structure to an elevation of 19 ft) a new breakwater that would extend from the shore into Lake Pontchartrain was considered for the mouth of Bayou St. John. The breakwater would be constructed to an elevation of 14 ft. This alternative was eliminated from further evaluation due to excessive costs with no significant additional benefits, as well as potential environmental impacts to Gulf sturgeon critical habitat.

Modification of Gates L10, W39, and W40 – LPV 104

As part of the initial investigations, replacement of gate L10 with a new gate was considered. This alternative was eliminated because this gate provides access to the Naval Reserve Center, which is scheduled to be demolished and eliminating it would reduce building and maintenance costs to the Orleans Levee District. Accordingly, this alternative was abandoned. As part of the initial evaluation, modification of gates W39 and W40 was considered but eliminated from detailed impact analysis. The existing elevation of these gates is 14 ft; the gates would need to be raised 4.5 ft and 2.5 ft, respectively. Therefore, modification of the existing gates was not considered a practical alternative.

Replace American Standard Floodwall with New Floodwall/Levee – LPV 104

As part of the initial evaluation, two alternatives were considered: (1) demolition and replacement of the floodwall, and (2) replacement with a levee section. The replacement option was eliminated due to the fact that the existing floodwall exceeds the 100-year standard at 18.5 ft. The levee option was eliminated because of the loss of adjacent buildings and storage areas and the higher level of risk reduction provided by the existing structures.

Replace Pontchartrain Beach Floodwall and Gates with New Floodwall/Levee – LPV 104

Removal of the floodwall and gates (L9, A-C) and replacement with a floodwall or levee was considered as an alternative for the Pontchartrain Beach portion of LPV 104. Removal and replacement of the floodwall and gates with a new floodwall was eliminated from further evaluation because the existing height of the floodwall and gates exceed the 100 year standard at 18.5 ft and the gates could be modified to meet the current design criteria. The removal and replacement of the gates and floodwall by earthen levees was also eliminated because the current authorized structures provide a higher level of risk reduction than earthen levees built to the 100-year level of risk reduction, and the construction of earthen levees would require an additional 89,100 cubic yards of material.

Non-Structural Alternatives

Section 73 of the WRDA of 1974 requires consideration of nonstructural alternatives in flood damage reduction studies. ER 1105-2-100 provides the following planning guidance on applicable nonstructural measures. Nonstructural measures can be considered independently or in combination with structural measures (USACE 2000). Nonstructural measures reduce flood damages without significantly altering the nature or extent of flooding. Damage reduction from nonstructural measures is accomplished by changing the use made of the floodplains, or by accommodating existing uses to the flood hazard. Examples are flood proofing, relocation of structures, flood warning and preparedness systems (including associated emergency measures), and regulation of floodplain uses. Orleans Parish already has a flood warning system and evacuation plan in place, and regulation of floodplain uses is addressed by the National Flood Insurance Program. Therefore, only flood proofing and relocation were considered as nonstructural measures. The flood-proofing, nonstructural measures evaluated in this analysis are to raise place existing structures and the acquisition and relocation of structures, which is defined as a buyout or permanent physical relocation.

Raise in Place

Flood proofing would require elevating all residential and commercial properties subject to flooding in the study area above the expected levels of flooding. This alternative would also have to consider elevating roadways, public buildings, and some forms of public infrastructure that would need to continue operations during and after a storm event. Some facilities, such as roadways and railroads, might remain at grade when repair from storm damage would be less costly than the construction, operation, and maintenance of them on elevated structures. The average cost of elevating residential structures in the study area has been estimated at approximately \$95 per square foot (USACE 2007a). This includes the cost of administration, design, inspection, costing, project management, and all other associated costs of elevating the structures, as well as the costs of the occupants of the residential structures being relocated to temporary housing during the time period that the structures are being elevated. Within the eight Orleans Parish planning districts that are located within the area bounded by Lake Pontchartrain, Jefferson Parish, the Mississippi River, and the IHNC, there were 70,896 homes damaged by flooding from Hurricane Katrina (U.S. Department of Housing and Urban Development 2006). The \$95 per square foot average cost results in a cost of approximately \$152,000 to raise a 1,600 square-foot residence above the expected level of flooding. Using these assumptions, the cost to elevate all of the residences in the study area damaged from flooding by Hurricane Katrina would be approximately \$10.8 billion.

Other costs associated with flood proofing would include elevating non-residential buildings, roads and railroads, and other infrastructure. No information is available on the cost of elevating commercial, industrial, and public buildings because these buildings are so different from one another that information would have to be developed for each individual building. However, it

can reasonably be expected that it would equal the cost associated with elevating the residential structures, and bring the total estimated cost to more than \$20 billion.

Elevating the roadways would be equivalent to converting all roadways and railroads to bridges. The costs for repairing all roads and railroads would be much more reasonable, and these costs were estimated based on highway design assumptions and current unit prices. A nonstructural alternative that left roads and railroads at existing elevations would mean they would have to be repaired after each storm event. Costs for repairing two-lane asphalt roads with shoulders were estimated at \$400,000 per mile. There are approximately 1,432 miles of two-lane roads in Orleans Parish. About 80 percent of the roads in Orleans Parish were flooded during Hurricane Katrina. Therefore, repair costs would be \$458.2 million for each storm event that exceeded the level of flood risk reduction. Repair costs were estimated at \$800,000 per mile for four-lane divided roadways with shoulders. There are approximately 398 miles of four-lane roadways in Orleans Parish. The cost of repairs to the four-lane roadways would be \$254.7 million for each storm event that compromised hurricane protection. Repair costs to railroads were calculated for the 114 miles of railroad in Orleans Parish. Railroad repair costs were estimated at \$100 per linear foot. This resulted in railroad repair costs of approximately \$60.2 million for the parish. No information is available on the costs for elevating other infrastructure such as airport facilities, electrical distribution and transmission grids, gas distribution lines, drainage, sewage and water distribution facilities, communication networks, public transit, and waterborne navigation facilities. However, the estimated costs of elevating all flood-prone infrastructure in the study area would likely exceed \$20 billion, which would be much more than the costs of other structural alternatives. Therefore, this alternative was eliminated from further consideration.

Real Estate Acquisition and Relocation Assistance

Public acquisition of properties in areas subject to flooding can also reduce damages from storms and hurricanes. Acquisition of these properties as part of a Federal project and for projects where there is Federal financial assistance in any part of project costs would be subject to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 United States Code (USC) Section 4601, et seq., as amended (the Relocation Assistance Act). Accordingly, the displacement of individuals, families, businesses, farms, and non-profit organizations would have to be organized and a system established to minimize the adverse impacts on displaced persons.

There are several options that could be offered for the acquisition and relocation alternative: sale of the site and home or commercial structure to the local sponsor for demolition, sale of the site to the local sponsor and relocation of the structure to a comparable site outside the area of flooding, or relocation of the displaced persons to a comparable home or business outside the area of flooding. In addition to compensation for real property, displaced persons could be eligible for expenses for moving themselves and their personal or business-related property, costs of property lost as a result of moving or discontinuing a business, expenses in searching for a replacement business or farm, and necessary expenses for reestablishment of a displaced farm, nonprofit organization, or small business at its new location. However, the estimated costs for real estate acquisition and relocation assistance for all flood-prone infrastructures in the study area would exceed the costs of structural alternatives. Therefore, this alternative was eliminated from further consideration.

2.6 SUMMARY TABLE

Table 2 provides a summary of the preliminary alternatives screening results.

**Table 2.
Preliminary Alternatives Screening Results**

Alternative	LPV 101	LPV 102	LPV 103	LPV 104
No Action	☑	☑	☑	☑
Non-Structural	X	X	X	X
Hollow Core Levee	X	X	X	X
Earthen Levee	☑	-	☑	☑
Earthen Levee with T-wall Floodwall Cap	☑	-	-	-
Addition of Breakwaters	-	-	X	-
New Floodwall (T-wall/L-wall)	☑	-	☑	☑
Modification of Existing Floodwalls	X	-	☑	☑
New Gates (Vehicular/Pedestrian)	☑	☑	☑	☑
Modification of Existing Gates	X	-	☑	☑
Elimination of Gates	☑	-	-	☑
New Flood Control Structures	-	-	☑	-
Modification of Existing Flood Control Structures	-	-	☑	-
Roadway Modifications (Ramps)	X	☑	☑	☑

X = eliminated from further study or not considered for all components of the LPV reach.

☑ = considered in detail for at least one component of the LPV reach.

- = not applicable – this alternative was not formulated for this reach.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 ENVIRONMENTAL SETTING

General

The IER # 4 project area is situated along the south shore of Lake Pontchartrain in the northeastern portion of the Mississippi River deltaic plain (figure 15). The project area and existing levee system runs along the south shore of Lake Pontchartrain within Orleans Parish. The existing risk reduction system proposed for amendment as part of the IER # 4 project begins immediately east of the 17th Street Canal and continues eastward to the west side of the IHNC.

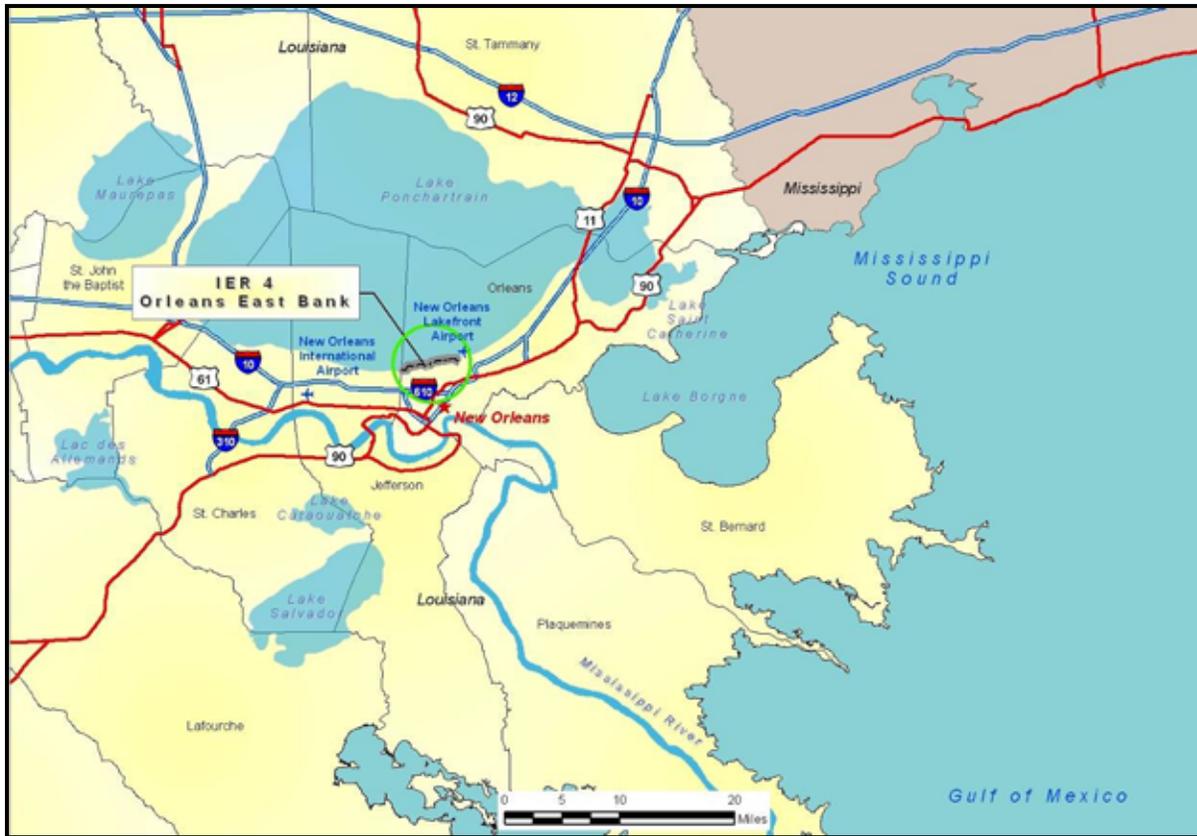


Figure 15. Regional Map of the IER # 4 Project Area (2005)

Climate

Orleans Parish is located within a subtropical latitude. The climate is influenced by the many water surfaces of the nearby wetlands, rivers, lakes, streams, and the Gulf of Mexico. Throughout the year, these water areas affect the relative humidity and temperature conditions, decreasing the range between the extremes. Summers are long and hot, with an average daily temperature of 82 degrees Fahrenheit (°F), average daily maximums of 91°F, and high average humidity. Winters are influenced by cold, dry polar air masses moving southward from Canada, with an average daily temperature of 54°F and an average daily minimum of 44°F. Annual precipitation averages 54 inches.

Geology and Soils

Dominant physiographic features in the vicinity of the project area include Lake Pontchartrain, the lakefront levee, and the outfall canals. The natural surface environment of Lake Pontchartrain has been altered by artificial filling and forced drainage to allow for land development.

The shallow subsurface is composed of approximately 15 ft of material fill from Lake Pontchartrain. Fill deposits contain sand, silt, and clay. Fill deposits overlay lacustrine deposits except near the 17th Street Canal where they overly approximately 10 ft of swamp deposits before entering lacustrine deposits. Lacustrine deposits are approximately 20 ft thick and are characterized by soft to medium clays with some silt and sand layers and shells. Swamp deposits are mainly very soft to medium organic clays and clays with peat and wood. Beach deposits are

located beneath lacustrine deposits and are approximately 5 ft to 30 ft thick, generally becoming thicker toward the east. Beach deposits are related to the Pine Island Beach Ridge and are generally composed of silty, fine sand, and sand with shells. Beach deposits overlay 10 ft to 30 ft of bay-sound deposits, which are characterized by soft to medium clays, silts, and some sand containing shell fragments. Pleistocene deposits are located beneath bay-sound deposits at an approximate elevation -60 ft NAVD88. These deposits are mainly stiff to very stiff, oxidized clays, silts, and sands.

The study area contains Aquents soils, which are poorly drained soils of hydraulically dredged material and are stratified and clayey to mucky throughout (US Soil Conservation Service 1989). Groundwater is artificially lowered in the project area by forced drainage.

Long-term relative subsidence, resulting mainly from compaction of Holocene sediments and possibly from movement on the downthrown side of growth faults, is estimated at 0.5 ft per century. Eustatic sea level is predicted to rise an additional 1.3 ft over the next century (Intergovernmental Panel on Climate Change 2001). Therefore, the natural, long-term, relative subsidence rate at the project site is estimated to be 1.8 ft per century. Ground subsidence related to artificial lowering of the water table far exceeds the natural rate of subsidence and is estimated at several feet in areas south of the project site.

Hydrology

The proposed project area is situated within the Lake Pontchartrain Basin, a watershed covering 4,700 square miles (mi²) in southeast Louisiana and southwest Mississippi. The basin is within the coastal zone delineation and, therefore, regulated under the Louisiana State and Local Coastal Resources Management Act of 1978. The areas potentially affected by the IER # 4 project are close or immediately adjacent to the current levees, floodwalls, and gates along 5 miles of the Lake Pontchartrain shoreline in Orleans Parish. Project activities for the alternatives considered would occur mainly at the current locations of the levees and other components of the flood risk reduction system within the IER # 4 project area, which are near but do not adjoin the shoreline of Lake Pontchartrain.

The project area is bound by the 17th Street Canal on the west, urban development and the Mississippi River to the south, the IHNC on the east, and Lake Pontchartrain to the north. Lake Pontchartrain is an oval-shaped, low-salinity estuary approximately 12 ft deep with a water surface area of 640 mi². Water depths within 350 ft of the shoreline are less than 3 ft (U.S. Geological Survey [USGS] 1998) and the water is less than 10 ft deep 2,700 ft to 4,000 ft from the shoreline in the project area. The hydrology of the area has been severely altered from its original state and is currently defined by Lake Pontchartrain, Bayou St. John, and several drainage canals that move water (via pumping stations) from the urban areas located south of the lake. The primary hydrological features within the IER # 4 project area are shown in figure 16.

Lake Pontchartrain connects to the Gulf of Mexico via the natural tidal passes at Rigolets Strait (The Rigolets). The lake also connects to Lake Borgne and the IHNC and into the MRGO via the Chef Menteur Pass. The lake receives freshwater drainage from Lake Maurepas to the west, via North Pass and Pass Manchac, and from multiple rivers and streams that empty into its north shore. Pumping stations are required within the project area to pump water from the south into the lake.



Figure 16. Hydrologic Features of the IER # 4 Project Area

Hurricane Katrina and On-going Construction Activities

On 29 August 2005, Hurricane Katrina made landfall near Buras on the Louisiana Coast, east of New Orleans. The water level of Lake Pontchartrain rose to 7 ft, affecting all of the surrounding coastal areas. The storm crossed southeastern Louisiana, approximately 15 miles east of Orleans Parish, with wind gusts reaching 100 miles per hour (mph) to 125 mph. Floodwaters entered Orleans Parish in the vicinity of the project area through breaches in floodwalls/levees along the 17th Street Canal, the London Avenue Canal, and the IHNC, south of the lakefront levee system.

On 27 September 2005, Hurricane Rita hit the western part of Louisiana and the storm surge inflicted additional damage on the area, re-flooding areas prior to making landfall near the Texas-Louisiana border. The damages to Orleans Parish's residences were widespread, and at least 10 of the 29 historic districts in the parish suffered extensive damage from flooding. As part of the USACE HSDRRS Program, approximately 30 contracts for construction work to repair, construct, and raise levees and flood control structures in the metropolitan portion of Orleans Parish, west of the IHNC, have been created. Fourteen of these contracts have been awarded, and 11 of those have been completed or are near completion. Contract status can be viewed at http://www.mvn.usace.army.mil/hps/hps_contract_info.html.

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 would be impacted, directly or indirectly, by the alternatives. Direct impacts are those that would be caused by the action taken and occur at the same time and place (40 CFR 1508.8(a)). Indirect impacts are those that would be caused by

the action and would occur later in time, or removed in distance, but are reasonably foreseeable (40 CFR 1508.8(b)). Cumulative impacts are discussed in section 4.

The resources described in this section are those recognized as significant by laws, executive orders, regulations, and other standards of national, 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 3 shows those significant resources found within the project area, and notes whether they would be impacted by any of the alternatives analyzed in this IER.

**Table 3.
Significant Resources in Project Study Area**

Significant Resource	Impacted	Not Impacted
Lake Pontchartrain/Canals	X	
Bayou St. John	X	
Fisheries	X	
Essential Fish Habitat	X	
Wildlife	X	
Threatened and Endangered Species		X
Non-wet Uplands		X
Cultural Resources	X	
Recreational Resources	X	
Aesthetic (Visual) Resources	X	
Air Quality	X	
Noise	X	
Transportation	X	
Socioeconomic Resources		
Land Use, Population, Employment	X	
Environmental Justice		X*

* Using presently available data on racial, ethnic, or socioeconomic status in the area. Some data insufficiencies were identified and are discussed in section 1.6, Data Gaps and Uncertainty.

3.2.1 Lake Pontchartrain/Canals/Bayou St. John

Existing Conditions

As discussed previously in regard to hydrology (section 3.1) and as shown in figure 16, several canals and Bayou St. John are part of the IER # 4 project area or border the project area. The canals are man-made canals that provide drainage from the urban areas south of the project area into Lake Pontchartrain. (The canals are described and evaluated in IER # 5.) The network of these structures illustrates the highly manipulated hydrology of the project area. Bayou St. John is the only major natural waterway occurring within the project area. The canals and Bayou St. John provide suitable habitat for many aquatic species and could provide a conduit for aquatic

species to move from the south side of the levees to the north side of the levees and into Lake Pontchartrain.

Bayou St. John passes through the center of the City of New Orleans. It originates in mid-city New Orleans, north of downtown, and travels north for approximately 4 miles to its confluence with Lake Pontchartrain. The bayou historically served as a natural drainage for lands north of the Mississippi River into Lake Pontchartrain. Its current width varies from 700 ft to 200 ft (Orleans Levee District 1996). The alternatives evaluated within this IER would occur where Bayou St. John meets Lake Pontchartrain. Lake Pontchartrain, Bayou St. John and the canals are Waters of the United States (WoUS) (as defined by 33 CFR 328) and Navigable Waters of the United States (NWUS) (as defined by 33 CFR 329) and are under the jurisdiction of the USACE. Dredge and fill activities in the lake or canals require compliance with Section 404 of the Clean Water Act (33 USC 1344). Additionally, Bayou St. John is designated as a Historic and Scenic River by Louisiana State legislation (Louisiana Scenic Rivers Act of 1976, amended 1988, No. 947, Section 1). Any modification or alteration of the bayou would require a permit review.

The shoreline of the lake in the project area alternately consists of rock riprap, sand, turf grass, and paved/developed surfaces. The area behind the shoreline is heavily developed, with roads, infrastructure, marinas, levees, floodwalls, and other hurricane risk reduction features beginning from 0 ft to 50 ft from the waters of Lake Pontchartrain, the canals, and Bayou St. John. These developed and armored shorelines do not allow for transitional wetland areas that would provide many ecological functions, such as production of detritus, reduction of turbidity, filtration of nutrients/contaminants, and fish nursery habitat.

Water circulation and water levels in Lake Pontchartrain are controlled by tidal action at the tidal passes, freshwater inflows from upstream drainage areas, and wind. The greatest volume of water contributed to the lake is from the Rigolets (USACE 1984). The salinity of the lake varies significantly from less than 1 part per thousand (ppt) in the northern portion of the lake to levels over 20 ppt within a high salinity plume that enters the lake from the IHNC. The average salinity of Lake Pontchartrain is approximately 4.9 ppt (Georgiou and McCorquodale 2002).

Bayou St. John and the canals in the project area receive water from precipitation and a small amount of tidal action from Lake Pontchartrain. These waterways are highly influenced by forced drainage features and flood risk reduction measures that move water from the south into Lake Pontchartrain and prevent the movement of water from the lake south during storm events. The existing sector gate on Bayou St. John is maintained in the closed position; however, the sluice gate adjacent to the sector gate (on the western side) is opened and closed manually to manage water levels within the bayou.

Elevation is another contributing factor to the hydrology of Bayou St. John. Due to the dewatering of the lands behind the HSDRRS and their subsequent subsidence, the bayou is lower in elevation than Lake Pontchartrain, resulting in an overall north-to-south direction of flow and the input of brackish water from the lake into the bayou. The primary water sources for Bayou St. John are Lake Pontchartrain waters, which enter the bayou through the open sluice gate, direct precipitation, and limited runoff.

Salinity data collected from three locations on Bayou St. John (all north of Robert E. Lee Blvd.) between February and May 2001 revealed an average surface salinity of 7.5 ppt (New Orleans Museum of Art 2002). Similarly, salinity measurements taken in 2001 from the Louisiana Department of Environmental Quality (LaDEQ) Watershed Planning Division Bayou St. John Station (number 305), which is located at Filmore Avenue approximately 1 mile south of both Lakeshore Drive and the existing sector and sluice gates, ranged from 5.2 ppt to 8.3 ppt (U.S. Environmental Protection Agency [USEPA] 2008a). During sampling conducted in 1995, salinity gradually increased from August 25th through October 26th due to a lack of rainfall and

decreased from October 26th through November 14th due to rainfall (Orleans Levee District 1996). During this 1995 salinity study, readings taken from the north side (lake side) of the existing sector gate south to the Orleans Avenue bridge gradually decreased from a range of 4 ppt to 7.3 ppt (north of the existing sector gate) to a range of 2.8 ppt to 3.0 ppt (at the Orleans Avenue bridge) (Orleans Levee District 1996). However, a study conducted in 2001 (New Orleans Museum of Art 2002) did not indicate a similar decrease from the north to the south end of the bayou. Salinity ranged from 5.7 ppt to 8.4 ppt on the lake side of the existing sector gate to 7.5 ppt to 8.3 ppt at the Orleans Avenue bridge in 2001 (New Orleans Museum of Art, 2002).

The water quality in the project area is impacted by storm water runoff from the adjacent urban development and is listed as impaired by the state based on levels of total and fecal coliform levels (USEPA 2008). Water quality in Bayou St. John is listed as not supporting its designated use for primary contact recreation and only partially supporting its designated uses for secondary contact recreation, outstanding resource, and fish and wildlife propagation (Louisiana Department of Environmental Quality [LaDEQ] 2006).

The lake bottom in the project area is composed of fine-grained materials, including abundant shell hash and some intact clams (Flocks et al. 2002), and clay (Gulf of Mexico Fishery Management Council [GMFMC] 2006).

Discussion of Impacts

Future Conditions with No Action

Without implementation of the proposed action, there would be no activities involving construction or modification of the existing levees, floodwalls, gates, and roadway ramps in the four LPV reaches beyond what are currently authorized for the HSDRRS. Effects on the water and habitat of Lake Pontchartrain, Bayou St. John, and canals would not differ substantially from those described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

The proposed action along LPV 101 requires demolition of the existing floodwalls and gates and their replacement with new T-walls and/or gates in approximately the same locations. In addition, new T-walls would be built on top of the existing levees on the east and west ends of the reach. The structures would have similar footprints and placements as the existing structures. The 17th Street Canal borders the western end of LPV 101.

Direct Impacts

The primary impacts from these actions would be related to demolition and construction. Materials required for the LPV 101 improvements would be placed in a staging area on the west side of West Roadway St. and on the north side of the existing levee. This area is a sandy lot that formerly was used as a baseball park and recently was disrupted for reconstruction work. Water may collect in the southern portion of this lot near the levee during storm events. Materials placed in this area would have no direct impact to Lake Pontchartrain or the 17th Street Canal. Demolition and construction of the floodwalls and gates would occur primarily on developed land and would not directly impact waters or substrates of the lake or canal.

Indirect Impacts

Construction activities associated with the proposed action such as placement of materials in the proposed staging area could result in a temporary increase in turbidity and a reduction in water quality in the project area (the marina and the 17th Street Canal) during the 1.5 years to 3 years of construction. These impacts would be limited by adherence to regulations governing stormwater runoff at construction sites and the use of best management practices (BMP) to prevent soil erosion, runoff, and sediment transport. These practices, such as the use of silt fences, sediment traps, seeding, and mulching, would reduce runoff of storm water and sediment into the canal and lake, thus, decreasing turbidity and water quality impacts.

Cumulative Impacts

Impacts of the proposed action on Lake Pontchartrain and the 17th Street Canal would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the waters or substrates of the lake or canal.

Alternative 1 LPV 101 (West End Levee)

This alternative would include all of the elements of the proposed action, but the west end levee would be raised by expanding the levee footprint (as opposed to using a T-wall cap). This alternative would include a flood-side shift (alternative 1a) or expansion in a straddle configuration (alternative 1b).

Direct Impacts

Direct impacts under this alternative would be similar to the proposed action and would not directly impact Lake Pontchartrain or the 17th Street Canal.

Indirect Impacts

Indirect impacts under this alternative would be similar to the proposed action, potentially resulting in a temporary increase in turbidity and a reduction in water quality in the project area (primarily the 17th Street Canal) during the 1.5 years to 3 years of construction. BMP would be used to reduce storm water runoff into the canal, which would decrease turbidity and water quality impacts.

Cumulative Impacts

Impacts of this alternative on the 17th Street Canal would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the waters or substrates of the canal.

Alternative 2 LPV 101 (Gate L4)

This alternative would include all of the elements of the proposed action, but gate L4 and adjacent floodwalls would be demolished and replaced with new structures in the same footprint as the current structures.

Direct Impacts

Direct impacts under this alternative would be similar to the proposed action and would not directly impact Lake Pontchartrain or the 17th Street Canal.

Indirect Impacts

Indirect impacts under this alternative would be similar to the proposed action, potentially resulting in a temporary increase in turbidity and a reduction in water quality in the project area (primarily Lake Pontchartrain). Such impacts would be limited by the use of BMP and adherence to regulations governing storm water runoff at construction sites, which would decrease turbidity and water quality impacts. Impacts would not continue after construction is completed. Impacts would be temporary, lasting approximately 1.5 years to 3 years, with some effects lasting until the areas have stabilized.

Cumulative Impacts

Impacts of this alternative on Lake Pontchartrain would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the waters or substrates of the lake.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

This alternative would include all of the elements of the proposed action, except that it would include an expansion of the existing levee within two new retaining walls and remaining within the existing ROW.

Direct Impacts

Direct impacts under this alternative would be similar to the proposed action and would not directly impact Lake Pontchartrain or the 17th Street Canal.

Indirect Impacts

Indirect impacts under this alternative would be similar to the proposed action, potentially resulting in a temporary increase in turbidity and a reduction in water quality in the project area (primarily Lake Pontchartrain) during the 1.5 years to 3 years of construction. Construction-related impacts would be limited by the use of BMP and adherence to regulations governing storm water runoff at construction sites.

Cumulative Impacts

Impacts of this alternative on Lake Pontchartrain would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the waters or substrates of the lake.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

The proposed action for LPV 102 would raise the roadway ramp on Canal Boulevard, which would include a slight change in the existing ramp footprint.

Direct, Indirect, and Cumulative Impacts

No impacts to water resources would result from the proposed action.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

No impacts to water resources would result from this alternative.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

The proposed action for the LPV 103 reach includes construction of new T-walls to replace the existing L-walls and T-walls along the banks of Bayou St. John, modifications to the existing Bayou St. John sector gate, construction of new gates on-top of the ramps across Lake Terrace Drive and Rail Street, and strengthening of the Marconi Drive gate by the addition of steel plates to the top of the gate and through the conversion of the adjacent I-walls to L-walls.

Direct Impacts

Construction activities during the proposed action are not expected to directly affect Bayou St. John. Modification of the sector gate structure would occur at the top of the existing structure, and construction of the new T-walls along the bayou would occur behind the existing I-walls, which are 50 ft to 110 ft away from the bayou. As a result, no 401 water quality certification or 404 (b)(1) permitting was pursued. Bayou St. John is a Historic and Scenic River and is protected by Louisiana state law from alteration within the stream or along its banks. Any activities under the proposed action that would occur near the bayou could require a Scenic River Permit. The Louisiana Department of Wildlife and Fisheries (LaDWF) was consulted regarding the potential for the proposed action to impact Bayou St. John and require a Scenic River Permit. In a letter dated 8 January 2009, the LaDWF Scenic Rivers Program determined that there would be “no negative ecological impacts to Bayou St. John as a result of this project and no Scenic River Permit will be required” (Appendix D).

Indirect Impacts

The proposed action could result in a temporary increase in turbidity and a reduction in water quality in the waters near the project area (Bayou St. John and Lake Pontchartrain) during the 1.5 years to 3 years of construction. These impacts would be largely eliminated by the use of BMP and adherence to regulations governing storm water runoff at construction sites, which would reduce storm water runoff into the lake and bayou, decreasing turbidity and water quality impacts.

Cumulative Impacts

Potential cumulative impacts on Lake Pontchartrain would involve the combined effects on the lake from the multiple LPV flood control projects in the New Orleans area. The proposed action at LPV 103 would be unlikely to contribute to adverse cumulative impacts on water resources because the proposed action would not be constructed within Lake Pontchartrain or Bayou St. John, and BMP would be used to prevent storm water runoff during construction.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

This alternative could result in limited short-term construction-related impacts to Bayou St. John and Lake Pontchartrain during the 1.5 year to 3 year construction period. Adherence to regulations governing storm water runoff at construction sites and the implementation of BMP would limit most construction-related impacts.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

This alternative consists of a 26.5 ft high levee that would occupy a footprint of approximately 205 ft by 315 ft across the mouth of Bayou St. John. This closure structure would have one culvert with a sluice gate.

Direct Impacts

This alternative would permanently impact about 1.5 acres of bayou bottom and surface water area through construction of the structure. Temporary impacts to water quality and hydrology would occur as a result of coffer damming that would be required during construction. Bayou St. John is a Historic and Scenic River that is protected by Louisiana State law from alteration within the stream or along its banks. Any activities under this alternative that would occur near the bayou would require a Scenic River Permit.

Indirect Impacts

Potential indirect impacts from this alternative would primarily consist of effects from increased turbidity in Lake Pontchartrain and Bayou St. John as a result of construction-related runoff. However, these impacts would be minimized through the use of BMP and adherence to regulations governing storm water runoff at construction sites.

Cumulative Impacts

Potential cumulative impacts on the bayou and lake would involve the combined effects on the lake from the multiple LPV flood control projects in the New Orleans area. However, several projects, such as the authorized MRGO deep-draft deauthorization and several proposed or recently approved wetland restoration projects, would positively impact the habitat within Lake Pontchartrain.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

This alternative requires that a portion of Bayou St. John near Lake Pontchartrain be filled with earthen fill and a concrete and metal sector gate structure (approximately 195 ft by 130 ft at its widest and longest points, respectively) be constructed north of Lakeshore Drive at the mouth of the bayou. This sector gate would operate similar to the existing sector gate, and would also have an adjacent sluice gate similar to the existing gate for water control.

Direct, Indirect, and Cumulative Impacts

Impacts for this alternative would be very similar to those described for alternative 2 for LPV 103. There would be up to 1 acre of bayou bottom and associated water column replaced by the construction of the new structure and temporary impacts to water quality and hydrology would occur as a result of coffer damming that would be required during construction. Bayou St. John is a Historic and Scenic River that is protected by Louisiana state law from alteration within the

stream or along its banks. Any activities under this alternative that would occur near the bayou could require a Scenic River Permit.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

The proposed action includes the demolition and construction of gates and floodwalls and the modification of existing ramps along LPV 104, which begins on the eastern side of the London Avenue Canal, parallel to Lakeshore Drive, and terminates on the western side of the IHNC.

Direct Impacts

The proposed action for LPV 104 would remain primarily within the footprint of the existing structures. Where an increase in the footprint or change in the alignment would occur, it would remain on developed areas adjacent to the structures. No direct impacts to adjacent water bodies would occur from construction of the proposed action.

Indirect Impacts

Potential indirect impacts from this alternative would primarily consist of increased turbidity of water in Lake Pontchartrain as a result of construction-related runoff. However, these impacts would be minimized through the use of BMP and adherence to regulations governing storm water runoff at construction sites.

Cumulative Impacts

Potential cumulative impacts on Lake Pontchartrain would involve the combined effects on the lake from the multiple LPV flood control projects in the New Orleans area. Adverse cumulative impacts from the proposed action on water resources near LPV 104 would be unlikely because BMP would be used to prevent storm water runoff during construction and the proposed action would not be constructed within Lake Pontchartrain or other water resources.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

Impacts on water resources from this alternative would be essentially the same as for the proposed action.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

Impacts on water resources from this alternative would be essentially the same as for the proposed action.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

Impacts on water resources from this alternative would be essentially the same as for the proposed action.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Impacts on water resources from this alternative would be essentially the same as for the proposed action.

3.2.2 Fisheries

Existing Conditions

The waters of Lake Pontchartrain, Bayou St. John, and the canals in the project area are brackish, with variable salinities that range from an average of about 3 ppt to 5 ppt. The low salinity of these waters provides habitat for freshwater fish and also provide nursery and foraging habitat for some marine fish and shellfish. Freshwater fishes that might inhabit areas near the project area are presented by season in table 4. Marine fish that might inhabit areas near the project area are presented by season in table 5. Marine fish do not reproduce in the Bayou St. John habitat but can mature and grow to be very large because food is plentiful with little competition, and energy is not diverted to reproduction (Orleans Levee District 1996)

**Table 4.
Freshwater Fish of Lake Pontchartrain**

Common Name	Scientific Name	Seasonality			
		Spring	Summer	Fall	Winter
Gizzard shad	<i>Dorosoma cepedianum</i>	B	B	P	P
Largemouth bass	<i>Micropterus salmoides</i>	B	P	P	P
Black crappie	<i>Pomoxis nigromaculatus</i>	P	P	P	P
Bluegill	<i>Lepomis macrochirus</i>	P	P	P	P
Blue catfish	<i>Ictalurus furcatus</i>	B	B	P	P
Channel catfish	<i>Ictalurus punctatus</i>	B	B	P	P
White crappie	<i>Pomoxis annularis</i>	P	P	P	P
Warmouth	<i>Chaenobryttus gulosus</i>	P	P	P	P
Redear sunfish	<i>Lepomis microlophus</i>	P	P	P	P
Freshwater drum	<i>Aplodinotus grunniens</i>	P	P	P	P
Spotted sunfish	<i>Lepomis punctatus miniatus</i>	P	P	P	P

P = present, B = breeding season

Sources: Table compiled from Milanés (2002) and Frierson (2002).

**Table 5.
Marine Fish/Shellfish of Lake Pontchartrain**

Common Name	Scientific Name	Seasonality			
		Spring	Summer	Fall	Winter
Spotted seatrout	<i>Cynoscion nebulosus</i>	P	P	P	P
Red drum	<i>Sciaenops ocellatus</i>	P	P	B	B
Southern flounder	<i>Paraichthys lethostigma</i>	P	P	P	B
Bay anchovy	<i>Anchoa mitchilli</i>	B	B	B	B
Spot	<i>Leiostomus xanthurus</i>	P	P	P	B
Black drum	<i>Pogonias cromis</i>	P	P	P	B
Atlantic croaker	<i>Micropogonias undulatus</i>	P	P	P	B
Southern kingfish	<i>Menticirrhus americanus</i>	P	P	P	P
Sheepshead	<i>Coryphaena hippurus</i>	B	P	P	P
Gulf menhaden	<i>Brevoortia patronus</i>	P	P	P	B
Gulf kingfish	<i>Menticirrhus littoralis</i>	P	P	P	P
Blue crab	<i>Callinectes sapidus</i>	B	B	P	P
White shrimp	<i>Penaeus setileus</i>	B	P	P	P
Brown shrimp	<i>Penaeus aztecus</i>	B	P	P	P
Brackish-water clam	<i>Macomia</i> sp.	B	P	P	P

P = present, B = breeding season

Sources: Table compiled from Milanés (2002), Frierson (2002), and Nelson (1992).

Discussion of Impacts

Future Conditions with No Action

Without implementation of the proposed action, there would be no activities involving construction or modification of the existing levees, floodwalls, gates, and roadway ramps in the four LPV reaches beyond what are currently authorized for the HSDRRS. Effects on the fisheries of Lake Pontchartrain, Bayou St. John, and canals would not differ substantially from those described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct Impacts

The primary impacts from these actions would be related to demolition and construction. Materials required for the LPV 101 improvements would be placed in a staging area on the west side of West Roadway Street and on the north side of the existing levee. This area is a sandy lot that was formerly used as a baseball park and is currently being used as a staging area for reconstruction activities. Water may collect in the southern portion of this lot near the levee during storm events. Materials placed in this area would have no direct impact to fisheries habitat within Lake Pontchartrain or the 17th Street Canal. Demolition and construction of the

floodwalls and gates would occur primarily on developed land and would not directly impact fisheries habitat of the lake or canal.

Indirect Impacts

Construction activities associated with the proposed action, such as placement of materials in the proposed staging area, could result in a temporary increase in turbidity and a reduction in water quality in the project area (Lake Pontchartrain and the 17th Street Canal) from construction site runoff. Effects from siltation and suspended sediment in waters adjacent to the project area could affect fish and other organisms by clogging gills, reducing growth rates, and adversely affecting egg and larval development (USEPA, 2003). Alterations in water quality from increased turbidity or sediment loading could also affect fish populations by lowering dissolved oxygen and raising water temperatures. However, with the use of BMP and adherence to regulations governing storm water runoff at construction sites indirect impacts to fisheries would not be expected. Noise that would be generated during project construction would occur on land where it would be attenuated quickly and would be unlikely to impact aquatic receptors. Any indirect impacts that would occur to the fisheries of the lake and canal from the proposed action would be temporary; lasting approximately 1.5 years to 3 years, and most fish species would be able to move to adjacent unimpacted waters.

Cumulative Impacts

Impacts of the proposed action on the fisheries resources of Lake Pontchartrain and the 17th Street Canal would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the fisheries resources of the lake or canal.

Alternative 1 LPV 101 (West End Levee)

Direct Impacts

Expansion of the west end levee as either a flood-side shift or a straddle would not directly impact fisheries resources of Lake Pontchartrain or the 17th Street Canal.

Indirect Impacts

Construction of this alternative could result in a limited, temporary increase in turbidity and a reduction in water quality in the project area (Lake Pontchartrain and 17th Street Canal) from construction site runoff. Effects from siltation and suspended sediment in waters adjacent to the project area could affect fish and other organisms by clogging gills, reducing growth rates, and adversely affecting egg and larval development (USEPA 2003). Alterations in water quality from increased turbidity or sediment loading could also affect fish populations by lowering dissolved oxygen and raising water temperatures. However, these impacts would be greatly minimized through the use of BMP and adherence to regulations governing storm water runoff at construction sites. These impacts would have limited effects on fisheries because of the minimal magnitude and duration of the reduction in water quality in conjunction with the ability of most fish species to move to similar adjacent habitat. Noise that would be generated by construction during the project would occur on land where it would be attenuated quickly and would be unlikely to impact aquatic receptors. The impacts to the fisheries of the lake and canal from the proposed action would be temporary, lasting approximately 1.5 years to 3 years, with some effects lasting until the areas have stabilized.

Cumulative Impacts

Impacts of this alternative on the 17th Street Canal would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the fisheries resources of the canal or Lake Pontchartrain.

Alternative 2 LPV 101 (Gate L4)

Direct Impacts

This alternative would not directly impact fisheries resources of Lake Pontchartrain or the 17th Street Canal.

Indirect Impacts

Construction of this alternative could result in a temporary increase in turbidity and a reduction in water quality in the project area (primarily Lake Pontchartrain) from construction site runoff, which could impact fisheries resources. However, BMP would be used to reduce storm water runoff into the lake, which would largely eliminate turbidity and water quality impacts. The indirect impacts from this alternative to fisheries resources would also be limited based on this feature's location near, but not in, Lake Pontchartrain.

Cumulative Impacts

Impacts of this alternative on the fisheries resource of Lake Pontchartrain would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on fisheries resources.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct Impacts

This alternative would not directly impact fisheries resources within the project area.

Indirect Impacts

Construction of this alternative or placement of materials in the proposed staging area could result in a temporary increase in turbidity and a reduction in water quality in the project area (Lake Pontchartrain and 17th Street Canal) from construction site runoff, which could impact fisheries resources. However, the indirect impacts from this alternative to fisheries resources would be largely eliminated with the use of BMP to reduce storm water runoff and would be limited due to the location of this alternative relative to water and fisheries resources.

Cumulative Impacts

Impacts of this alternative on the fisheries resources of Lake Pontchartrain would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the fisheries of Lake Pontchartrain.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct, Indirect, and Cumulative Impacts

No impacts to fisheries resources would result from the proposed action.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

No impacts to fisheries resources would result from this alternative.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct Impacts

Replacement of the floodwalls, modifications to the Bayou St. John sector gate, addition of gates to ramps, and modifications to the Marconi Drive gate and adjacent floodwalls would not directly impact fisheries resources of Lake Pontchartrain, Orleans Canal, or Bayou St. John.

Indirect Impacts

The proposed action could result in a limited, temporary increase in turbidity and a reduction in water quality in the project area (Lake Pontchartrain, Orleans Canal, and Bayou St. John) from construction site runoff. Effects from siltation and suspended sediment in waters adjacent to the project area could affect fish and other organisms by clogging gills, reducing growth rates, and adversely affecting egg and larval development (USEPA 2003) and alterations in water quality could also affect fish populations. However, these impacts would be largely eliminated through the use of BMP and adherence to regulations governing storm water runoff at construction sites. These impacts would have limited effects on fisheries because of the minimal magnitude and duration of the reduction in water quality in conjunction with the ability of most fish species to move to similar adjacent and unimpacted habitat. Noise that would be generated by the project during construction would occur primarily on land where it would be attenuated quickly and would be unlikely to impact aquatic receptors. The impacts to the fisheries of Lake Pontchartrain, Bayou St. John, and the canal from the proposed action would be temporary, lasting approximately 1.5 years to 3 years, with some effects lasting until the areas have stabilized.

Cumulative Impacts

Impacts of this alternative on the fisheries would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the fisheries resources of the canal or Lake Pontchartrain.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

This alternative could result in fisheries impacts similar to those described for the proposed action at LPV 103.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct Impacts

This alternative would permanently impact 1.5 acres of water bottom and surface water area at the mouth of Lake Pontchartrain in Bayou St. John. The removal of this habitat represents proportionately a very small area of similar aquatic habitat within the expanse of Lake Pontchartrain, which has an area of over 400,000 acres. Additionally, the rocky surface area of the riprap on the flood and protected sides of the levee could provide new habitat that would be suitable for colonization by periphyton and sessile organisms. The new habitat would provide protective cover for various species of shellfish and finfish. This new habitat is uncommon in Lake Pontchartrain and potentially more productive than the very common mud bottoms.

Placing an earthen structure in the existing Bayou St. John channel at the entrance to Lake Pontchartrain would change the hydrologic conditions in this area and would permanently impact the passage of some fish species between the lake and the bayou. However, the existing sector gate remains in the closed position, with water flow occurring through a sluice gate similar to the one that would be part of this alternative. Therefore, although the current structure has the capability to allow more tidal movement and fish passage, because this structure has remained in the closed position, construction of alternative two would not result in a substantial change from the existing conditions currently found behind the existing structure. Movement of the closure structure to the mouth of Bayou St. John could result in a change in salinity between the existing gate structure and the mouth of the bayou. A shift in salinity may result in changes in community structure as conditions change in favor of species better adapted to the new salinity regime.

Indirect Impacts

Potential indirect impacts from this alternative would primarily consist of effects from increased turbidity in nearby areas of Lake Pontchartrain and Bayou St. John as a result of construction-related activities. Alterations in water quality from increased turbidity or sediment loading could affect fish populations by lowering dissolved oxygen, raising water temperatures, reducing growth rates, and adversely affecting egg and larval development. However, these impacts would be minimized through the use of BMP and would occur primarily during the construction period.

Cumulative Impacts

Potential cumulative impacts on the fisheries resources of the bayou and lake would involve the combined effects to the lake from the multiple LPV flood control projects in the New Orleans area. However, several projects, such as the deauthorization of the MRGO and several proposed or recently approved wetland restoration projects, would positively impact the fisheries resources within Lake Pontchartrain and the many water bodies hydrologically connected to it.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Approximately 1 acre of fish habitat would be lost due to construction of the new sector gate. This gate would be very similar in design to the existing gate, but it would be located closer to Lake Pontchartrain. The new gate would be maintained/operated similar to the existing gate, and a sluice gate feature similar to the existing gate would be used to manage water flow from the flood side to the protected side of the new structure. Direct impacts to fisheries would be similar to those discussed for LPV 103 alternative 2 and would occur primarily during construction. Permanent impacts to fisheries should be very similar to existing conditions because the existing structure and this alternative would be very similar in design and operation. Indirect and cumulative impacts for this alternative would be very similar to those described for alternative 2 for LPV 103.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct, Indirect, and Cumulative Impacts

The proposed action for LPV 104 would remain primarily within the footprint of the existing structures. Where an increase in the footprint or change in the alignment would occur, it would remain on developed areas adjacent to the structures. In addition, the location of the proposed action for LPV 104 is on land, so direct impacts to fisheries resources would not occur. Potential indirect impacts from this alternative, related to increased turbidity in nearby areas of Lake Pontchartrain as a result of construction-related runoff, would be controlled through the use of BMP and adherence to regulations governing storm water runoff at construction sites. No cumulative impacts to fisheries resources would occur from the proposed action at LPV 104.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

Impacts on fisheries from this alternative would be essentially the same as for the proposed action.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

Impacts on fisheries from this alternative would be essentially the same as for the proposed action.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

Impacts on fisheries from this alternative would be essentially the same as for the proposed action.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Impacts on fisheries from this alternative would be essentially the same as for the proposed action.

3.2.3 Essential Fish Habitat

Existing Conditions

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) (50 CFR 600) defines an Essential Fish Habitat (EFH) as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity” (16 United States Code [USC] 1802(10); 50 CFR 600.10). The 1996 amendments to the MSA set forth a mandate for the National Marine Fisheries Service (NMFS) of the National Oceanic and Atmospheric Administration (NOAA), regional Fishery Management Councils (FMC), and other Federal agencies to identify and protect EFH of economically important marine and estuarine fisheries. A provision of the MSA requires that FMCs identify and protect EFH for every species managed by a Fishery Management Plan ([FMP] 16 USC 1853).

Lake Pontchartrain and associated brackish wetlands, canals, and bayous are considered EFH because they are part of the estuarine system of the Gulf of Mexico. Estuarine EFH includes all waters and substrates within estuarine boundaries; including emergent wetlands, mangrove wetlands, SAV, algal flats, the estuarine water column, and mud, sand, shell and rock substrates. As discussed previously for the Lake Pontchartrain, Bayou St. John, and canals resources, the lake bottom near the project area is most likely a nonvegetated, silty fine sand, shell, and soft mud bottom. Based on this type of habitat, three managed species are common in the project area.

Table 6 presents the three managed species likely to occur in the project area and their occurrence in the project area by life stage as indicated by relative abundance maps from the NMFS Galveston Laboratory (NMFS 1998).

**Table 6.
Essential Fish Habitat for Life Stages of EFH Species Common in Lake Pontchartrain**

Species (Scientific Name)	Life Stage (occurrence in project area)	Essential Fish Habitat Zone and Habitat Type
Brown Shrimp (<i>Farfantepenaeus aztecus</i>)	Adult (rare)	Near shore and offshore sand/shell and soft bottoms
	Eggs (not reported)	Offshore soft bottoms and sand/shell
	Larvae (not present)	Offshore pelagic
	Juvenile (common)	Estuarine emergent marshes, SAV, sand/shell, soft bottoms, and oyster reefs
White Shrimp (<i>Litopenaeus setiferus</i>)	Adult (rare)	Near shore and offshore sand/shell and soft bottoms
	Eggs (not reported)	Offshore soft bottoms and sand/shell
	Larvae (not reported)	Near shore pelagic
	Juvenile (abundant)	Estuarine emergent marshes and soft bottoms

Species (<i>Scientific Name</i>)	Life Stage (occurrence in project area)	Essential Fish Habitat Zone and Habitat Type
Red Drum (<i>Sciaenops ocellatus</i>)	Adult (common)	Estuarine SAV, soft bottoms, sand/shell and emergent marshes Near shore pelagic and sand/shell and hard bottom habitat (used for spawning. offshore sand/shell and hard bottom)
	Eggs (not reported)	Near shore pelagic
	Larvae (not reported)	Estuarine SAV and soft bottoms early and sand/shell and emergent marshes post larvae
	Juvenile (common)	Estuarine SAV, soft bottoms and near shore sand/shell and hard bottom

Source: GMFMC 2004 and NMFS 1998

Discussion of Impacts

Impacts to EFH and managed fish species from each alternative are similar to the impacts discussed above for fisheries. However, the consultation requirements in the MSA direct Federal agencies to consult with the NMFS when any of their activities could have an *adverse effect* on EFH. The NMFS defines *adverse effect* as “any impact that reduces quality and/or quantity of EFH... [and] could include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species’ fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.” Impacts to EFH can result from the removal or disturbance of wetland and aquatic habitat.

Future Conditions with No Action

Without implementation of the proposed action, there would be no activities involving construction or modification of the existing levees, floodwalls, gates, and roadway ramps in the four LPV reaches beyond what are currently authorized for the HSDRRS. Effects on the fisheries of Lake Pontchartrain, Bayou St. John and canals would not differ substantially from what was described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct Impacts

The primary impacts from these actions would be related to demolition and construction. Materials required for the LPV 101 improvements would be placed in a staging area on the west side of West Roadway Street and on the northern side of the existing levee. This area is a sandy lot that was formerly used as a baseball park and is currently being used as a staging area for reconstruction efforts. Water may collect in the southern portion of this lot near the levee during storm events. Materials placed in this area would have no direct impact to EFH or managed fish species within Lake Pontchartrain or the 17th Street Canal. Demolition and construction of the

floodwalls and gates would occur primarily on developed land and would not directly impact EFH of the lake or canal.

Indirect Impacts

Construction activities during the proposed action, such as placement of materials in the proposed staging area, could result in a temporary increase in turbidity and a reduction in water quality in the estuarine water column in the project area (Lake Pontchartrain and 17th Street Canal) from construction site runoff. Effects from siltation and suspended sediment in waters adjacent to the project area could affect managed fish species and other organisms by clogging gills, reducing growth rates, and adversely affecting egg and larval development (USEPA, 2003). Alterations in water quality from increased turbidity or sediment loading could also affect managed fish populations by lowering dissolved oxygen and raising water temperatures. However, these impacts would be largely eliminated through the use of BMP and adherence to regulations governing storm water runoff at construction sites.

These impacts would have limited effects on estuarine water column and managed species because the magnitude and duration of the reduction in water quality in conjunction with the ability of most fish species to move to similar, unimpacted adjacent habitat. Noise generated by construction during the project would occur on land where it would be attenuated quickly and would be unlikely to impact aquatic receptors. Impacts to the estuarine water column of and the managed fish species in the lake and canal from the proposed action would be temporary; lasting approximately 1.5 years to 3 years, with some effects lasting until the areas have stabilized.

Cumulative Impacts

Impacts of the proposed action on the estuarine substrate and water column and managed fish species of Lake Pontchartrain and the 17th Street Canal would be limited to temporary, construction-related impacts. These impacts would be largely eliminated through BMP and would not be expected to contribute to cumulative impacts for the EFH resources of the lake or canal.

Alternative 1 LPV 101 (West End Levee)

Direct Impacts

Expansion of the west end levee as either a flood-side shift or a straddle would not directly impact EFH resources of Lake Pontchartrain or the 17th Street Canal.

Indirect Impacts

Construction activities during the proposed action could result in a temporary increase in turbidity and a reduction in water quality in the estuarine water column in the project area (Lake Pontchartrain and 17th Street Canal) from construction site runoff. Effects from siltation and suspended sediment in waters adjacent to the project area could affect managed fish species and other organisms by clogging gills, reducing growth rates, and adversely affecting egg and larval development (USEPA, 2003). Alterations in water quality from increased turbidity or sediment loading could also affect managed fish populations by lowering dissolved oxygen and raising water temperatures. However, these impacts would be largely eliminated through the use of BMP and adherence to regulations governing storm water runoff at construction sites.

These impacts would have limited effects on estuarine water column and managed species because the magnitude and duration of the reduction in water quality in conjunction with the ability of most fish species to move to similar, unimpacted adjacent habitat. Noise generated by

construction during the project would occur on land where it would be attenuated quickly and would be unlikely to impact aquatic receptors. Impacts to the estuarine water column and the managed fish species in the lake and canal from the proposed action would be temporary; lasting approximately 1.5 years to 3 years, with some effects lasting until the areas have stabilized.

Cumulative Impacts

Impacts of the proposed action on the estuarine substrate and water column and managed fish species of Lake Pontchartrain and the 17th Street Canal would be limited to temporary, construction-related impacts. These impacts would be largely eliminated through BMP and would not be expected to contribute to cumulative impacts for the EFH resources of the lake or canal.

Alternative 2 LPV 101 (Gate L4)

Direct Impacts

This alternative would be unlikely to directly impact EFH of Lake Pontchartrain or the 17th Street Canal.

Indirect Impacts

This alternative could result in a temporary increase in turbidity and a reduction in water quality in the project area (primarily Lake Pontchartrain) from construction site runoff, which could impact the estuarine water column. BMP would be used to reduce storm water runoff into the lake, which would decrease turbidity and water quality impacts. The indirect impacts from this alternative to EFH would be limited based on its location near, but not in, Lake Pontchartrain.

Cumulative Impacts

Impacts of this alternative on the EFH of Lake Pontchartrain would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts for EFH.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct Impacts

This alternative would be unlikely to directly impact EFH within the project area.

Indirect Impacts

This alternative could result in a temporary increase in turbidity and a reduction in water quality in the project area (primarily Lake Pontchartrain) from construction site runoff, which could impact the estuarine water column. BMP would be used to reduce storm water runoff. The impacts from this alternative to EFH would be very limited because of the location of this alternative, which is not in or immediately adjacent to the lake, and the use of BMP during construction activities.

Cumulative Impacts

Impacts of this alternative on the EFH of Lake Pontchartrain would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts for EFH of the lake.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct, Indirect, and Cumulative Impacts

No impacts to EFH resources would occur from the proposed action.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

No impacts to EFH would occur from this alternative.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls).

Direct Impacts

Replacement of the floodwalls, addition of gates to ramps and modifications to the Marconi Drive Gate and adjacent floodwalls would not directly impact EFH resources of Lake Pontchartrain, the Orleans Canal, or Bayou St. John.

Indirect Impacts

The proposed action could result in a limited, temporary increase in turbidity and a reduction in water quality of the estuarine water column in the project area (Lake Pontchartrain, the Orleans Canal and Bayou St. John) from construction site runoff. Effects from siltation and suspended sediment in waters adjacent to the project area could affect EFH for managed fish and other organisms by clogging gills, reducing growth rates, and adversely affecting egg and larval development (USEPA 2003), and alterations in water quality could also affect fish populations. However, these impacts would be largely eliminated through the use of BMP and adherence to regulations governing storm water runoff at construction sites.

These impacts would have limited effects on estuarine water column and managed species because the magnitude and duration of the reduction in water quality in conjunction with the ability of most fish species to move to similar, unimpacted adjacent habitat. Noise generated by construction during the project would occur on land, where it would be attenuated quickly and would be unlikely to impact aquatic receptors. Impacts to the estuarine water column of and the managed fish species in the lake and canal from the proposed action would be temporary; lasting approximately 1.5 years to 3 years, with some effects lasting until the areas have stabilized.

Cumulative Impacts

Impacts of this alternative on the estuarine substrate and water column would be limited to temporary, construction-related impacts. These impacts would be largely controlled through BMP and would not be expected to contribute to cumulative impacts on the EFH of the canal or Lake Pontchartrain.

Alternative 1 LPV 103 (Gates across Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

This alternative could result in EFH impacts similar to those described for the proposed action at LPV 103.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct Impacts

This alternative would permanently impact 1.5 acres of estuarine water column and substrate at the mouth of Lake Pontchartrain in Bayou St. John. The removal of this habitat represents proportionately a very small area of similar aquatic habitat within the expanse of Lake Pontchartrain, which has an area of over 400,000 acres. Additionally, the rocky surface area of the riprap on the flood and protected sides of the levee could provide new habitat that would be suitable for colonization by periphyton and sessile organisms. The new habitat would provide protective cover for various species of shellfish and finfish. This new habitat is uncommon in Lake Pontchartrain and potentially more productive than the very common mud bottoms.

Placing an earthen structure in the existing Bayou St. John channel at the entrance to Lake Pontchartrain would change the hydrologic conditions in this area and would permanently impact the passage of some fish species between the lake and the bayou. However, the existing sector gate remains in the closed position, with water flow occurring through a sluice gate similar to the one that would be part of this alternative. Therefore, although the existing structure has the capability to allow more tidal movement and fish passage, because this structure has remained in the closed position, construction of alternative 2 would not result in a substantial change from the conditions that currently exist behind the structure. Movement of the closure structure to the mouth of Bayou St. John could result in a change in salinity between the existing gate structure and the mouth of the bayou. A shift in salinity may result in changes in community structure as conditions change in favor of species better adapted to the new salinity regime.

Indirect Impacts

Potential indirect impacts from this alternative would primarily consist of effects from increased turbidity in nearby areas of Lake Pontchartrain and Bayou St. John as a result of construction-related activities. Alterations in water quality from increased turbidity or sediment loading could impact EFH by lowering dissolved oxygen, raising water temperatures, and adversely affecting egg and larval development and growth rates of EFH species or other organisms on which they depend. However, these sediment-related impacts would be minimized through the use of BMP and would occur primarily during the construction period.

Cumulative Impacts

Potential cumulative impacts on the EFH of the bayou and lake would involve the combined effects to the lake from the multiple LPV flood control projects in the New Orleans area. However, several projects, such as the de-authorization of the MRGO and several proposed or recently approved wetland restoration projects, would positively impact the EFH resources within Lake Pontchartrain and the many water bodies with hydrological connection to it.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Under this alternative, there would only be approximately 1 acre of EFH mud bottom and water surface area replaced by the new gate at the confluence of Bayou St. John with Lake Pontchartrain. This gate would be very similar in design to the existing gate, but it would be located closer to Lake Pontchartrain. The new gate would be maintained/operated similarly to the existing gate, and a sluice gate feature similar to the gate in the existing structure would be used to manage water flow from the flood side to the protected side of the structure. Direct impacts to EFH would be similar to those discussed for LPV 103 alternative 2 and would occur primarily during construction. Permanent impacts to EFH should be very similar to existing conditions because the existing structure and this alternative are very similar in design and operation. Indirect and cumulative impacts for this alternative would be very similar to those described for alternative 2 at LPV 103.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct, Indirect, and Cumulative Impacts

The proposed action for LPV 104 would remain primarily within the footprint of the existing structures. Where an increase in the footprint or change in the alignment would occur it would remain on developed areas adjacent to the structures. In addition, the location of the proposed action for LPV 104 is on land so direct impacts to EFH would not occur. Potential indirect impacts from this alternative of increased turbidity to Lake Pontchartrain as a result of construction related runoff would be controlled through the use of BMP and adherence to regulations governing storm water runoff at construction sites. No cumulative impacts to EFH resources would occur from the proposed action at LPV 104.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

Impacts on EFH from this alternative would be essentially the same as for the proposed action.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

Impacts on EFH from this alternative would be essentially the same as for the proposed action.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

Impacts on EFH from this alternative would be essentially the same as for the proposed action.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Impacts on EFH from this alternative would be essentially the same as for the proposed action.

3.2.4 Wildlife

Existing Conditions

The diversity and abundance of wildlife inhabiting the project area are dependent on the quality, diversity, and extent of available habitats. Construction-related activities for the alternatives considered would occur at the current locations of the levees and other components of the flood protection system within the IER # 4 project corridor. The wildlife habitats potentially affected are terrestrial habitats near the shoreline of the lake and on the levees and their associated ROW on both the protected side and flood side.

Terrestrial wildlife habitats in the project corridor south of the Lake Pontchartrain shoreline consist principally of open expanses of turf grass lawn that cover the levees and ROWs on each side of the levees and floodwalls. The distance from the shoreline to the project corridor is over 100 ft in all but a few locations, and it often is 200 ft to 300 ft. In many areas, habitat similar to that of the project corridor extends north to Lakeshore Drive and beyond to the shoreline as well as south to adjacent residential properties. The grass in these areas is kept short by regular mowing, and this lawn habitat provides minimal cover or other habitat components supportive of wildlife. Scattered trees, including small to large slash pines (*Pinus elliottii*) and live oaks (*Quercus virginiana*), as well as shrubs are present in these areas on each side of the ROW and provide additional habitat for birds and other arboreal species. The wildlife most likely to occur here are birds that commonly forage on lawns and other open grassy areas with scattered trees, including the northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), purple martin (*Progne subis*), mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferus*), common grackle (*Quiscalus quiscula*), boat-tailed grackle (*Quiscalus major*), blue jay (*Cyanocitta cristata*), and American crow (*Corvus brachyrhynchos*) (Dunn and Alderfer 2006). Some of these birds may nest in the trees and shrubs present in this habitat.

Species from other classes that may occur in the habitats of the project area can be identified based on their geographical ranges and habitat preferences. Amphibians that may occur in these habitats include the Gulf coast toad (*Bufo valliceps*) and Fowler's toad (*Bufo woodhousii fowleri*) (Conant and Collins 1998). Reptiles that may utilize the habitats provided by these areas include the green anole (*Anolis carolinensis*) and eastern garter snake (*Thamnophis sirtalis sirtalis*) (Conant and Collins 1998). Mammals that may occur in these habitats include the eastern cottontail (*Sylvilagus floridanus*), hispid cotton rat (*Sigmodon hispidus*), least shrew (*Cryptotis parva*), and raccoon (*Procyon lotor*) (Whitaker 1998).

Discussion of Impacts

Future Conditions with No Action

Without implementation of the proposed action, there would be no activities involving construction or modification of the existing levees, floodwalls, gates, and roadway ramps at the four LPV reaches beyond what is currently authorized for the HSDRRS. Effects on wildlife would not differ substantially from what was described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct Impacts

The construction phase of the proposed action for LPV 101 would result in the temporary loss of minor areas of wildlife habitat consisting principally of mowed grass lawn, which provides habitat of limited value for wildlife. The footprint of the new wall segments and gates would remain within the existing ROW, and a turf grass lawn would be re-established adjacent to the walls in the ROW after construction, so the existing habitat would be restored in these areas. Additionally, two grassy areas would be temporarily impacted as a result of their use as staging areas (figure 7) during construction. These staging areas also would be re-vegetated after project completion, resulting in restoration of the existing habitat. Therefore, the potential effects on terrestrial wildlife associated with the proposed action would be restricted principally to short-term effects from the loss of limited areas of marginal habitat during the construction period.

The presence of construction-related activity, machinery, and noise would be expected to cause most wildlife to avoid the terrestrial habitat of the project area during the construction period. Impacts would be limited because of the ability of the predominant wildlife present (birds) to move to adjacent terrestrial habitats during construction, and due to the low quality of the terrestrial habitat that would be temporarily avoided during construction but utilized again after project completion and revegetation. Other, less-mobile wildlife that may occur in the area (e.g., common species of mice, lizards, and toads) could become casualties of the construction. However, their current populations are likely to be small given the marginal habitat present, and these species would likely re-colonize the area after construction from areas adjacent to the project corridor. Thus, direct impacts on wildlife from the proposed action would be negligible.

Indirect Impacts

Potential indirect impacts on wildlife from the proposed action for LPV 101 include the potential movement of displaced wildlife currently inhabiting the project area into nearby terrestrial habitats that would not be directly impacted by this alternative. This migration would not be expected to result in exceedances of the carrying capacity of the similar terrestrial and aquatic habitats in the vicinity. Relatively small populations and habitat areas would be affected, and the extensive adjacent habitats should be able to support the immigrants, resulting in negligible indirect impacts on wildlife.

Cumulative Impacts

Potential cumulative impacts on wildlife from the proposed action for LPV 101 would involve the combined effects on wildlife of habitat loss and displacement of wildlife populations from the multiple LPV flood control projects in the New Orleans area. The displacement of the majority of wildlife would be short-term during the construction period, and the displaced individuals likely would return following project completion. The terrestrial habitat that would be affected at LPV 101 is not high-quality or unique habitat, but a frequently mowed, turf-grass habitat similar to that which covers extensive areas in the New Orleans region, such as residential lawns, parks, and ROWs along levees and floodwalls.

Movement of the limited numbers of wildlife, principally birds that currently inhabit these terrestrial habitat areas into surrounding, unimpacted habitats would not be expected to result in exceedances of the carrying capacity of the adjacent habitats. Thus, the potential cumulative impacts on wildlife from the proposed action for LPV 101 in conjunction with other flood

control projects in the region would be negligible given the relatively small populations and habitat areas affected and the carrying capacities of similar habitats remaining in the region.

Alternative 1 LPV 101 (West End Levee)

Direct, Indirect, and Cumulative Impacts

Under this alternative, the west end levee reach of LPV 101 would be raised in a flood side (1a) or a straddle (1b) configuration using the addition of soil rather than construction of a floodwall on top of the levee. This would expand the area of mowed-grass habitat lost to wildlife during the construction period in this short reach of LPV 101. However, the turf grass lawn would be re-established on the levee after construction, so the existing habitat would be restored. Therefore, the potential for effects on terrestrial wildlife associated with this alternative would be limited to the construction period and would be negligible. Other direct, indirect, and cumulative impacts on wildlife from these alternatives would be the same as those described for the proposed action.

Alternative 2 LPV 101 (Gate L4)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 101.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 101.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from the proposed action for LPV 102 would be similar to those described for the proposed action for LPV 101. Small areas of mowed grass habitat would be affected under this alternative where a gate would be replaced by levee and a ramp across the levee would be raised. Additionally, a grassy area near the Canal Boulevard ramp also would be temporarily impacted as a result of its use as a staging area (figure 8) during construction. This staging area would be allowed to revegetate after project completion, resulting in restoration of the existing habitat. Thus, the extent of the marginal habitat areas directly impacted during construction would be small, and the potential direct, indirect, or cumulative impacts on wildlife from the proposed action would be negligible.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 102.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from the proposed action for LPV 103 would be similar to those described for the proposed action for LPV 101 except that the removal of a limited number of trees within the footprint of the project along Bayou St. John would result in an additional, minor reduction in arboreal habitat for birds and other wildlife in that area. Also, seven grassy areas, some with scattered trees, would be temporarily impacted as a result of their use as staging areas (figure 9) during construction. These staging areas also would be re-vegetated after project completion, resulting in restoration of the existing habitat. Thus, the extent of the marginal habitat areas directly impacted during construction would be small, and the potential direct, indirect, or cumulative impacts on wildlife from the proposed action would be minimal.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 103.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 103.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 103.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from the proposed action for LPV 104 would be similar to those described for the proposed action for LPV 101 except that the removals of a limited number of trees would result in additional, minor reductions in arboreal habitat for birds and other wildlife within the project corridor.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 104.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 104.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 104.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on wildlife from this alternative would be essentially the same as those described for the proposed action for LPV 104.

3.2.5 Threatened and Endangered Species

Existing Conditions

In accordance with the consultation provisions of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 USC 1531 et seq.), the CEMVN submitted a letter on 10 July 2007, to the U.S. Fish and Wildlife Service (USFWS) office in Lafayette, Louisiana, requesting information on protected, proposed, and candidate species and critical habitat that may occur in the vicinity of the proposed IER # 4 project (USACE 2007b). In response and in accordance with the provisions of the ESA and the Migratory Bird Treaty Act of 1918 (40 Stat. 755, as amended; 16 USC 703 et seq.), the USFWS responded in a letter on 6 August 2007 (USFWS 2007a). The USFWS identified two Federally listed species that potentially could occur in the project area: the endangered West Indian manatee (*Trichechus manatus*) and the threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*).

The CEMVN also submitted a letter on 10 July 2007 to the NMFS requesting information on Federally protected species under NMFS jurisdiction that could occur in the vicinity of the proposed project (USACE 2007c). The NMFS Southeast Regional Office in St. Petersburg, Florida, responded in a letter dated 26 July 2007 (NMFS 2007), which provided a table of the Federally listed endangered and threatened species under NMFS jurisdiction for the state of Louisiana. These species included the Gulf sturgeon, five sea turtles, and five whales. Subsequently, NMFS identified the Federally listed endangered and threatened species under NMFS jurisdiction that potentially could occur in Lake Pontchartrain as the threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), the endangered Kemp's ridley sea turtle (*Lepidochelys kempii*), the threatened loggerhead sea turtle (*Caretta caretta*), and the threatened green sea turtle

(*Chelonia mydas*). Because the Gulf sturgeon and these sea turtles occur in Lake Pontchartrain, there is a potential that they could occur in the inshore area of the lake near the IER # 4 project area on the south shore.

West Indian Manatee

The West Indian manatee is Federally- and state-listed as endangered and also is protected under the Marine Mammal Protection Act of 1972, under which it is considered depleted (USFWS 2001). Critical habitat for the manatee has been designated in Florida, but not in Louisiana (USFWS 1977). The manatee is a large gray or brown aquatic mammal that can reach a length of 13 ft and a weight of over 2,200 pounds. It occurs in both freshwater and saltwater habitats within tropical and subtropical regions and includes two subspecies, the Florida manatee (*T. manatus latirostris*) and the Antillean manatee (*T. manatus manatus*). The primary human-related threats to the manatee include watercraft-related strikes (impacts and/or propeller strikes), crushing and/or entrapment in water control structures (flood gates, navigation locks), and entanglement in fishing gear (discarded fishing line, crab traps) (USFWS 2007b).

The Florida manatee can occur throughout the coastal regions of the southeastern United States and could disperse greater distances during warmer months – it has been sighted as far north as Massachusetts and as far west as Texas. However, the manatee is a subtropical species with little tolerance for cold, and it returns to and remains in the vicinity of warm-water sites in peninsular Florida during the winter (USFWS 2007b, USFWS 2007c). Thus, the manatee is not a year-round resident in Louisiana, but it could migrate there during warmer months. Manatees prefer access to natural springs or manmade warm water and waters with dense beds of submerged aquatic or floating vegetation. Manatees prefer to forage in shallow grass beds that are adjacent to deeper channels. They seek out quiet areas in canals, creeks, lagoons, or rivers, using deeper channels as migratory routes (USFWS 1999).

There have been 110 reported sightings of manatees in Louisiana since 1975 (LaDWF 2005). Sightings in Louisiana, which have been uncommon and sporadic, have included occurrences in Lake Pontchartrain and vicinity. Between 1997 and 2000, there were approximately 16 sightings in the Lake Pontchartrain area and a general increase in the number of manatees per sighting (Abadie et al. 2000). Sightings of the manatee in the Lake Pontchartrain Basin have increased in recent years, and in late July 2005, 20 to 30 manatees were observed in the lake from the air (Powell and Taylor 2005). Substantial food sources (submerged or floating aquatic vegetation) have not been observed within the project vicinity. Given the extensive areas of relatively undisturbed wetlands in the region and the paucity of food sources in the lake in the IER # 4 project vicinity, it is considered unlikely for the manatee to frequent and utilize as habitat the inshore waters of Lake Pontchartrain near the project area, though manatees could pass through this area while transiting the lake.

Gulf Sturgeon

The Gulf sturgeon is Federally listed as threatened throughout its range and is state-listed as threatened in Louisiana. The Gulf sturgeon supported an important commercial fishing industry during the late 19th and early 20th centuries. A minor commercial fishery was reported to exist for Gulf sturgeon in Lake Pontchartrain and its tributaries during the late 1960s (USFWS and NMFS 2003). Throughout most of the 20th century, Gulf sturgeon suffered population declines due to overfishing, habitat loss, water quality deterioration, and barriers to historic migration routes and spawning areas (dams). In 1991, the Gulf sturgeon was listed as a threatened species under the ESA. The present range of the species extends from Lake Pontchartrain and the Pearl River system in Louisiana and Mississippi east to the Suwannee River in Florida (USFWS and NMFS 2003).

The Gulf sturgeon is an anadromous fish that migrates from saltwater into large coastal rivers to spawn and spend the warm months. Subadults and adults typically spend the three to four coolest months in estuaries or Gulf of Mexico waters before migrating into rivers as temperatures increase (USFWS and Gulf States Marine Fisheries Commission [GSMFC] 1995). This migration typically occurs from mid-March through June (Rogillio et al. 2007). Most adults spend eight to nine months each year in rivers before returning to the estuary or the Gulf of Mexico by mid-November to early December. Thus, the Gulf sturgeon spends the majority of its life in freshwater (USFWS and GSMFC 1995).

Subadult and adult Gulf sturgeon do not feed significantly in freshwater; instead, they rely almost entirely on estuarine and marine areas for feeding. Young-of-the-year and juveniles feed mostly in the riverine environment (USFWS and NMFS 2003). The diet of the Gulf sturgeon consists predominantly of invertebrates. The types and sizes of invertebrates consumed varies according to life history stage and annual migration. Soft-bodied prey appear to be preferred over armored or spiny organisms. Juveniles consume amphipods, isopods, annelid worms, chironomid larvae, and other aquatic insects, small bivalves, and small shrimp. Subadults also consume ghost or mud shrimp. Adults in estuaries and coastal waters consume mainly amphipods, isopods, gastropods, brachiopods, polychaete worms, lancelets, and shrimp. Detritus is consumed incidentally while foraging in sediment, while bony fish are seldom eaten (USACE 2006a).

Habitats designated by USFWS or NMFS as “critical habitat” are specific areas that have been identified as being essential to the conservation of a threatened or endangered species. Critical habitats may include certain physical and biological features necessary to the preservation of the species and, therefore, may require special management considerations or protection. The designation is intended to ensure that activities of federal agencies will not destroy or adversely modify these habitats. Critical habitat designated for the Gulf sturgeon in Louisiana includes Lake Pontchartrain east of the Lake Pontchartrain Causeway, all of Little Lake, the Rigolets, Lake Catherine, Lake Borgne, and the Mississippi Sound. These critical habitat units follow the shorelines of each water body. Estuaries and bays located adjacent to riverine units were designated as critical habitat to protect unobstructed passages for sturgeon between feeding and spawning areas (USACE 2006a). Sturgeon migrations to rivers that enter Lake Pontchartrain follow routes through Lake Borgne and the Rigolets. Studies conducted by the LaDWF have shown the presence of Gulf sturgeon in Lake Pontchartrain, the Rigolets, and Lake Borgne during the winter and during periods of migration to and from marine environments. Thus, critical habitat was designated for the Gulf sturgeon in each of these areas (USACE 2006a).

Studies conducted by the LaDWF have shown the presence of Gulf sturgeon in Lake Pontchartrain during the winter and during periods of migration to and from marine environments. Sturgeon migrations to rivers that enter Lake Pontchartrain follow routes through Lake Borgne and the Rigolets. Most records of Gulf sturgeon from Lake Pontchartrain have been located east of the Causeway, particularly on the eastern north shore. Gulf sturgeon have also been documented west of the Causeway, typically near the mouths of small rivers on the north shore. However, critical habitat was not designated for the western half of the lake because the sturgeon there were believed to have come from western tributaries and not the Pearl River (USFWS and NMFS 2003). In addition, observations of Gulf sturgeon in marine and estuarine habitats have been associated with sand and mud bottoms (USFWS and GSMFC 1995), and sediment data from Lake Pontchartrain indicate that sediments from the eastern half of the lake have a greater sand content than those from the western half (Barrett 1976, as cited in USFWS and NMFS 2003). Therefore, only the half of Lake Pontchartrain east of the Causeway was designated as critical habitat for the Gulf sturgeon.

All of the IER # 4 project area is adjacent to the critical habitat area designated for the Gulf sturgeon in Lake Pontchartrain. Gulf sturgeon may pass through or forage in the inshore waters

along the project area, principally during the three to four coolest, winter months and periods of migration between marine environments (Lake Borgne and the Mississippi Sound) and rivers that drain into Lake Pontchartrain. The area along the south shore of the lake is relatively unlikely to be used as a migratory route by Gulf sturgeon because the rivers to which they migrate are on the north shore of the lake. Gulf sturgeon would be much less likely to occur in the lake during the five warmest months of the year (May through September). Thus, although the Gulf sturgeon could potentially forage in the shallow, inshore habitat near the project area in winter, they would not be expected to utilize this area as an important migratory route to the rivers on the north shore, nor would they be expected to enter Bayou St. John or the canals that open to the lake along IER # 4.

Kemp's Ridley, Loggerhead, and Green Sea Turtles

Sea turtles are air-breathing reptiles with large flippers and streamlined bodies. They inhabit tropical and subtropical marine and estuarine waters around the world. Of the seven species in the world, six occur in waters of the U.S., and all are listed as threatened or endangered. The three species identified by NMFS as potentially occurring in the vicinity of the project area are similar in appearance, though they differ in maximum size and coloration. The Kemp's ridley is the smallest sea turtle; adults average about 100 pounds with a carapace length of 24 inches to 28 inches and a shell color that varies from gray in young individuals to olive green in adults. The loggerhead is the next largest of these three species; adults average about 250 pounds with a carapace length of 36 inches and a reddish brown shell color. The green is the largest of the three; adults average 300 pounds to 350 pounds with a length of more than 3 feet and brown coloration (its name comes from its greenish colored fat). The Kemp's ridley has a carnivorous diet that consists mainly of crabs and may also include fish, jellyfish, and mollusks. The loggerhead has an omnivorous diet that includes fish, jellyfish, mollusks, crustaceans, and aquatic plants. The green has a herbivorous diet of aquatic plants, mainly seagrasses and algae, which is unique among sea turtles (NMFS 2008).

All three of these sea turtle species are known to forage as juveniles and adults in nearshore waters, including estuaries, in Louisiana and may be more likely to occur there in months when the waters are warmer. The Kemp's ridley and loggerhead turtles may find suitable foraging habitat for invertebrates and fish in the waters of Lake Pontchartrain. The green turtle may be less likely to occur there due to the scarcity of the submerged aquatic vegetation on which they feed. (Observations by UNO researchers found no aquatic grass beds along the south shore of Lake Pontchartrain from 1996 to 1998, an absence they attributed to high nutrient input from urban runoff and the armoring of the shoreline [Penland et al. 2002]). All three species nest on sandy beaches, which are not present in the project area, and the Kemp's ridley does not nest in Louisiana. The life stages that may enter Lake Pontchartrain are likely to be older juveniles to adults (NMFS 2008), though their occurrence in the project area on Bayou St. John would be very unlikely. None of these species have designated critical habitat in Lake Pontchartrain or the region (USFWS 2007c).

Discussion of Impacts

Future Conditions with No Action

Without implementation of the proposed action, there would be no activities involving construction or modification of existing levees, floodwalls, gates, and roadway ramps at the four LPV reaches beyond what is currently authorized for the HSDRRS. Effects on threatened or endangered species would not differ substantially from those described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct Impacts

The proposed action at LPV 101 would involve the replacement of existing floodwalls and gates along the current alignment. The primary impacts from these actions would be related to demolition and construction. Materials required for the LPV 101 improvements would be placed in a staging area on the west side of West Roadway Street and on the north side of the existing levee. This area is a sandy lot that was formerly used as a baseball park and is currently being used as a staging area for reconstruction activities. Water may collect in the southern portion of this lot near the levee during storm events. Materials placed in this area would have no direct impact to fisheries habitat within Lake Pontchartrain or the 17th Street Canal. Demolition and construction of the floodwalls and gates would occur primarily on developed land. Therefore, the proposed action would have no direct impact on the aquatic threatened and endangered species potentially occurring in the vicinity.

Indirect Impacts

Indirect impacts on threatened or endangered species are effects that could occur later in time than direct impacts but still are reasonably certain to occur (NMFS 2006). Construction activities during the proposed action such as placement of materials in the proposed staging area could result in a temporary increase in turbidity and a reduction in water quality in the project area (Lake Pontchartrain and 17th Street Canal) from construction site runoff. However, these impacts would largely be eliminated through the use of BMP and adherence to regulations governing storm water runoff at construction sites, and the potential for impacts on threatened or endangered species after the construction period would be negligible. Thus, there would be no indirect effects on endangered or threatened species from the proposed action that would adversely impact manatees, Gulf sturgeon, or sea turtles.

Cumulative Impacts

The proposed action would have no direct or indirect impacts on threatened or endangered species that would contribute to cumulative impacts on these species.

Alternative 1a and 1b LPV 101 (West End Levee)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 101, and the manatee, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles would not be adversely affected.

Alternative 2 LPV 101 (Gate L4)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 101, and the manatee, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles would not be adversely affected.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 101, and the manatee, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles would not be adversely affected.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct Impacts

The proposed action at LPV 102 would involve the replacement of an existing gate with a short segment of levee and increasing the height of existing ramps that cross the current levee alignment. It would occur on developed land and would not directly impact Lake Pontchartrain or the threatened or endangered species potentially occurring in the project area.

Indirect Impacts

The potential for indirect impacts on threatened or endangered species as a result of impacts on water quality during the construction period would be minimized through the use of BMP and adherence to regulations governing storm water runoff at construction sites. The potential for indirect impacts on threatened or endangered species after the construction period would be negligible. Thus, indirect impacts on endangered or threatened species from the proposed action would not adversely affect the manatee, Gulf sturgeon, or Kemp's ridley, loggerhead, or green sea turtles.

Cumulative Impacts

The proposed action would have no direct or indirect impacts on threatened or endangered species that would contribute to cumulative impacts on these species.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 102, and the manatee, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles would not be adversely affected.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct Impacts

Replacement of the floodwalls, modifications to the Bayou St. John sector gate, addition of gates to ramps, and modifications to the Marconi Drive Gate and adjacent floodwalls would not

directly impact the threatened and endangered species potentially found in the project area or the adjacent critical habitat of the Gulf sturgeon.

Indirect Impacts

The potential for indirect impacts on threatened or endangered species due to adverse effects on water quality of Bayou St. John or inshore areas of the lake from construction site runoff would largely be eliminated through the use of BMP and adherence to regulations governing storm water runoff at construction sites. Therefore, the likelihood of indirect impacts from the proposed action at LPV 103 on manatees, Gulf sturgeon, and Kemp's ridley, loggerhead, green sea turtles, and any adjacent critical habitat would be discountable, and potential indirect effects would not adversely impact these species.

Cumulative Impacts

The proposed action would have no direct or indirect impacts on threatened or endangered species that would contribute to cumulative impacts on these species.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 103; thus, the manatee, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles would not be adversely affected.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct Impacts

This alternative could permanently impact up to 1.5 acres of water bottoms and surface water area at the mouth of Bayou St. John as a result of filling to construct a levee across the bayou. A culvert approximately 350 ft in length would pass through the levee and allow hydrological exchange between the lake and bayou. A sluice gate within the culvert would provide flow control.

The construction of this section of levee would occur within the bayou near its mouth and adjacent to designated critical habitat for the Gulf sturgeon, which covers the eastern half of Lake Pontchartrain. Substrates within the bayou are not conducive to Gulf sturgeon feeding preferences and their occurrence in the bayou would be incidental during their winter residency in the lake.

Manatees prefer to forage in shallow grass beds in quiet areas of canals, creeks, lagoons, or rivers, using deeper channels as migratory routes (USFWS 1999). Substantial food sources (submerged or floating aquatic vegetation) have not been observed in the vicinity of the project area in the open waters of Lake Pontchartrain or in Bayou St. John. Given the extensive areas of relatively undisturbed wetlands in the region and the lack of food sources in the LPV 103 project area, it is unlikely that manatees would occur in the inshore waters along the project area or near the mouth of the bayou other than sporadically while transiting the lake.

Sea turtles potentially could forage in the waters of Lake Pontchartrain along the IER # 4 project area, principally during the warmer months. Due to their mobility, sea turtles could avoid equipment and noise in the project area on Bayou St. John during the construction period. The

bottom substrate does not support submerged aquatic vegetation attractive to green sea turtles, and it is unlikely to provide substantial invertebrate populations that would attract Kemp's ridley or loggerhead sea turtles to the area. In addition, the adjacent areas of the lake provide extensive, alternative areas for sea turtle foraging and refuge.

The presence of construction-related activity, machinery, and noise would be expected to cause manatees, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles to avoid the project area during the construction period. Construction of a levee across the bayou approximately 900 ft north of the existing sector gate would prevent access of these species to the segment of the bayou between the gates. These species are unlikely to utilize the area within the bayou as habitat under current conditions, so they are unlikely to be affected by loss of access to this relatively small section of bayou. However, to ensure no threatened or endangered species become trapped behind the proposed construction site, USFWS personnel would be employed to inspect the area prior to a cofferdam being erected, and any threatened or endangered species found trapped by the construction of the proposed action would be quickly relocated.

In order to further minimize the potential for construction activities in Bayou St. John to adversely affect threatened or endangered species during the construction period (approximately 1.5 to 3 years), manatee protection measures and sea turtle construction conditions would be implemented under this alternative. Assuming these procedures for preventing disturbance or injury to manatees and sea turtles are employed, and given the mobility of Gulf sturgeon, the likelihood of adverse effects on these species would be discountable, and the potential direct effects during the period of construction of alternative 2 at LPV 103 would be unlikely to adversely affect manatees, Gulf sturgeon, or sea turtles.

In summary, the potential for direct, adverse impacts on threatened or endangered species (manatee, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles) from alternative 2 at LPV 103 would be influenced by the following factors: the mobility of these species, their lack of dependence on the project area on Bayou St. John for habitat, their ability to avoid the project area during construction, the temporary nature of many of the effects of construction activity on the limited area of bayou habitat affected, the use of USACE inspections and procedures to avoid injury to these species, and the extensive habitat available for use in the vicinity. As a result, direct effects from the proposed action would not adversely affect the threatened or endangered species identified for the project area.

Indirect Impacts

Potential indirect impacts on endangered or threatened species from alternative 2 at LPV 103 would mainly consist of effects from siltation and suspended sediment in areas of the lake adjacent to the project area from construction runoff. Effects such as these would be minimized by BMP to control sediment transport, adherence to regulations governing storm water runoff at construction sites, and through dispersion by the tides. Thus, indirect effects on endangered or threatened species from Alternative 2 at LPV 103 would not adversely impact the manatee, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles. No impacts beyond temporary lake water turbidity are anticipated to Gulf sturgeon critical habitat from construction of this alternative.

Cumulative Impacts

Potential cumulative impacts on endangered or threatened species from alternative 2 at LPV 103 mainly would involve the combined adverse effects on the manatee, Gulf sturgeon, and sea turtles from the multiple LPV flood control projects in the New Orleans area. These species are mobile and could avoid project areas during the construction period, and the displaced

individuals could return to the temporarily impacted areas following project completion. The permanently impacted, aquatic habitat is a relatively very small area of bayou habitat at the mouth of Bayou St. John on the south shore of Lake Pontchartrain. Neither manatees, Gulf sturgeon, nor sea turtles are likely to substantially utilize the bayou area where the project would be sited, and extensive, similar aquatic and benthic habitats exist in the vicinity. If the area of bayou habitat impacted by this alternative were added to the areas of similar aquatic habitats potentially impacted by other LPV projects along Lake Pontchartrain, the loss of this type of habitat still would be a small fraction of the available habitat remaining for these species. Use of these adjacent, similar habitats by these species would not result in exceedances of the carrying capacity of these habitats for these species. Thus, cumulative effects on endangered or threatened species from alternative 2 at LPV 103 would not adversely impact these species.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from alternative 3 would be essentially the same as those described for alternative 2 at LPV 103 since operation and maintenance of the new structure would be conducted in a manner similar to what is done for the existing sector gate. Construction of a new sector gate approximately 900 ft north of the existing sector gate would prevent access of manatees, Gulf sturgeon, and sea turtles to the segment of the bayou between the gates. However, this segment of the bayou does not provide habitat that is important to or known to be used by these species, so they would not be adversely affected by the lack of access to this relatively small area.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct Impacts

The proposed action at LPV 104 would involve construction activities along the current floodwall and levee alignment. The activities would occur on land and would not directly impact Lake Pontchartrain or the threatened or endangered species potentially occurring in the lake.

Indirect Impacts

The potential for indirect impacts on threatened or endangered species as a result of adverse effects on water quality during the construction period would be largely eliminated through the use of BMP and adherence to regulations governing storm water runoff at construction sites. The potential for indirect impacts on threatened or endangered species after the construction period would be negligible. Thus, indirect effects on endangered or threatened species from the proposed action would not adversely impact the manatee, Gulf sturgeon, or Kemp's ridley, loggerhead, or green sea turtles.

Cumulative Impacts

The proposed action would have no direct or indirect impacts on threatened or endangered species that would contribute to cumulative impacts on these species.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

Under this alternative, new gates would be constructed to an elevation of 19 ft at these locations in lieu of raising the existing ramps at these locations, which would occur under the proposed action. Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 104, and manatees, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles potentially occurring in the project area would not be adversely affected.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 104, and manatees, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles potentially occurring in the project area would not be adversely affected.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 104, and manatees, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles potentially occurring in the project area would not be adversely affected.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on threatened or endangered species from this alternative would be essentially the same as those described for the proposed action for LPV 104, and manatees, Gulf sturgeon, and Kemp's ridley, loggerhead, and green sea turtles potentially occurring in the project area would not be adversely affected.

3.2.6 Non-Wet Uplands

Existing Conditions

There are no naturally occurring uplands in the IER # 4 project area. The project corridor is located on fill, obtained from the lake bottom, that was placed along the south shore of Lake Pontchartrain in the late 1920s to early 1930s within the IER # 4 segment of shoreline (between the Orleans-Jefferson Parish line and the IHNC). That activity expanded developable land northward into the lake approximately 1,000 ft to 3,000 ft beyond the historical shoreline. The fill initially was placed to a elevation of around 5 ft to 10 ft above the lake level (GNOCDC 2008) and covered approximately 2,000 acres (NOCPC 1999).

Discussion of Impacts

Given the history and characteristics of the land in the project area, created by filling of Lake Pontchartrain, non-wet uplands are not a significant resource in this area and are not evaluated further with regard to potential impacts.

3.2.7 Cultural Resources

Existing Conditions

Numerous archaeological sites and historic properties have been previously recorded in the greater New Orleans metropolitan area, including the general project vicinity. Known prehistoric sites are primarily situated on the relatively high natural levee and shoreline deposits located adjacent to the Mississippi River, Lake Pontchartrain, and along smaller waterways such as Bayou St. John and the high ground running along Metairie Ridge. Similarly, historic period archaeological sites and structures, including those associated with forts, plantations, farmsteads, and cemeteries; residential, commercial, and industrial areas; and river and lake port facilities initially developed along these same elevated areas. Further historic development later expanded into drained back swamp, land-filled locations, and along canal waterways. Historic period watercraft are recorded in Lake Pontchartrain as well as bayou and river channels in the region.

The CEMVN contracted R. Christopher Goodwin and Associates, Inc. to conduct a cultural resources investigation of the IER # 4 project area, including the proposed action and all project alternatives being considered at that time (Heller et al. 2008). This study investigated a 1,750-foot-wide linear corridor extending approximately 1,250 ft north into Lake Pontchartrain and 500 ft south on the protected side of the existing levee/floodwall center line. The study extended from the 17th Street Canal east to the Inner Harbor Navigation Canal. Researchers reviewed previous cultural resources investigations and site records, along with soil data and field reconnaissance information, to identify and investigate high potential areas for archaeological resources. A general assessment of historic structures in the project area was also conducted to identify individual historic structures and historic districts that may be eligible for, or that are listed on, the National Register of Historic Places (NRHP). In addition, a submerged remote sensing survey was conducted from the shoreline north 1,250 ft into Lake Pontchartrain along the entire project length to identify targets exhibiting cultural resources characteristics. Background research conducted at the Louisiana Division of Archaeology did not identify any previously conducted cultural resources surveys within or intersecting the IER # 4 project area. The project area is almost entirely located on man-made land created from dredged material taken from Lake Pontchartrain in the 1920s. The only portion of the project area demonstrating any potential for prehistoric archaeological sites is the natural levee deposits located adjacent to either side of Bayou St. John. Four prehistoric archaeological sites have been previously recorded within 1 mile, but are not in the IER # 4 project area.

Two previously recorded historic period archaeological sites are partially situated within the IER # 4 project area. Site 16OR19 (Fort St. John, Spanish Fort) is located on the west bank of Bayou St. John approximately 1,600 ft south of the Lake Pontchartrain shoreline. The brick fortifications at the site were constructed between 1808 and 1814, replacing earlier fortifications constructed during the eighteenth century. The fort was abandoned in the 1820s and subsequently became the location of a hotel and then an amusement park. The site is listed on the National Register of Historic Places (NRHP).

The second previously recorded historic period archaeological site located in the project area is 16OR219 (Camp Leroy Johnson). The site is the former location of various New Orleans Army Air Base facilities in use between 1941 and 1964. Recent archaeological monitoring of construction activities related to temporary housing development at the site revealed concrete

footings, construction material, and a few artifacts. Researchers evaluated 16OR219 (Camp Leroy Johnson) and found it was not eligible for listing on the NRHP.

One NRHP listed historic structure, the 1890 New Canal Lighthouse, is located in the project area. This lighthouse is the most recent in a series of lighthouses that had been located on the mouth of the New Basin Canal since the 1830s.

Reconnaissance-level field investigations identified one potential historic district and eight historic properties in the project area. These include the Lake Vista neighborhood (1938); the Milneburg Lighthouse (1855); a portion of the New Basin Canal (1832); four recreational areas located on the lake shoreline at West End, Milneburg, Pontchartrain Beach, and Spanish Fort; and two historic structures associated with the Camp Leroy Johnson military installation (16OR219).

Researchers identified only two land parcels in the project area exhibiting a high potential for prehistoric archaeological sites. These land parcels are on opposite banks of Bayou St. John. Phase 1 cultural resource investigations were conducted in these two parcels. Prehistoric and historic archaeological material was identified in subsurface deposits at 16OR19 (Fort St. John, Spanish Fort), located on the west bank of Bayou St. John. Subsurface shovel tests revealed that these archaeological deposits extend approximately 360 ft north of the fort.

The second land parcel is situated on the east bank of Bayou St. John directly across the bayou from site 16OR19. Although no prehistoric material was recovered, subsurface testing identified 19th and 20th century artifacts and an articulated brick feature in an area designated site 16OR448 (Locus 04-02).

Researchers also conducted a Phase 1 marine remote sensing survey in the Lake Pontchartrain portion of the project area (Heller et al. 2008). The survey was designed to identify specific magnetic, acoustic, and sub-bottom anomalies that might represent significant submerged cultural resources. This investigation identified eight targets exhibiting shipwreck characteristics. These include Targets 18-1, 19-1, 19-2, 19-3, 19-4, 19-5, 19-6 and 23-1.

The CEMVN held meetings with the State Historic Preservation Office (SHPO) staff and Tribal governments in 2007 to discuss the emergency alternative arrangements approved under NEPA for HSDRRS project review and the development of a Programmatic Agreement (PA) to tailor the Section 106 consultation process under these alternative arrangements. The CEMVN formally initiated Section 106 consultation for the LPV Hurricane Protection Project (100-year), which includes IER # 4, in a letter dated 9 April 2007, and emphasized that standard Section 106 consultation procedures would be followed during PA development. A public meeting was held on 18 July 2007 to discuss the working draft PA.

In letters to the SHPO and Indian Tribes dated 23 October 2008, the CEMVN provided project documentation, an evaluation of cultural resources potential in the project area, and the results of reconnaissance survey and Phase 1 investigations, and found that proposed construction activities within all reaches of the proposed action would have no adverse impacts on significant cultural resources. The SHPO requested additional project information in a letter dated 5 December 2008. The CEMVN provided this information with a letter dated 13 January 2009. The SHPO reviewed the additional information and concurred with our "no adverse effect" finding in a letter dated 26 January 2009 (appendix D). The Caddo Nation of Oklahoma, Seminole Nation of Oklahoma, Alabama-Coushatta Tribe of Texas, and Seminole Tribe of Florida concurred with our effect determination on 27 October 2008, 5 November 2008, 5 November 2008, and 24 November 2008, respectively (appendix D). No additional Indian Tribes responded to our requests for comment. Per 36 CFR Part 800.5(c)(3)(i), no response implies concurrence with a "Finding of no adverse effect." Section 106 consultation for the

proposed action has been concluded. However, if any unrecorded cultural resources are determined to exist within the proposed action boundaries, then no work will proceed in the area containing these cultural resources until a CEMVN archaeologist has been notified and final coordination with the SHPO and Indian Tribes has been completed.

The following discussion of impacts is based on the information provided in the cultural resources investigation management summary prepared by R. Christopher Goodwin and Associates, Inc. (Heller et al. 2008).

Discussion of Impacts

Future Conditions with No Action

Without implementation of the proposed action, there would be no activities involving construction or modification of the existing levees, floodwalls, gates, and roadway ramps at the four LPV reaches beyond what is currently authorized for the HSDRRS. Only one cultural resource has been recorded in the existing project ROW. Site 16OR219 (Camp Leroy Johnson) is recorded as a historic period archaeological site and is the former location of various New Orleans Army Air Base facilities in use between 1941 and 1964. No associated historic standing structures are present in the existing ROW. The site is not eligible for listing on the NRHP. Therefore, effects on cultural resources would not differ substantially from what was described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct Impacts

The proposed action for LPV 101 would have no direct impacts on cultural resources. The footprint of the new wall segments and gates would remain within the existing ROW. The existing ROW was initially investigated for cultural resources in 1982 (New World Research 1983) and the results discussed in the 1984 EIS for Lake Pontchartrain Hurricane Protection. No cultural resources were identified at that time.

The LPV 101 proposed action, which includes the existing project ROW and additional adjacent areas proposed for temporary staging areas and construction easements, was examined for cultural resources as part of a larger study conducted in 2008 (Heller et al. 2008). No cultural resources were identified directly in the boundaries of the LPV 101 proposed action. Researchers found that the LPV 101 reach is entirely located on man-made land created from dredged material taken from Lake Pontchartrain in the 1920s. The proposed action, including ROW, staging areas, and easements, has been severely impacted by previous flood control infrastructure construction and dredged material placement. The likelihood for intact and significant cultural resources in these disturbed areas is considered extremely minimal.

Indirect Impacts

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

The Heller et al. (2008) study investigated a much larger area than the proposed action and included a 1,750-foot-wide linear corridor extending approximately 1,250 ft north into Lake Pontchartrain and 500 ft south on the protected side of the existing levee/floodwall alignment center line. Background research and reconnaissance level field investigations identified two historic period cultural resources in the LPV 101 reach. These include 1) a portion of the 1832 New Basin Canal, and 2) the general area where numerous historic recreational facilities once existed in the vicinity of the West End shoreline. These two cultural resources are located outside of the boundaries of the proposed action for LPV 101 and will not be indirectly or visually impacted by proposed construction.

Cumulative Impacts

Implementation of the proposed action would have beneficial cumulative impacts on cultural resources in the greater New Orleans metropolitan area. The combined effects from construction of the multiple projects underway and planned for the Lake Pontchartrain Hurricane Protection System would reduce flood risk and storm damage to cultural resources including archaeological sites, individual historic properties, engineering structures, and historic districts.

Alternative 1 LPV 101 (West End Levee)

Direct, Indirect, and Cumulative Impacts

Under this alternative, the west end levee reach of LPV 101 would be raised with a flood side (1a) or a straddle (1b) configuration using the addition of soil rather than construction of a floodwall on top of the levee. Direct, indirect, and cumulative impacts on cultural resources from these alternatives would be the same as those described for the proposed action for LPV 101.

Alternative 2 LPV 101 (Gate L4)

Direct, Indirect, and Cumulative Impacts

Under this alternative, gate L4 would be demolished and replaced in its current location to an elevation of 16 ft. The existing floodwalls adjacent to gate L4 (running along both sides of Pontchartrain Boulevard) also would be demolished and replaced with new T-walls to an elevation of 16 ft. Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 101.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct, Indirect, and Cumulative Impacts

Under this alternative, the existing levee embankment would be increased from an elevation of 12.5 ft to 17.5 ft plus overbuild in a straddle configuration; no additional ROW would be required and retaining walls would likely be constructed to minimize the levee footprint due to space restrictions. Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 101.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct, Indirect, and Cumulative Impacts

The proposed action for LPV 102 is to raise the existing roadway ramp on Canal Boulevard from its current elevation of 13.5 ft to an elevation of 21.1 ft. The footprint of the raised ramp could vary slightly from existing conditions and could require some additional new ROW. Direct, indirect, and cumulative impacts on cultural resources from the proposed action for LPV 102 would be similar to those described for the proposed action for LPV 101.

Recent cultural resources investigations indicate that no cultural resources, including archaeological sites or historic standing structures, are located directly in the boundaries for the proposed action for LPV 102 (Heller et al. 2008). The proposed action for LPV 102, which includes the existing project ROW, a temporary staging area, and a construction easement area, is located entirely on man-made land where the likelihood for significant archaeological sites is considered extremely low.

Two historic structures are located in the LPV 102 reach and include: 1) the 1890 New Canal Lighthouse, which is listed on the National Register of Historic Places, and 2) portions of the 1832 New Basin Canal (Heller et al. 2008). Both of these historic structures are located well outside of proposed action boundaries for LPV 102 and would not be directly, indirectly, or visually impacted by proposed construction.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 102.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct Impacts

The proposed action for LPV 103 would have no direct impacts on cultural resources. The existing project ROW was initially investigated for cultural resources in 1982 (New World Research 1983) and the results discussed in the 1984 EIS for Lake Pontchartrain Hurricane Protection. No cultural resources were identified in the existing project ROW at that time.

The boundaries of the LPV 103 proposed action, which includes the existing project ROW investigated in 1982 and additional adjacent areas proposed for temporary staging areas, construction easements, and new perpetual levee/floodwall easements, were examined for cultural resources as part of a larger study conducted in 2008 (Heller et al. 2008). No cultural resources were identified in the boundaries of the LPV 103 proposed action.

The existing project ROW and additional staging areas and easement areas have all been subjected to severe ground-disturbing activities associated with massive dredged material placement as well as floodwall, earthen levee, gate, and other infrastructure construction. The

likelihood for intact and significant cultural resources in these areas is considered extremely minimal.

Indirect Impacts

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

In the 2008 study prepared by Nathanael Heller and others, researchers investigated a much larger area in the LPV 103 reach than the proposed action. This area included a 1,750-foot-wide linear corridor extending approximately 1,250 ft north into Lake Pontchartrain and 500 ft south on the protected side of the existing levee/floodwall alignment center line. Researchers found that the LPV 103 reach is almost entirely located on man-made land created from dredged material taken from Lake Pontchartrain in the 1920s. The only areas exhibiting a potential for prehistoric archaeological sites within the LPV 103 reach were identified along the natural levee deposits on either side of Bayou St. John.

Researchers reviewed background information and reconnaissance/Phase 1 field data to identify cultural resources located in the project reach. Researchers identified two historic sites, one potential historic district and seven remote sensing targets exhibiting shipwreck characteristics. All of these cultural resources are located outside of the proposed action boundaries and will not be indirectly impacted by proposed construction. They include 1) 16OR19 (Fort St. John, Spanish Fort), which is listed on the NRHP and also contains a historic 20th century recreation component, 2) 16OR448 (Locus 04-02), 3) the 1938 Lake Vista neighborhood, and 4) submerged remote sensing targets 18-1, 19-1, 19-2, 19-3, 19-4, 19-5, and 19-6.

Recent subsurface testing has determined that archaeological deposits associated with sites 16OR19 (Fort St. John, Spanish Fort) and 16OR448 (Locus 04-02) do not extend into the boundaries of the proposed action for LPV103 and will not be indirectly impacted by the proposed action (Heller et al. 2008). Proposed retrofitting of the gates located in Bayou St. John and on Marconi Drive will have no indirect or visual impacts on extant historic architectural features at 16OR19 (Fort St. John, Spanish Fort), which includes brick remains of Fort St. John and three rock fountains associated with a later 19th/20th century amusement park, or on the 1938 Lake Vista neighborhood, which is a potential historic district.

Seven submerged remote sensing targets exhibiting shipwreck characteristics were identified in Lake Pontchartrain and are located well outside of the proposed action of LPV 103 (Heller et al. 2008). They would not be indirectly impacted by proposed construction.

Cumulative Impacts

Implementation of the proposed action for LPV 103 would be essentially the same as those described for the proposed action for LPV 101.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 103.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 103.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 103.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct Impacts

The existing project ROW was initially investigated for cultural resources in 1982 (New World Research 1983) and the results were discussed in the 1984 EIS for Lake Pontchartrain Hurricane Protection. No cultural resources were identified in the existing project ROW at that time.

The boundaries of the LPV 104 proposed action, which includes the existing project ROW investigated in 1982 and additional adjacent areas proposed for a staging area and several construction easements, were examined for cultural resources as part of a larger study conducted in 2008 (Heller et al. 2008). Researchers identified one cultural resource within the boundaries of the proposed action for LPV 104. This site, a previously recorded historic period military site whose archaeological component is designated 16OR219 (Camp Leroy Johnson), extends into the proposed action boundaries and would be directly impacted by proposed construction. However, recent archaeological monitoring of recent temporary housing construction indicated that site 16OR219 is not eligible for listing on the NRHP. In addition, the boundaries of the existing ROW have been previously subjected to severe ground disturbing activities associated with floodwall, earthen levee, gate, and other infrastructure construction. It is highly unlikely that intact archaeological deposits associated with 16OR219 are present in the ROW.

Indirect Impacts

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

In the Heller et al. (2008) study, researchers investigated a much larger area than the proposed action for LPV 104. The study area consisted of a 1,750-foot-wide linear corridor that extended approximately 1,250 ft north into Lake Pontchartrain and 500 ft south on the protected side of the existing levee/floodwall alignment center line. Researchers found that the LPV 104 reach is entirely located on man-made land created from dredged material taken from Lake Pontchartrain in the 1920s.

Researchers identified one historic period archaeological site with two associated standing structures, one historic lighthouse, two historic period recreation areas, and one remote sensing target exhibiting shipwreck characteristics in the LPV 104 reach. However, all of these sites are

located outside of the area of the proposed action and will not be indirectly impacted by proposed construction. These cultural resources include 1) portions of archaeological site 16OR219 (Camp Leroy Johnson) and associated standing structures that include a smokestack and an administration building, 2) the Milneburg Lighthouse, 3) two historic period recreation areas at Milneburg and Pontchartrain Beach, and 4) remote sensing target 23-1.

Camp Leroy Johnson was originally designed as an army air base in 1941, and by the time it closed in 1964, it spanned approximately 66 acres and included 196 buildings. Only two structures remain standing from the original World War II installation. These include a smokestack on the UNO campus and an altered and badly damaged administration building located on the lake shore. Researchers believe these historic structures are not eligible for listing on the NRHP. Both structures and the remaining portions of the archaeological component of the site (16OR219) are located outside of the proposed action for LPV 104 and would not be indirectly impacted by the proposed construction.

The 1855 Milneburg Lighthouse, once located thousands of feet north in Lake Pontchartrain, served to guide steamships into Milneburg and remained in operation until 1929. The structure now sits in the UNO Technology Research Park, which is situated on man-made land that was created in the 1920s. The lighthouse is located south of the proposed action and would not be indirectly or visually impacted by proposed construction. In a letter dated 16 February 2007, the SHPO determined that the Milneburg Lighthouse did not meet the criteria for listing on the NRHP.

Historic period recreation features once located at Milneburg and Pontchartrain Beach are located outside of the proposed action and would not be indirectly impacted by proposed construction. The Milneburg recreation area, originally located on the lake shoreline, was severely impacted by land reclamation activities in the 1920s, which essentially moved the lake shoreline several thousand feet to the north. Any structures once associated with this historic recreation area would now be located well south of the proposed action and would not be indirectly impacted by proposed construction. One historic period structure associated with the Pontchartrain Beach recreation area is located immediately north of the proposed action boundary. This structure once served as the platform for the Ragin' Cajun rollercoaster and would not be indirectly impacted by proposed construction.

One submerged remote sensing target exhibiting shipwreck characteristics was identified in Lake Pontchartrain and is located well outside of the proposed action of LPV 104 (Heller et al. 2008). This target would not be indirectly impacted by proposed construction.

Cumulative Impacts

Cumulative impacts from implementation of the proposed action for LPV 104 would be essentially the same as those described for the proposed action for LPV 101.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 104.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 104.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 104.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on cultural resources from this alternative would be essentially the same as those described for the proposed action for LPV 104.

3.2.8 Recreation

Existing Conditions

The Orleans Parish lakefront area receives a high level of recreational usage. Recreational features in the vicinity of the proposed action include boat ramps, bike/multi-purpose paths, shelters, picnic tables and benches, and wildlife viewing and fishing opportunities on the protected and flood sides of the project corridor. As illustrated on figure 17, the following recreational resources are located within the LPV 101 project area:

- Retif Recreation Center – an indoor recreation facility located northwest of gate L1A.
- West End Tennis Center – located southwest of gate L1A and adjacent to the west end levee.
- Coconut Beach – located southwest of the west end levee between the 17th Street Canal and West Roadway Street. This recreation area has several heavily utilized sand volley ball courts.
- Orleans Marina – located adjacent to the LPV 101 reach; provides boat ramps and boat access to Lake Pontchartrain.
- West End Park – located north of Orleans Marina provides green space; provides a walking path, and several picnic shelters.
- Lakeshore Park – located on the eastern side of Lakeshore Drive; offers green space with a parking area and a shelter.



Figure 17. Recreational Areas Located Near LPV 101

Lakeshore and Orleans Parks are the primary recreational resources located within the LPV 102 project area. Lakeshore Park is located along Lakeshore Drive in LPV 102 and 103 between the shoreline and the levee system from Orleans Marina on the west end to Bayou St. John on the east end. Orleans Park borders the banks of the Orleans Canal and offers green space. Lakeshore Park offers green space, picnic tables, benches, shelters, parking areas, lake viewing and fishing opportunities, walking paths, and a fountain. Some of the parking areas and the large shelters have not been re-opened since Hurricanes Katrina and Rita. Figure 18 indicates the locations of major recreational resources for LPV 102.



Figure 18. Recreational Areas Located Near LPV 102

In addition to Lakeshore Park, other recreational features within the LPV 103 project area include Bayou St. John, Lake Terrace Park, and London Park (as indicated in figure 19). Bayou St. John is a Historic and Scenic River, but the project area of this bayou has already been modified as a result of adjacent development, infrastructure, and the existing flood control structures (floodwalls along the each bank and sector and sluice gates within the bayou). The banks of the bayou, adjacent to the project area, offer green space which is used by walkers and joggers. This bayou is important to City Park, which is located south of the project area. The bayou within City Park is also a popular recreational feature and is utilized for walking, jogging, biking, canoeing, kayaking, picnicking, and fishing. Access to the parking area and the shoreline area of Lake Terrace Park north of Lakeshore Drive is currently closed.



Figure 19. Recreational Areas Located Near LPV 103

Recreational resources located within the LPV 104 project area are shown in figure 20 and include Lake Oaks Park and the Senator Nat G. Kiefer UNO Lakefront Arena (UNO Lakefront Arena). Lake Oaks Park is adjacent to Lake Pontchartrain and extends from the east side of the London Avenue Canal to the west side of Franklin Avenue. This heavily-used park offers sandy beach areas (Pontchartrain Beach), parking areas, lake viewing, beach fishing, picnic tables, and tennis courts. Some of the picnic tables and the tennis courts were damaged during Hurricanes Katrina and Rita and have not been repaired. The UNO Lakefront Arena is adjacent to the project area on the south side, between the Franklin Avenue ramp and the Leroy Johnson Drive ramp. This venue serves as a multi-purpose sports and entertainment complex. Several boat ramps are located east of the arena off of Lakeshore Drive, just west of the Senator Ted Hickey Bridge, which crosses the IHNC.



Figure 20. Recreational Areas Located Near LPV 104

Discussion of Impacts

Future Conditions with No Action

Without implementation of the proposed action, there would be no activities involving construction or modification of the existing levees, floodwalls, gates, and roadway ramps in the four LPV reaches beyond what are currently authorized for the HSDRRS. Effects on the recreational resources would not differ substantially from what was described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct Impacts

Some impacts to recreational resources would occur during construction of the proposed action. Construction of the proposed action at LPV 101 would impact a large parking area for the Orleans Marina; would continue to utilize an area next to Coconut Beach that was Retif Park for a staging area; and would utilize an approximately 225 square foot area of Lakeshore Park east

of the marina as a staging area. These impacts to recreational resources would be short-term; occurring during project construction.

Indirect Impacts

Construction of the proposed action at LPV 101 could impede access to the tennis center, marina, Coconut Beach, and West End Park during construction activities. The prevention of access to and use of potential and former recreational areas during construction could impact other recreational resources within the New Orleans metropolitan area through increased use by recreational users unable to use recreational facilities within the project area. Increases in turbidity in waters adjacent to the project area would be controlled through BMP and are unlikely to noticeably impact recreational fishing. However, increased construction activity and noise could temporarily reduce fish resources near the project area, which could impact recreational fishing.

Cumulative Impacts

Most of the areas that would be impacted by the project have already been impacted by Hurricanes Katrina and Rita or construction and restoration efforts following these hurricanes. These events have negatively impacted recreational resources throughout the region. However, restoration of hurricane risk reduction in the area should provide long-term beneficial impacts through provision of flood risk reduction for restored and new recreational facilities and opportunities.

Alternative 1 LPV 101 (West End Levee)

Direct Impacts

This alternative would increase the footprint of the west end levee either equally on each side or all of the footprint increase would be to the flood side. This alternative would have greater impacts to existing and potential future recreational uses near the levee because of the footprint expansion. Construction of alternative 1 would have all of the impacts as the proposed action, but they would be slightly greater because the expansion of the footprint would encroach upon area that has been used for recreational purposes.

Indirect Impacts

Construction of alternative 1 at LPV 101 would have similar indirect impacts as the proposed action, but may be slightly greater due to the higher level of truck traffic and earth moving that would be required to expand the levee, which would increase the impediments to access of the tennis center, marina, Coconut Beach, and West End Park during construction activities. Increases in turbidity in waters adjacent to the project area would be controlled through BMP, but would have a slightly higher probability of occurring for this alternative than the proposed action, which may result in a reduction of recreational fishing opportunities particularly in the 17th Avenue Canal adjacent to west end levee. Increased construction activity and noise also could temporarily reduce fish resources near the project area, which could impact recreational fishing.

Cumulative Impacts

The area that would be impacted by this alternative has already been impacted by Hurricanes Katrina and Rita or construction and restoration efforts following these hurricanes. These events have negatively impacted recreational resources throughout the region. However, restoration of hurricane risk reduction in the area should provide long-term beneficial cumulative impacts

through provision of flood risk reduction for restored and new recreational facilities and opportunities.

Alternative 2 LPV 101 (Gate L4)

Direct, Indirect, and Cumulative Impacts

This alternative would have similar direct, indirect and cumulative impacts as the proposed action, but placement of the gate closer to Lake Marina Drive would likely provide the beneficial direct impact of better access to the recreational opportunities within the Orleans Marina.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct, Indirect, and Cumulative Impacts

This alternative would increase the height of this reach of levee by using retaining walls. This alternative would have direct, indirect and cumulative impacts similar to those described for the proposed action, but direct, indirect and cumulative adverse impacts would be greater. The footprint of the levee would be increased slightly, which would impact access to the green space, and with addition of the retaining walls, creation of recreational paths in this area would be inhibited.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct Impacts

The proposed action for LPV 102 would raise the roadway ramp on Canal Boulevard, which would include a slight change in the existing ramp footprint. Impacts to recreational resources from the proposed action at LPV 102 would include a temporary construction easement that would be established in Lakeshore Park between Lakeshore Drive and Lakeshore Parkway on either side of Canal Boulevard (figure 8). This easement could impact over 19 acres of the park, and a little over 1 acre of the park within this easement would be used as a construction staging area. The construction easement and staging area could impede people using the park's walking path through this area, but it is unlikely that all access would be blocked around the easement, so people trying to run, walk, or bike through this portion of the park should be able to detour around the construction area. These impacts would be short-term; occurring during construction.

Indirect Impacts

Construction of the proposed action at LPV 102 could impede access to recreational resources adjacent to or near LPV 102 during construction activities. The prevention of access to and use of potential and former recreational areas during construction could impact other recreational resources within the New Orleans metropolitan area through increased use by recreational users unable to use recreational facilities within the project area. Increases in turbidity in waters adjacent to the project area during construction would be controlled through BMP and are unlikely to noticeably impact recreational fishing. However, increased construction activity and noise could temporarily reduce fish resources near the project area, which could impact recreational fishing.

Cumulative Impacts

Most of the areas that would be impacted by the project have already been impacted by Hurricanes Katrina and Rita or construction and restoration efforts following these hurricanes. These events have negatively impacted recreational resources throughout the region. However, restoration of hurricane risk reduction in the area should provide long-term beneficial impacts through provision of flood risk reduction for restored and new recreational facilities and opportunities.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

Impacts from this alternative would be similar to the proposed action, but this alternative would not require an increase in the ramp footprint, which would lessen adverse direct, indirect and cumulative impacts to recreational resources compared to the proposed action.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct Impacts

Several staging areas and construction easements (as indicated in figure 9) would be required to complete the proposed action for LPV 103. The easements and staging areas could potentially impact approximately 28 acres of green space within Lakeshore and London Parks and along the banks of Bayou St. John. The construction easements and staging areas could impede recreational use along Bayou St. John and could temporarily prohibit recreational use, such as kayaks within the Bayou. It is unlikely that all access would be blocked around the easements, so people trying to run, walk, or bike through these areas should be able to detour around the construction area. These impacts would be short-term; occurring during construction.

Indirect Impacts

Construction of the proposed action at LPV 103 could impede access to recreational resources adjacent to or near LPV 103 during construction activities. The prevention of access to and use of potential and former recreational areas during construction could impact other recreational resources within the New Orleans metropolitan area through increased use by recreational users unable to use recreational facilities within the project area. Increases in turbidity in waters adjacent to the project area during construction would be mostly controlled through BMP. However, if water quality changes do occur during construction they would impact recreational fishing. Construction activity and noise also would temporarily reduce fish resources near the project area, which could impact recreational fishing.

Cumulative Impacts

Most of the areas that would be impacted by the project have already been impacted by Hurricanes Katrina and Rita or construction and restoration efforts following these hurricanes. These events have negatively impacted recreational resources throughout the region. However, restoration of hurricane risk reduction in the area should provide long-term beneficial impacts through provision of flood risk reduction for restored and new recreational facilities and opportunities.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

This alternative would include all the components of the proposed action and would therefore have similar direct, indirect and cumulative impacts, with the exception that raising the ramps versus building gates on the ramps would require an increase in the footprint of the existing ramps and adjacent roadways. The increase in the footprint of the Lakeshore Drive ramps would have adverse direct impacts to the green space and recreational resources near these ramps and contribute to the cumulative loss of recreational and green spaces.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct Impacts

This alternative would include all the components of the proposed action and would therefore have similar impacts. However, this alternative would eliminate boating access from Lake Pontchartrain to Bayou St. John and would have a larger footprint within the bayou. Boats are currently inhibited by the existing sector gate, which is located approximately 1050 ft from the proposed location of this alternative. The existing sector gate would be left in place and if left open could provide opportunities for boaters from within City Park to boat the length of Bayou St. John. The construction of the levee within the bayou would permanently impact the amount of aquatic habitat available for fish (approximately 1.5 acres), which would impact recreational fishing.

Indirect Impacts

The culverts within the levee would be the only access point for fish to and from Lake Pontchartrain from City Park, which dependent upon culvert design and operation could adversely impact the fish community structure within the bayou south of alternative 2 and within City Park. This change in access could potentially impact recreational fishing within the park. However, the existing sector gate structure is left in the closed position and only opened for maintenance. The sluice gate that is part of the existing structure also provides limited fish access to and from Lake Pontchartrain and the southern portion of the bayou.

Increases in turbidity in Bayou St. John would be managed during construction, but because of the nature and duration of levee construction this alternative is more likely to impact water quality, which would impact recreational fishing. Construction activity and noise also would temporarily reduce fish resources near the project area, which could also impact recreational fishing. Impacts to recreational fishing from noise and changes in water quality would be temporary, occurring during levee construction. A permanent change to salinity levels between the new levee and existing gate could also occur, which would also impact recreational fishing by changing the fish community.

Cumulative Impacts

This alternative would have similar but greater adverse cumulative impacts to recreational resources than the proposed action because it requires that up to 1.5 acres of aquatic habitat at the mouth of Bayou St. John be replaced with earthen and concrete fill.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

This alternative would have similar direct, indirect and cumulative impacts as alternative 2. However, the placement of the sector gate within Bayou St. John would have a smaller impact to the aquatic habitat of the bayou than alternative 2 (less than one acre for alternative 3 compared to 1.5 acres for alternative 2). This alternative would be operated similar to the existing sector gate (in the closed position with water levels maintained through a sluice gate). The sluice gate may provide more or less fish access between Lake Pontchartrain and the southern side of Bayou St. John than alternative 2, but it would be similar to the existing conditions and the proposed action.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct Impacts

Temporary construction easements would be required within Lake Oaks Park and on the east and west sides of the UNO Lakefront Arena (figure 10). Approximately 6 acres of green space associated with the park or the arena could be temporarily impacted during construction. Another 4 acres of green space on the western side of Senator Ted Hickey Bridge could also be impacted during construction. The construction easements required on the eastern side of LPV 104 near the bridge could impact access to the fishing piers and boat ramps located in this area. Vehicle access to the boat ramps under Senator Ted Hickey Bridge could be disabled due to a reduction in roadway for 10 to 12 months during floodwall construction; however, the fishing piers would remain accessible by pedestrian traffic.

Indirect Impacts

Construction of the proposed action at LPV 104 could impede access to recreational resources adjacent to or near LPV 104 during construction activities. The prevention of access to and use of potential and former recreational areas during construction could impact other recreational resources within the New Orleans metropolitan through increased use by recreational users unable to use recreational facilities within the project area. Increases in turbidity in waters adjacent to the project area during construction would be mostly controlled through BMP. However, if water quality changes do occur during construction they would impact recreational fishing. Construction activity and noise also would temporarily reduce fish resources near the project area, which could impact recreational fishing.

Cumulative Impacts

Most of the areas that would be impacted by the proposed project have already been impacted by Hurricanes Katrina and Rita or construction and restoration efforts following these hurricanes. These events have negatively impacted recreational resources throughout the region. However, restoration of hurricane risk reduction in the area should provide long-term beneficial impacts through provision of flood risk reduction for restored and new recreational facilities and opportunities.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

This alternative would have similar direct, indirect and cumulative impacts as those discussed for the proposed action. However, this alternative would reduce the short-term construction-related direct, indirect and cumulative impacts to recreational resources that would occur from the proposed action because it does not require expansion of the ramp footprints or construction of the ramps.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

This alternative would have similar direct, indirect and cumulative impacts as those discussed for the proposed action. However, under this alternative, gate L10 would be modified with a steel plate along the top to stiffen the girder to meet current design standards, which would reduce impacts for recreational resources compared to the proposed action. Modifications for this alternative would require less time and a smaller footprint than the proposed action reducing the direct, indirect and cumulative impacts compared to the proposed action.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

This alternative would have similar direct, indirect and cumulative impacts as those discussed for the proposed action. However, under this alternative, gate L11 would be demolished and reconstructed in its original location to an elevation of 16.5 ft. This alternative would take longer to construct than the proposed action for gate L11, so direct, indirect and cumulative impacts to recreational resources that could occur during construction would be greater than those for the proposed action.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

This alternative would not impact recreational resources.

3.2.9 Aesthetic (Visual) Resources

Existing Conditions

The New Orleans lakefront project area is located within the public green space that extends from the Lake Pontchartrain shoreline to the Robert E. Lee Boulevard Bridge crossing. The entire landscape is man-made, all part of a massive early 20th century reclamation project that created new land northward from the historic lakeshore near the current location of Robert E. Lee Boulevard. This land area was created by using sediment dredged from the lake to fill along the lakefront from the historical shoreline north into the lake approximately 1,000 ft to 3,000 ft. The resulting landscape has elevations generally around 5 ft to 10 ft above the lake level, with higher elevations occurring within the project corridor in conjunction with the levees and roadway ramps that cross them. Constructed over the last 80 years, the diverse visual setting of the New Orleans lakefront project area includes a mix of public green spaces, extensions of existing drainage canals which resemble natural streams, new residential neighborhoods, public

streets, and many other facilities. By the time Hurricane Katrina struck in August 2005, the former lake bottom was a mature landscape with grass-covered hurricane risk reduction levees and varied mix of mature trees (mostly live oaks, cypress, and pines) scattered throughout the wide expanses of public spaces between the levees and private spaces.

Starting at the Orleans Parish boundary with Jefferson Parish, The LPV 101 reach project area is less residential and park-like in setting than the rest of the lakefront area. The early 20th century lake reclamation project along the New Orleans lakefront resulted in the construction of the West End Marina complex along the eastern side of this canal. South of Hammond Highway, the project area contains several marinas, boat houses, a Coast Guard Station, public recreation areas like West End Park, and multilevel residential structures including the Mariners Cove residential complex and two eighteen story condominium developments. Much of the project area is still in disrepair due to damage sustained during the aftermath of Hurricane Katrina. Risk reduction measures including the interim control structure (ICS) and floodwalls made of concrete, or metal sheet-piling are evident throughout the LPV 101 reach project area. The residents living adjacent to the current ICS have voiced concerns about its visual aesthetics and how it contrasts with the adjacent Mariners Cove residential area.

The LPV 102 reach project area begins at the southeastern portion of West End Marina at the corner of Lakeshore Drive and ends at the eastern side of the Orleans outfall canal. Lakeshore Drive is a major recreation destination centered in a park-like linear green space setting that follows the meandering lakefront seawall and is located for most of its length between the shoreline and the risk reduction system. Risk reduction measures including earthen berm levees and floodwalls made of concrete, or metal sheet-piling, are evident throughout the LPV 102 reach project area. Recreational amenities along the project area include covered shelters and facilities with uniform design elements, parking areas, and the Mardi Gras Fountain lakefront. The Lakeshore neighborhood north of the LPV 102 reach project area borders the corridor of undeveloped green space that extends to the Canal Boulevard providing access to the lakefront. Consisting of single-family homes, the Lakeshore neighborhood enjoys the benefits of a park-like setting regularly maintained by the Orleans Levee District.

The LPV 103 reach project area begins at the eastern portion of Orleans Outfall Canal and ends at the western side of Bayou St John. Risk reduction measures including earthen berm levees and floodwalls constructed of architecturally treated concrete, or metal sheet-piling, are evident throughout the LPV 102 reach project area. As in LPV 102, Lakeshore Drive continues in this reach. The public green space along the LPV 103 reach project area is expansive and holds great value as a visual and physical connection to City Park via the Orleans Outfall Canal and Bayou St John. The adjoining Lake Vista neighborhood enjoys a park-like setting highlighted by wide open grassy expanses broken up by mature live oak and pine trees.

The LPV 104 reach project area extends from the London Avenue Outfall Canal to the IHNC. Risk reduction measures including earthen berm levees and floodwalls constructed of architecturally treated concrete, or metal sheet-piling, are evident throughout the LPV 104 reach project area. Recreational amenities along the project area include covered shelters and facilities with uniform design elements, parking areas, and the Seabrook Marina. As in LPVs 102 and 103, Lakeshore Drive continues in this reach crossing historic Bayou St John and the London Ave Outfall Canal. On the east side of the London canal, adjacent to the northern portion of the risk reduction system, is the main campus of the University of New Orleans where most of the adjoining land uses are utilitarian (parking areas and maintenance and storage facilities) with some three-story student housing. Other areas of the campus contain multilevel buildings including some seven-to eight-story buildings.

On the west side of the London Avenue Canal is a corridor of undeveloped green space that extends from the lake to Pratt Drive, a public road provides access to the lakefront. A well-

designed and maintained residential neighborhood of single-family homes, Lake Terrace, borders the east side of Pratt Drive. The London Avenue corridor provides a park-like setting for the neighboring homes. There are public park areas located along the lakeshore to Leon C. Simon Boulevard Bridge. These public green spaces are regularly maintained by the Orleans Levee District.

Discussion of Impacts

Future Conditions with No Action

Direct and Indirect Impacts

With the no action alternative, the proposed action would not be constructed by the CEMVN. The current levee reach floodwalls, associated structures, and ramps would remain at or be brought to the previously authorized heights. The visual resources of the project corridor would be temporarily impacted by construction activities related to raising the floodwalls to authorized grade and by transport activities needed to move equipment and materials to and from the site. The proposed floodwall structure would replace existing similar flood risk reduction measures in areas where it currently exists. The floodwall may be designed with an architectural treatment to the concrete. The area adjacent to the floodwall would be landscaped. Floodwall treatments are strongly recommended in urban areas (EM 1110-2-2504, Design of Sheet Pile Walls). The long-term direct impacts on aesthetics resources would be minimal as the project area would be returned, as much as possible, to existing conditions after floodwall construction.

Cumulative Impacts

There are a variety of contrasting architectural elements along the New Orleans Lakefront and the floodwalls along the three outfall canals. The contrasting architectural elements in this area are primarily a result of the emergency repair work completed in response to the damage caused by Hurricane Katrina. A portion of the Orleans Avenue Canal floodwall along Robert E. Lee Boulevard was designed with architectural concrete features, such as concrete urns and extruded concrete wreaths on the floodwall face. In another section of the Orleans Avenue Canal floodwall, rusted sheet-piling protrudes from the concrete base. Residents living adjacent to the outfall canals have voiced concerns regarding the contrast between the appearance of the floodwalls and the residential areas and the green space along the outfall canals

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct, Indirect and Cumulative Impacts

Replacement of floodwalls and gates in LPV 101 would have a minimal adverse impact on visual resources. The visual attributes of the project corridor would be temporarily impacted by construction activities at the project site and the transportation of equipment and materials in the project area. The modifications to the floodwalls and gates would increase their height; however, the modifications would take place within the existing floodwall and gate corridors. The visual character of the project area after construction would be minimally different from current conditions. The major visual differences would be an increase of approximately 3.5 feet in the height of the levee/floodwall system in most of this reach. The west end levee would increase in height by 4.0 feet. Turf grass would be re-established on the levees after construction, and the appearance of the levees and gates would remain similar to the existing conditions. The floodwall would be designed with an architectural treatment to the floodwall

concrete. The area adjacent to the floodwall would be landscaped where appropriate. The long-term impacts on aesthetics resources would be minimal as the project area would be returned, as much as possible, to existing conditions after floodwall construction.

Alternative 1 LPV 101 (West End Levee, Alternative 2 LPV 101 (Gate L4), and Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct, Indirect and Cumulative Impacts

The direct and indirect impacts on visual resources under these alternatives would be essentially the same as described for the proposed action.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct, Indirect and Cumulative Impacts

Increasing the height of the ramps across the levee at Canal Boulevard to the current height of the levees in LPV 102 would have minimal adverse impacts on visual resources. The visual attributes of the project corridor would be temporarily impacted by construction activities at the project sites and by the transport of equipment and materials to and from the sites. The modifications to the ramps would increase the height of the risk reduction system, but the resulting structures would remain similar in design to the existing, adjacent levee system across LPV 102. In addition, these modifications would take place within the existing levee system corridor, so the visual character of the area after construction would be minimally different from current conditions. Turf grass would be re-established on the levees in the area after construction, and the appearance of the levees would remain similar to the existing conditions. The long-term impacts on aesthetics resources would be minimal as the project area would be returned, as much as possible, to existing conditions after ramp construction.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on visual resources from this alternative would be essentially the same as those described for the proposed action for LPV 102.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on visual resources from the proposed action for LPV 103 would be similar to those described for the proposed action at LPVs 101 and 102. The proposed increases in the height of floodwalls, and the construction of roller gates across Rail Street and Lake Terrace Drive at increased heights along Bayou St. John between the mouth of the bayou and the existing sector gate, would have minimal impacts on the project area's visual character. The addition of roller gates and modification of floodwalls along Bayou St. John under the proposed action for LPV 103 would increase the height of the risk reduction system in these areas, but the resulting structures would remain similar in design to the existing conditions.

In addition, these modifications would take place within the existing levee system corridor, so the visual character of the area after construction would be minimally different from current conditions. Turf grass would be re-established on the levees after construction, and the appearance of levees, floodwalls, ramps, and gates would remain similar to the existing conditions. The removal of a limited number of trees within the footprint of the project along Bayou St. John, as the result of construction and staging areas (figure 9), could have an impact on the appearance of that area. However, the floodwall could be designed with an architectural treatment to the floodwall concrete. The areas adjacent to the floodwall would be landscaped where appropriate. The long-term impacts on aesthetic resources would be minimal as the project area would be returned, as much as possible, to existing conditions after floodwall construction.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on visual resources from this alternative would be essentially the same as those described for the proposed action for LPV 103.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on visual resources from this alternative would be similar to those described for the proposed action for LPV 103. However, the construction of a levee and sluice gate across the mouth of Bayou St. John under this alternative would add large, man-made elements to the shoreline of the lake and would result in a greater impact on views of the bayou and the lake.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on visual resources from this alternative would be similar to those described for the proposed action for LPV 103. However, the construction of a sector gate across the mouth of Bayou St. John under this alternative would add large, man-made elements to the shoreline of the lake and would result in a greater impact on views of the bayou and the lake.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on visual resources from the proposed action at LPV 104 would be similar to those described for the proposed action for LPV 103.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue and Leroy Johnson Drive), Alternative 2 LPV 104 (Modification of Gate L10), Alternative 3 LPV 104 (Modification of Gate L11), and Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on visual resources from these alternatives would be essentially the same as those for the proposed action for LPV 104.

3.2.10 Air Quality

Existing Conditions

The USEPA, under the requirements of the Clean Air Act of 1963 (CAA), has established National Ambient Air Quality Standards (NAAQS) for seven contaminants, referred to as criteria pollutants (40 CFR 50). These are carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter less than 10 microns in diameter (PM₁₀), particulate matter less than 2.5 microns in diameter (PM_{2.5}), lead (Pb), and sulfur dioxide (SO₂). 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 7.

National Ambient Air Quality Standard Attainment Status

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 nonattainment.” The proposed levee, floodwall, flood gate, and roadway ramp demolition and construction activities would occur in Orleans Parish, Louisiana, an area that is currently designated as in attainment for all criteria pollutants. Therefore, further analysis required by the CAA general conformity rule (Section 176(c)) would not apply for the proposed Federal action.

Discussion of Impacts

Future Conditions with No Action

There would be no adverse direct, indirect, or cumulative impacts to air quality within the project area under the no action alternative beyond what was described in the final EIS for the LPV Hurricane Protection Project (August 1974) and its supplements (Final Supplement I [July 1984] and Final Supplement II [August 1994]).

Proposed Action – All Reaches within IER # 4 Project Area

Direct Impacts

During construction of the proposed action, increases in air emissions along the levee/floodwall corridor could be expected during the demolition and construction years. These emissions could include 1) exhaust emissions from operations of material delivery/dump trucks and various types of non-road construction equipment such as loaders, excavators, cranes, etc. and 2) fugitive dust due to earth disturbance. These emissions would be from mobile sources for which emissions performance standards would be applicable to source manufacturers, and they are not regulated under the CAA air permit regulations. Therefore, it is not necessary to quantify these emissions given the lack of ambient emissions thresholds that could be used to make a determination of the level of effect from these mobile sources on air quality.

The principal air quality concern associated with the proposed activities is emission of fugitive dust near demolition and construction areas. The on-road trucks and private autos used to access the work area would also contribute to construction phase air pollution in the project neighborhood when traveling along local roads.

**Table 7.
National Ambient Air Quality Standards**

Pollutant and Averaging Time	Primary Standard		Secondary Standard	
	µg/m ³	parts per million (ppm)	µg/m ³	ppm
Carbon monoxide 8-hour concentration 1-hour concentration	10,000 ¹ 40,000 ¹	9 ¹ 35 ¹	- -	
Nitrogen dioxide annual arithmetic mean	100	0.053	Same as primary	
Ozone 8-hour concentration	147	0.075 ²	Same as primary	
Particulate matter <u>PM_{2.5}</u> : annual arithmetic mean 24-hour maximum <u>PM₁₀</u> : 24-hour concentration	15 ³ 35 ⁴ 150 ¹	- - -	Same as primary	
Lead quarterly arithmetic mean	1.5	-	Same as primary	
Sulfur dioxide annual arithmetic mean 24-hour concentration 3-hour concentration	80 365 ¹ -	0.03 0.14 ¹ -	- - 1300 ¹	- - 0.50 ¹

Notes:

¹ Not to be exceeded more than once per year.

² 3-year average of the fourth highest daily maximum 8-hour concentration must not exceed 0.075 ppm, effective as of May 27, 2008.

³ Based on 3-year average of annual averages.

⁴ Based on 3-year average of annual 98th percentile values.

Source: 40 CFR 50.

However, site-specific construction effects would be temporary and dust emissions would be controlled using standard BMP. For instance, application of water to control dust and periodic street sweeping and/or wetting down of paved surfaces would aid in preventing fugitive dust from becoming airborne. Construction activities related to the proposed action would not occur all at once, but would occur in increments through the estimated construction period. Construction activities would be similar to those activities that have already occurred in the area since Hurricane Katrina.

Indirect Impacts

There would be no adverse indirect impacts to air quality within the project area under the proposed action.

Cumulative Impacts

It would be assumed that other activities creating dust emissions and occurring within the vicinity of the IER # 4 project area would also be using standard BMP. For instance, application of water to control dust and periodic street sweeping and/or wetting down of paved surfaces would aid in preventing fugitive dust from becoming airborne. Other construction activities occurring during the same timeframe and within the vicinity of the IER # 4 project area would likely occur in increments through the estimated construction period. Construction activities would be similar to those activities that have already occurred in the area since Hurricane Katrina. Therefore, cumulative impacts to air quality in the project area due to the proposed action and other construction activities within the area that may be occurring concurrently would be temporary. After the construction period, there would be no incremental contribution to cumulative air quality impacts due to the proposed action.

Alternative Actions – All Reaches within IER # 4 Project Area

Direct, Indirect, and Cumulative Impacts

The direct, indirect, and cumulative impacts to air quality under the alternative actions would be the same as those described under the proposed action.

3.2.11 Noise

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 (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

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 USEPA and has been adopted by most Federal agencies (USEPA 1974). A DNL of 65 weighted decibels (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. (The A-weighted sound level, used extensively in this country for the measurement of community and transportation noise, represents the approximate frequency response characteristic of an average young human ear.) Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by USEPA as a level below which there is no adverse impact (USEPA 1974).

Noise levels occurring at night generally produce a greater annoyance than do the same levels occurring during the day. It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than the same level of noise during the day. This perception is largely because background environmental sound levels at night in most areas are about 10 dBA lower than those during the day.

Noise levels surrounding the project corridor would vary depending on the time of day and climatic conditions. Areas to the north of the project corridor primarily consist of open water (Lake Pontchartrain) and parkland with minimal noise generated by recreational users. Areas to the south are mostly residential, educational (UNO), and parkland. There are recreational marinas on the west end of the project area, and a general aviation airport (Lakefront Airport) just to the east of the project area. Due to airplane take-off and landings, it is highly likely that the DNLs exceed 65 dBA for the eastern portion of the project area. In the western portion of the project area, recreational boating activities generate noise during normal operation hours.

Discussion of Impacts

Future Conditions with No Action

Under the no action alternative, noise receptors near the project corridor would not experience additional construction-related noise beyond that associated with activities required to bring the existing levees, floodwalls, gates, and roadway ramps to the currently authorized heights. Therefore, there would be no direct, indirect, or cumulative impacts beyond those associated with the previously authorized actions.

Proposed Action – All Reaches within IER # 4 Project Area

Direct Impacts

Table 8 describes noise emission levels for construction equipment that would be expected to be used during the proposed construction activities. As can be seen from this table, the anticipated noise levels at 50 ft range from 76 dBA to 101 dBA based on data from the Federal Highway Administration (FHWA 2006).

Assuming the worst case scenario of 101 dBA (pile driver), as would be the case during the construction of floodwalls along the project corridor, all areas within 1,000 ft of the project corridor would experience noise levels exceeding 65 dBA. There are many residences within 1,000 ft of the project corridor. The use of pile drivers and other high-level noise sources would likely be limited to daylight hours, which would reduce the adverse impact of noise on surrounding land uses.

**Table 8.
Weighted (dBA) Sound Levels of Construction Equipment and Modeled
Attenuation at Various Distances¹**

Noise Source	50 ft	100 ft	200 ft	500 ft	1,000 ft
Backhoe	78	72	68	58	52
Crane	81	75	69	61	55
Dump truck	76	70	64	56	50
Excavator	81	75	69	61	55
Front end loader	79	73	67	59	53
Concrete mixer truck	79	73	67	59	53
Auger drill rig	84	78	72	64	58
Dozer	82	76	70	62	56
Pile driver	101	95	89	81	75

1. The dBA at 50 ft is a measured noise emission. The 100- to 1,000-ft results are modeled estimates.
Source: Highway Construction Noise Handbook (FHWA 2006).

The construction activities would be expected to create temporary noise impacts above 65 dBA to the sensitive receptors within 1,000 ft of the project corridor. The opportunities for noise mitigation would be limited because much of the construction activity would occur on top of the existing levee, which is the highest point in elevation in the area, or at floodwall and roadway ramp locations. However, noise emission from construction activities on the flood side would be attenuated to some degree by the existing levee. In addition to noise created by construction equipment, there would also be impacts from noise generated by construction vehicles and personal vehicles for laborers that could use public roads and highways for access to construction sites. Following construction, noise levels would return to existing conditions.

Indirect Impacts

Potential indirect impacts from noise include those related to residents, traffic, fishermen, avoidance of the area by wildlife, and emotional and mental stress that could result from the noise levels in the area during construction. Most of these impacts, with the exception of the emotional and mental stress, are discussed in other sections of this document corresponding to the resource being impacted by the construction-related noise levels. Emotional and mental stresses from increased noise levels are difficult to assess and are out of the scope of this document. However, it is reasonable to assume that the emotional and mental stress created by noise levels would be compensated by the relief associated with the hurricane risk reduction provided by the project.

Cumulative Impacts

Noise resulting from ongoing and planned construction activities in the IER # 4 project area as a result of HSDRRS projects and rebuilding and restoration following Hurricanes Katrina and Rita would not likely cause levels in the project area to surpass the maximum levels of noise described previously under direct impacts. However, concurrent projects would likely extend the amount of time people would be exposed to the increased noise levels resulting from construction activities.

Alternative Actions – All Reaches within IER # 4 Project Area

Direct, Indirect, and Cumulative Impacts

Future conditions under the alternative actions would be similar to those described under the proposed action.

3.2.12 Transportation

Existing Conditions

The IER # 4 project area is located on the southern shore of Lake Pontchartrain in Orleans Parish. The shoreline area is fully developed with residential, recreational, commercial, and institutional land uses. It starts at the 17th Street Canal (at the Jefferson Parish border), extends eastward along Lakeshore Park and Lake Oaks Park, and ends at the IHNC. On the west end (LPV 101) of the project area near the 17th Street Canal, there are marinas on Lake Pontchartrain that serve private watercraft. On the east side of the IHNC, Lakefront Airport extends into the lake. This airport is designated as a general aviation airport but also serves military and commercial aircraft (New Orleans Lakefront Airport 2008). The Louis Armstrong New Orleans International Airport is located west of the project area, on the west side of Jefferson Parish, and is the primary commercial airport for the New Orleans metropolitan area and southeast Louisiana (Louis Armstrong New Orleans International Airport 2007).

A rail line crosses the IHNC at the point where it meets Lake Pontchartrain and then turns south, crossing the eastern corner of the project area and continuing past I-10 toward the Mississippi River. There are several dock facilities on the IHNC at the east end of the project area. The Mississippi River is 5 to 8 miles to the south of the project area. The Port of New Orleans, located on the river, is one of the world's busiest ports, and many transportation modes intersect there: river and sea vessels, rail, and highway (Port of New Orleans 2007).

I-10 and I-610 are the major east-west highways that cross this area. They are multi-lane divided freeways. I-10 and I-610 connect the New Orleans metropolitan area with Baton Rouge and major coastal cities in Mississippi and Alabama. Baton Rouge, the state capital and second largest city in Louisiana, is a major traffic generator to the west of the project area. In addition, I-10 is a major east-west route along the northern Gulf Coast. Just south of the project area are Robert E. Lee Boulevard and Leon C. Simon Boulevard. Both are functionally classified as "principal arterials." They are 4-lane, divided, urban streets with no control of access. Just north of the project area is Lakeshore Drive. It is functionally classified as a "minor arterial." Lakeshore Drive is a 4-lane, urban street that has parkway-like features (Louisiana Department of Transportation and Development [LADOTD] 2008a). Roads that connect I-10 and I-610 to the project area are Pontchartrain Boulevard, West End Boulevard, Canal Boulevard, Wisner Boulevard, St. Bernard Avenue, Paris Avenue, Gentilly Boulevard with St. Anthony Avenue, Elysian Fields Avenue, and Franklin Avenue. All are functionally classified as either principal or minor arterials.

Operational conditions on a highway can be described with "level-of-service" (LOS). LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. The "Highway Capacity Manual" (Transportation Research Board [TRB] 2000) defines six LOS, designating each level with the letters A to F. LOS "A" represents the best operating condition, and LOS "F" represents the worst operating condition. LOS "C" or "D" is generally considered acceptable. Heavy trucks adversely affect the LOS of a highway. "Heavy trucks" are vehicles that have more than four tires touching the pavement. Heavy vehicles adversely affect traffic in two ways: (1) they are larger than passenger cars and occupy more roadway space; and (2) they have poorer operating capabilities than passenger cars, particularly in respect to acceleration, deceleration, and the ability to maintain speed on grades. The second impact is more critical. The inability of heavy vehicles to keep pace with passenger cars in many situations creates large gaps in the traffic stream, which are difficult to fill by passing maneuvers. The resulting inefficiencies in the use of roadway space cannot be completely overcome.

The most recent traffic volumes available from the LADOTD are from 2004 (LADOTD 2008b). The project lies north of I-610 and I-10. There is only one traffic count station north of I-610 and I-10 for roads that construction traffic would be most likely to use. It is located on Elysian Fields Avenue between I-610 and Gentilly Boulevard. The 2004 average daily traffic (ADT) on I-610 and I-10 in this part of Orleans Parish ranged between 70,000 and 113,000 vehicles per day. The 2004 ADT on Elysian Fields Avenue was 34,000 vehicles per day. These traffic volumes may not be a good representation of current traffic volumes because of the population shifts caused by Hurricanes Katrina and Rita in 2005.

Based on field observations (Schrohenloher 2007), the LOS on highways and streets in the project area is very poor during morning, noon, and evening peak hours, while vehicles are able to travel at the posted speed limits during off-peak times. In Orleans Parish from 2002 through 2006, there were 19 fatalities involving large trucks. In 2006, there were 3 fatalities involving large trucks – a rate of 1.34 fatalities per 100,000 people, which ranks the parish 37th in the state (1 being the highest rate of fatalities (National Highway Traffic Safety Administration [NHTSA] 2008).

Discussion of Impacts

Future Conditions with No Action

Under the no action alternative, there would be no direct, indirect, or cumulative adverse impacts on transportation facilities within the project area beyond those associated with the previously authorized actions. Maintenance of the HSDRRS to its authorized heights would continue to occur and effects on transportation in the project area would not differ substantially from those discussed under the 1974 EIS for the LPV hurricane protection system and its supplemental documents.

Proposed Action – All Reaches within IER # 4 Project Area

Direct Impacts

Additional traffic to the roadway network would include the mobilization of construction equipment, construction workers traveling to and from construction sites, construction materials being shipped to construction sites, and construction debris being removed from construction sites. Construction materials being shipped to construction sites would be the bulk of the additional traffic. Truck access to the project sites along Lakeshore Drive would be via I-610 or I-10 to Pontchartrain Boulevard, West End Boulevard, Canal Boulevard, Wisner Boulevard, St. Bernard Avenue, Paris Avenue, Gentilly Boulevard with St. Anthony Avenue, Elysian Fields Avenue, and Franklin Avenue.

Earthen fill material would be obtained from the Bonnet Carré Spillway, which is located approximately 25 to 30 miles from the IER # 4 project area, off of U.S. 61 in St. Charles Parish. (Environmental impacts of borrowing material from this site were evaluated in IER # 18.) Fill material could also be brought to the project area from one or more of the borrow areas evaluated in IER # 18, # 19, # 22, # 23, #25, or # 26. Concrete would likely be transported to the site via mixing truck and pumped on-site. Steel and concrete piling would likely be shipped by rail or by barge into the city from the manufacturer and transloaded to trucks at a terminal near the project site. Roadway surfacing material and rock would likely be provided by a local supplier and transported via truck to the project sites. Truck access to the project sites would be via I-610 and I-10 to one of the area principal or minor arterials.

Pile and concrete reinforcement materials would likely be shipped to construction sites during off-peak traffic times; therefore, it would have minimal LOS impacts to the roadway network. Earthen fill shipments would likely be spread throughout the workday and life of the project. Concrete and surfacing material shipments would likely be concentrated into short time periods.

Most of the earthen fill truck traffic associated with the proposed project would use U.S. 61, I-10, and I-610. U.S. 61 is assumed to be the worst case. Impacts to highway capacity can be predicted using the methodology from the Highway Capacity Manual for multilane highways. Two models were built—Base and Additional Trucks—to evaluate the highway capacity impacts that additional trucks would have to U.S. 61. The “Base” model looked at future conditions with no action, which serves as a comparison. The “Additional Trucks” model looked at the future conditions and calculated the number of trucks that were operating in addition to the “Base” traffic stream during the peak hour. It was assumed that there are 30,000 vehicles per day in the “Base” condition, 10 percent of which are operating in the peak hour, 5 percent of the base vehicles are trucks, and base free-flow speed is 50 miles per hour. For the “Additional Trucks” condition, 7 trucks per hour in each direction were added to the “Base condition”. For the “Base” and “Additional Trucks” conditions U.S. 61 would operate at LOS “C.” The additional truck traffic would have a temporary impact on the LOS for U.S. 61. Were earthen fill material brought to the project area from one or more of the borrow areas evaluated in IER # 18, # 19, #

22, # 23, # 25, or # 26, impacts would be similar. After construction is complete, the proposed action would have no long-term impact on transportation.

For concrete shipments, the maximum number of concrete trucks per hour was assumed to be five (1 truck every 12 minutes) for LPVs 101, 102, 103, and 104. This could possibly affect the LOS on an arterial during peak traffic hours. Concrete pours could be done during non-peak traffic hours to ensure consistent concrete delivery and minimization of traffic impacts. The maximum number of trucks carrying piling or surfacing materials was assumed to be two per hour, which would likely have no effect on an arterial's LOS during peak traffic hours.

Local streets would be used to access work sites from the arterials. These access roads (e.g., work site access, staging areas) used by the trucks could have substantial changes in their LOS. It should be noted that without a detailed transportation routing plan, a more detailed evaluation of impacts on the LOS of minor highways and roads cannot be done, but will be addressed in more detail in the draft CED. Additionally, it can only be presumed that the increased traffic in the area could potentially increase traffic accidents and related traffic fatalities. However, a slow down in traffic due to the construction-related traffic could also reduce speeds and thereby reduce traffic accident-related fatalities.

Indirect Impacts

Heavy trucks are the primary loading source causing pavement degradation. The additional truck traffic resulting from the proposed action could contribute to additional wear-and-tear of pavement on area arterials and local streets.

Cumulative Impacts

As discussed previously, additional wear-and-tear of pavement on roads within the project vicinity could occur due to increased truck traffic under the proposed action. On-going construction related to other reconstruction projects in the project vicinity could also contribute to the increase in truck traffic and could, therefore, increase the wear-and-tear on the pavement of the roads.

Alternative Actions – All Reaches within IER # 4 Project Area

Direct, Indirect, and Cumulative Impacts

Direct, indirect, and cumulative impacts on transportation from the alternative actions would be similar to those described for the proposed action.

3.3 SOCIOECONOMIC RESOURCES

Existing Conditions

The project area is located in Orleans Parish on the southern shore of Lake Pontchartrain, extending from the Orleans-Jefferson Parish boundary line on the west to the IHNC on the east. Land use in this part of the Orleans Parish East Bank is predominantly residential, with some commercial development and several large institutional/government facilities, such as the 1,300-acre City Park and two college campuses. The shoreline is fully developed, with primarily residential, recreational, and institutional land uses. Land use in the protected area adjacent to the western portion of the project corridor (south of LPV 101) is a mixture of commercial and high-rise, multi-family, and single-family residential units. Farther east, along LPV 102 and 103, there is mostly single-family residential development, while the University of New Orleans campus occupies most of the area adjacent to the easternmost portion of the project corridor.

(LPV 104), which also includes some light industrial development near the IHNC. Recreational land uses north of the levee, along the Lake Pontchartrain shoreline, include the marinas at West End Lakeshore Park adjacent to the 17th Street Canal, Lakeshore Park and Lake Terrace Park along LPV 102 and 103, and Lake Oaks Park in LPV 104.

I-10/I-610 crosses this part of Orleans Parish in an east-west direction, parallel to and approximately 2.5 to 3 miles south of the Lake Pontchartrain shoreline. Access to the project area is provided by major north-south roads that connect with I-10 or I-610, including Canal Boulevard, St. Bernard Avenue, Paris Avenue, Elysian Fields Avenue, and Franklin Avenue, as well as by numerous local streets.

Orleans Parish encompassed 181 square miles of land plus 170 square miles of water in the year 2000 (U.S. Census Bureau [USCB] 2007a). With a population of 484,674 reported in the 2000 Census, the parish had a population density of 2,678 persons per square mile, compared to 103 persons per square mile for the state of Louisiana (USCB 2008). Most of the parish population is found on the East Bank. A total of 424,249 residents in the Orleans Parish East Bank (based on the 2000 Census) were protected by the Lake Pontchartrain and Vicinity Hurricane Protection Project, as authorized (USACE 2006b). The population had declined over 6 percent to an estimated 454,863 in July 2005 (prior to Hurricane Katrina). Following Katrina, the population experienced a substantial decline to an estimated 223,388 in July 2006, which represents a 54 percent decrease from 2000 (USCB 2006 and 2008). Within the eight Orleans Parish planning districts that are located within the area bounded by Lake Pontchartrain, Jefferson Parish, the Mississippi River, and the IHNC, there were 70,896 homes damaged by flooding from Hurricane Katrina (U.S. Department of Housing and Urban Development 2006).

According to the 2000 Census, 67.3 percent of the population of Orleans Parish was African American, 28.1 percent was white, and the remaining 4.6 percent was primarily Asian, persons identified as two or more races, and “some other race”. The median household income was \$27,133 and approximately 27.9 percent of individuals residing in Orleans Parish were identified as living below the Federal poverty level (USCB 2007b). In 2004, the median household income had increased slightly to \$27,355 while persons below the poverty level stayed approximately the same at 27 percent, compared to \$35,216 and 19.2 percent for Louisiana (USCB 2008). The Bureau of Economic Analysis *Survey of Current Business* (Lenze 2008) estimates that the per capita personal income of Orleans Parish was \$31,016 in 2004, dropping to \$13,137 in 2005 as a result of the effects of Hurricane Katrina, and increasing to \$59,449 in 2006 resulting from restoration, reinvestments, and the higher incomes of residents whose residences were not destroyed by the hurricane.

Orleans Parish is included in the New Orleans-Metairie-Kenner, Louisiana Metropolitan Statistical Area. Between 2000 and 2004, employment in Orleans Parish declined from 263,536 to 247,260 representing a decrease of 6.2 percent. In 2005, employment declined by 14.1 percent to 212,504. In 2004 and 2005, accommodation/food services represented the largest sector of employment followed closely by health care/social assistance and educational services (Louisiana Department of Labor [LaDOL] 2002, 2005, 2006). In 2007, the annual average unemployment rate in Orleans Parish was 4.5 percent, which is higher than the annual average unemployment rate of 3.8 percent for Louisiana (LaDOL 2008). The LaDOL estimated that total employment in the parish was 97,338 in November 2008 (latest available) with unemployment of 7.1 percent (LaDOL 2009).

Discussion of Impacts

Future Conditions with No Action

Direct Impacts

Without implementation of the proposed action for 100-year level of risk reduction, the levee reaches and associated structures included in the IER # 4 project area would be maintained at or replaced to the project's currently authorized height. This could present an increased risk of storm-related flooding in the low-lying portions of the area and the associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents. Costs would be incurred for such items as evacuation, clean up, debris removal, building and infrastructure repair, damaged vehicles, and reoccupation of homes and businesses.

Indirect Impacts

The no action alternative would be expected to have an adverse impact on the number of businesses and industries, land use patterns, employment, population levels, and other socioeconomic resources in this part of the Orleans Parish East Bank area. Without implementation of the proposed action, the flood risk reduction structures necessary for recovery and economic prosperity in the parish would not be provided.

Cumulative Impacts

The no action alternative would contribute to adverse cumulative impacts on socioeconomic resources in the New Orleans Metropolitan area. Without improvements to the Orleans Parish lakefront flood risk reduction system, there could be a gap in the HSDRRS for 100-year level of risk reduction that would leave parts of Orleans Parish East Bank more vulnerable to flooding.

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct Impacts

Replacement of existing floodwalls and gates and construction of new T-walls on top of existing levees under the proposed action would take place within the existing levee/floodwall corridor. The footprint of the new wall segments and gates would remain within the existing ROW. During construction, a "no work zone" would be established for the existing parking lot adjacent to Lakeshore Drive on the eastern side of the marina to provide parking for commercial businesses and residents. Therefore, adjacent land uses would not be directly impacted by construction activities. The proposed action would provide 100-year level of flood risk reduction for the area within the subject Orleans Parish East Bank protected area. This would allow for Federal Emergency Management Agency (FEMA) certification of that level of risk reduction, and would have a beneficial impact on social and economic resources in Orleans Parish East Bank.

There would be temporary beneficial socioeconomic impacts from construction activities associated with the proposed action, including purchase of materials, equipment, and services and a temporary increase in employment and income. This impact could be local or regional, depending on where the goods, services, and workers would be obtained.

Indirect Impacts

Following completion of the proposed action, land use patterns in Orleans Parish East Bank would not be expected to change since raising the lakefront levee LPV 101 through 104 to the 100-year level of risk reduction would not encourage one type of land use over another. However, the potential exists for an increase in the rate of urban development, given the increased risk reduction from flooding provided by the raised levees. Additionally, the proposed action would allow for FEMA certification of the 100-year level of risk reduction. A reduction in insurance rates and the potential costs resulting from flood damage could be expected if the proposed action were implemented. Population and long-term employment and income levels in Orleans Parish would be expected to increase if the raised levees stimulated growth in urban development in the protected area. Although the proposed action would reduce but not eliminate the risk of flooding, it could have beneficial impacts on population, long-term employment and income levels in the parish.

Cumulative Impacts

The proposed action would have beneficial cumulative impacts on socioeconomic resources in the New Orleans metropolitan area. It is part of the ongoing Federal effort to reduce the threat to life, health, and property posed by flooding. The combined effects from construction of the multiple projects underway and planned to rebuild the HSDRRS in the area would reduce flood risk and storm damage to residences, businesses, and other infrastructure from storm-induced and tidally-driven flood events and, thereby, encourage recovery. All segments of the Orleans Parish East Bank HSDRRS need to be brought to 100-year level of risk reduction in order to obtain FEMA certification of the system. When considered in conjunction with potential effects from other flood control projects in the region, beneficial cumulative impacts would be likely.

Alternative 1 LPV 101 (West End Levee)

Direct, Indirect, and Cumulative Impacts

The direct impacts on land use and socioeconomic resources from increasing the height of the west end levee under this alternative would be similar to, but slightly greater than, those described for the proposed action for LPV 101. The increase in the footprint of the levee could temporarily affect adjacent land uses. In particular, a flood side shift would extend a staging area closer to the Coconut Beach recreational area, which contains sand volleyball courts. Potential indirect and cumulative impacts would be essentially the same as those described for the proposed action.

Alternative 2 LPV 101 (Gate L4)

Direct, Indirect, and Cumulative Impacts

The direct impacts on land use and socioeconomic resources from replacement of gate L4 under this alternative would be similar to those described for the proposed action. Under this alternative, the gate would be demolished and rebuilt in the same location, rather than relocated closer to Lake Marina Avenue, and adjacent land uses would not be altered by construction activities. Potential indirect and cumulative impacts would be essentially the same as those described for the proposed action.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct, Indirect, and Cumulative Impacts

The direct impacts on land use and socioeconomic resources from the increase in height for the east end levee under this alternative would be similar to, but slightly greater than, those described for the proposed action. Under this alternative, the entire length of the east end levee would be raised, rather than just the northern portion, with a corresponding increase in the levee footprint (in a straddle configuration). Adjacent land uses would not be impacted by construction activities because this alternative would not require additional ROW and retaining walls would likely be constructed to minimize the levee footprint due to space restrictions. Potential indirect and cumulative impacts would be essentially the same as those described for the proposed action.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct Impacts

Land use would not be directly impacted by raising the elevation of the existing roadway ramp on Canal Boulevard where it crosses the levee under the proposed action because the ramp would remain at the same location. Although the footprint of the raised ramp could vary slightly from existing conditions, adjacent land areas are vacant (open space associated with Lakeshore Park) and construction would likely take place within the existing levee corridor. Therefore, land use would not be affected. The proposed action would provide 100-year level of flood risk reduction for the area within the Orleans East Bank protected area. This would allow for FEMA certification of that level of risk reduction, and would have a beneficial impact on social and economic resources in Orleans Parish East Bank. There would be temporary beneficial socioeconomic impacts from construction activities associated with the proposed action; these impacts would be similar to those described for the proposed action for LPV 101.

Indirect Impacts

Potential indirect impacts on socioeconomic resources and land use from the proposed action for LPV 102 would be essentially the same as those described for the proposed action for LPV 101.

Cumulative Impacts

Potential cumulative impacts on socioeconomic resources and land use from the proposed action for LPV 102 would be essentially the same as those described for the proposed action for LPV 101.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct, Indirect, and Cumulative Impacts

The direct impacts on land use and socioeconomic resources from constructing a new flood gate across Canal Boulevard under this alternative would be similar to, but slightly greater than, those described for the proposed action for LPV 102. There would likely be an increase in the construction footprint that could affect adjacent land uses. However, adjacent land areas consist of vacant open space associated with Lakeshore Park. Potential indirect and cumulative impacts would be the same as those described for the proposed action.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct Impacts

Demolition of existing floodwalls along Bayou St. John and replacement with new T-walls, construction of new gates across Rail Street and Lake Terrace Drive, and modification of the sector gate, roadway gate, and floodwalls under the proposed action would take place within the existing levee/floodwall corridor for the most part. However, new permanent easements totaling approximately 4 acres would be required, located adjacent to Lakeshore Drive near Rail Street and Lake Terrace Drive. Although the footprint of the gates could vary slightly from existing conditions, adjacent land areas are vacant (including open space associated with the lakefront parks) and land use would not be affected. The new T-walls would be constructed in the same location as the existing floodwalls. Therefore, adjacent land uses would not be directly impacted by construction activities. The proposed action would provide 100-year level of flood risk reduction for the area within the Orleans Parish East Bank protected area. This would allow for FEMA certification of that level of risk reduction, and would have a beneficial impact on social and economic resources in Orleans Parish East Bank.

There would be temporary beneficial socioeconomic impacts from construction activities associated with the proposed action; these impacts would be similar to those described for the proposed action for LPV 101.

Indirect Impacts

Potential indirect impacts on socioeconomic resources and land use from the proposed action for LPV 103 would be essentially the same as those described for the proposed action for LPV 101.

Cumulative Impacts

Potential cumulative impacts on socioeconomic resources and land use from the proposed action for LPV 103 would be essentially the same as those described for the proposed action for LPV 101.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct, Indirect, and Cumulative Impacts

The direct impacts on land use and socioeconomic resources from raising the elevation of the existing Lakeshore Drive ramps under this alternative would be greater than those described for the proposed action for LPV 103, which includes constructing new gates across Rail Street and Lake Terrace Drive adjacent to Lakeshore Drive. Under alternative 1, there would be an increase in the construction footprint that would affect adjacent residential land uses, with ramps raised in front of driveways and encroachment onto residential properties, resulting in the taking of four residences on Lake Terrace Drive and two on Rail Street. Potential indirect and cumulative impacts would be similar to those described for the proposed action.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct, Indirect, and Cumulative Impacts

Construction of a new section of levee with a sluice gate on the lake side of the Bayou St. John Bridge would have a direct impact on land use. The existing levees on either side of the bayou would be extended to the bayou shoreline. However, the construction would occur in the general area of the levee/floodwall corridor, on vacant open space associated with Lakeshore Park and Lake Terrace Park. Therefore, adjacent land uses would not be directly impacted by construction activities associated with alternative 2. The direct impacts on socioeconomic resources from constructing a new section of levee and sluice gate under this alternative would be similar to those described for replacement of floodwalls along Bayou St. John under the proposed action for LPV 103. Potential indirect and cumulative impacts from alternative 2 would be the same as those described for the proposed action.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct, Indirect, and Cumulative Impacts

The direct impacts on land use and socioeconomic resources from construction of a new section of levee with a sector gate on the lake side of the Bayou St. John Bridge under this alternative would be the same as or similar to those described for alternative 2 (construction of levee and sluice gate). Potential indirect and cumulative impacts would be the same as those described for the proposed action.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct Impacts

Strengthening gate L11 and the American Standard and Pontchartrain Beach floodwalls and raising the elevation of the roadway ramps at Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive under the proposed action would take place within the existing levee/floodwall corridor. The strengthened gate would be constructed in the same location as the existing gate and the replacement floodwalls would be constructed in their existing alignments. Therefore, adjacent land use would not be directly impacted by construction activities for these components of the proposed action. Although the footprints of the raised ramps would vary slightly from existing conditions, there is sufficient vacant land adjacent to the four ramp footprints and there would be no direct impact on land use. Replacement of gate L10 with a levee would result in an increase in the footprint; however, it would not directly impact adjacent land uses because there is sufficient vacant land to accommodate construction of the levee (which would be a continuation of the existing levee that already exists on either side of the gate). The reconstructed gates W39 and W40 and Seabrook floodwall (portion underneath the Senator Ted Hickey Bridge) would be located 60 ft to the floodside of the current structures. These changes in alignment would occur in vacant areas adjacent to the structures and would not directly impact land use.

The proposed action would provide 100-year level of flood risk reduction for the area within the Orleans East Bank protected area. This would allow for FEMA certification of that level of risk reduction, and would have a beneficial impact on social and economic resources in Orleans Parish East Bank. There would be temporary beneficial socioeconomic impacts from

construction activities associated with the proposed action; these impacts would be similar to those described for the LPV 101 proposed action.

Indirect Impacts

Potential indirect impacts on socioeconomic resources and land use from the proposed action for LPV 104 are essentially the same as those described for the proposed action for LPV 101.

Cumulative Impacts

Potential cumulative impacts on socioeconomic resources and land use from the proposed action for LPV 104 are essentially the same as those described for the proposed action for LPV 101.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive)

Direct, Indirect, and Cumulative Impacts

The direct impacts on land use and socioeconomic resources from constructing new flood gates across the roadway ramps under this alternative would be similar to, but slightly greater than, those described for the proposed action for LPV 104, which includes increasing the height of the ramps. There would likely be an increase in the construction footprint that could affect adjacent land uses. However, adjacent land areas are vacant, and construction would likely take place within the existing levee corridor. Therefore, land use would not be directly affected. Potential indirect and cumulative impacts would be the same as those described for the proposed action.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct, Indirect, and Cumulative Impacts

Under this alternative, gate L10 would be modified rather than replaced with a levee as would occur under the proposed action. There would be a decrease in the construction footprint and construction would take place within the existing levee corridor. Therefore, land use would not be directly affected. Potential indirect and cumulative impacts would be the same as those described for the proposed action.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct, Indirect, and Cumulative Impacts

Potential direct, indirect, and cumulative impacts on land use and socioeconomic resources from reconstruction of gate L11 in its original location under this alternative would be essentially the same to those described for the proposed action.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct, Indirect, and Cumulative Impacts

Potential direct, indirect, and cumulative impacts on land use and socioeconomic resources from reconstruction of gate W39 in its original location under this alternative would be essentially the same to those described for the proposed action.

3.4 ENVIRONMENTAL JUSTICE

The USEPA defines environmental justice (EJ) as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies." Meaningful involvement means that people have an opportunity to participate in decisions about activities that may affect their environment and/or health, the public's contribution can influence the regulatory agency's decision, the public's concerns will be considered in the decision-making process, and the decision makers seek out and facilitate the involvement of those potentially affected. The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high or adverse effects and alternatives that may mitigate these impacts.

This assessment of EJ was developed in accordance with requirements of the following:

- Executive Order 12898 ("Federal Actions to Address Environmental Justice in Minority Population and Low-Income Populations," 1994).
- "Department of Defense's Strategy on Environmental Justice" (March 24, 1995).

The EJ analysis identifies and addresses, as appropriate, potential disproportionate adverse human health and/or environmental effects of the proposed action and alternatives on minority and/or low-income populations. The methodology to accomplish this includes identifying low-income and minority populations within the study area. Census block group statistics from the 2000 US Census (the latest and most detailed census) and Environmental Systems Research Institute (ESRI) estimates, as shown in table 9, were utilized for data analysis. In addition, community meetings targeted at minority and low-income populations have and will continue to take place throughout the planning process.

Detailed discussion of demographic and income data, along with pertinent maps, tables and photographs, are available by request and will be included in the CED.

**Table 9.
Minority and Poverty Data for the Environmental Justice Analysis**

	IER # 4 Project Area		Orleans East Bank		Orleans Parish		Louisiana	
	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)	Number	Percentage (%)
Minority Population, 2000	18,588	39.4	2,163	66.3	355,803	73.4	1,689,422	37.8
Estimated Minority Population, 2007	7,063	33.7	934	53.7	168,017	63.4	1,741,453	39.8
Low Income Population, 2000	4,629	10.0	936	28.7	130,896	27.9	851,113	19.6
*Estimated Low Income Population, 2007	1,013	11.5	184	26.1	24,726	24.4	351,703	21.4

Note: 2007 does not use the equivalent definition for "low income" due to the limited information available in 2007 at the Block Group level. In 2000, the definition is equivalent to all populations living below the poverty line, whereas in 2007, the definition uses all households earning less than \$15,000 per year.

Existing Conditions

According to the 2000 Census, 67.3 percent of the population of Orleans Parish was African American, 28.1 percent was white, and the remaining 4.6 percent was primarily Asian, persons identified as two or more races, and “some other race.” The median household income was \$27,133, and approximately 27.9 percent of individuals residing in Orleans Parish were identified as living below the Federal poverty level (USCB 2007b). In 2004, the median household income had increased slightly to \$27,355, while persons below the poverty level stayed approximately the same at 27 percent, compared to \$35,216 and 19.2 percent for Louisiana (USCB 2008).

All Census Block Groups within a 1-mile radius of the IER # 4 footprint are defined as the IER # 4 project area, which includes the neighborhoods closest to Lake Pontchartrain in Orleans Parish. Per the U.S. Census Bureau, the IER # 4 project area was not a low-income or minority area in 2000. According to ESRI estimates, the low-income and minority population changed very little from 2000 to 2007.

Discussion of Impacts

The proposed actions and alternatives were evaluated for potential disproportionately high and adverse environmental effects on minority or low-income populations. As the project planning process advances, EJ will continue to be analyzed for further impacts to low-income and minority populations.

Cumulative EJ impacts from all alternatives (with the exception of the no action alternative) will be analyzed when further project planning data become available, and will be included in the CED.

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. The EJ impacts could be presented in the form of increased storm-related flooding in low-lying areas, which could lead to damage to buildings and infrastructure as well as disruption of local economic activity and displacement of residents. These impacts have previously been evaluated for existing, authorized projects. No indirect or cumulative impacts to EJ issues would result from the no action alternative.

Future Conditions for LPV 101

Proposed Action LPV 101 (Demolition of Existing Floodwalls, Construction of New T-Walls and Gates, and New T-wall Caps for East/West End Levees)

Direct and Indirect Impacts

The LPV 101 reach runs from the western end of Lake Marina Avenue on 17th Street Canal on the west to the intersection of Topaz Street and Lakeshore Drive on the east. Replacement of existing floodwalls and gates and construction of new T-walls on top of existing levees under the proposed action would take place within the existing levee/floodwall corridor. The footprint of the new wall segments and gates would remain within the existing ROW.

Minority and low-income populations would not be disproportionately impacted by the proposed action.

Alternative 1 LPV 101 (West End Levee)

Direct and Indirect Impacts

The increase in the footprint of the levee could temporarily affect adjacent land uses, but would be similar to the impacts described for the proposed action for LPV 101. The LPV 101 work in this area would not cause direct or indirect EJ impacts. Minority and low-income populations would not be disproportionately impacted by this alternative.

Alternative 2 LPV 101 (Gate L4)

Direct and Indirect Impacts

The impacts of the Gate L4 alternative would be similar to those described for the proposed action. The Gate L4 work would not cause direct or indirect EJ impacts in this area. Minority and low-income populations would not be disproportionately impacted by this alternative.

Alternative 3 LPV 101 (Levee Reach South of Topaz Street to Gate L5)

Direct and Indirect Impacts

Under this alternative, the entire length of the east end levee would be raised, rather than just the northern portion, with a corresponding increase in the levee footprint (in a straddle configuration). This project would not require additional ROW and minority and low-income populations would not be disproportionately impacted by this alternative.

Future Conditions for LPV 102

Proposed Action LPV 102 (Increase in Ramp Height)

Direct and Indirect Impacts

The entire length of the alignment of LPV 102 runs from Topaz Street on the west to the Orleans Avenue Canal on the east, parallel to and east/south of Lakeshore Drive. Under the proposed action, this area would not be directly impacted by raising the elevation of the existing roadway ramp on Canal Boulevard where it crosses the levee because the ramp would remain at the same location. Minority and low-income populations would not be disproportionately impacted by the proposed action.

Alternative 1 LPV 102 (Gate across Canal Boulevard)

Direct and Indirect Impacts

Because the land areas adjacent to the gate affected by this alternative consist of vacant lots, minority and low-income populations would not be disproportionately impacted by this alternative.

Future Conditions for LPV 103

Proposed Action LPV 103 (Replacement of Floodwalls with New T-Walls, Modification of Bayou St. John Sector Gate, Addition of Gates to Ramps, and Modification of Marconi Drive Gate and Adjacent Floodwalls)

Direct and Indirect Impacts

This reach extends from Orleans Avenue Canal along the existing levee/floodwall to the existing gate at Bayou St. John, continuing east to end at London Avenue Canal. Demolition of existing floodwalls along Bayou St. John and replacement with new T-walls, construction of new gates across Rail Street and Lake Terrace Drive, and modification of the sector gate, roadway gate, and floodwalls under the proposed action would take place within the existing levee/floodwall corridor for the most part. Minority and low-income populations would not be disproportionately impacted by the proposed action.

Alternative 1 LPV 103 (Raise Lakeshore Drive Ramps)

Direct and Indirect Impacts

This alternative includes constructing new gates across Rail Street and Lake Terrace Drive adjacent to Lakeshore Drive. Minority and low-income populations would not be disproportionately impacted by this alternative.

Alternative 2 LPV 103 (Levee with Sluice Gate at Bayou St. John)

Direct and Indirect Impacts

This alternative would construct a new section of levee with a sluice gate on the lake side of the Bayou St. John Bridge. The existing levees on either side of the bayou would be extended to the bayou shoreline, and would occur in the general area of the levee/floodwall corridor on vacant open space associated with Lakeshore Park and Lake Terrace Park. Minority and low-income populations would not be disproportionately impacted by this alternative.

Alternative 3 LPV 103 (Sector Gate across Bayou St. John)

Direct and Indirect Impacts

Impacts under this alternative from construction of a new section of levee with a sector gate on the lake side of the Bayou St. John bridge would be the same to those described for alternative 2 LPV 103. Minority and low-income populations would not be disproportionately impacted by this alternative.

Future Conditions for LPV 104

Proposed Action LPV 104 (Demolition and Construction of New Gates, Modification of Gates, Replacement of Floodwall with T-Wall, and Increase in Height of Existing Ramps)

Direct and Indirect Impacts

This reach begins at Orleans Avenue Canal on the west, runs eastward along the existing levee/floodwall parallel to the Lake, and concludes at IHNC on the east. The proposed action would strengthen gate L11 and the American Standard and Pontchartrain Beach floodwalls and raise the elevation of the roadway ramps at Lakeshore Drive, Franklin Avenue, and Leroy

Johnson Drive. Gate L10 would be replaced with a levee and gates W39 and W40 and Seabrook floodwall would be reconstructed. All of these projects fall within existing ROW. Minority and low-income populations would not be disproportionately impacted by the proposed action.

Alternative 1 LPV 104 (Gates Along Lakeshore Drive, Franklin Avenue, and Leroy Johnson Drive)

Direct and Indirect Impacts

This alternative would involve constructing new flood gates across the roadway ramps. All work would take place within existing ROW and levee corridors. Minority and low-income populations would not be disproportionately impacted by this alternative.

Alternative 2 LPV 104 (Modification of Gate L10)

Direct and Indirect Impacts

Under this alternative, gate L10 would be modified by strengthening to meet current design standards, and would take place within the existing levee corridor. Minority and low-income populations would not be disproportionately impacted by this alternative.

Alternative 3 LPV 104 (Modification of Gate L11)

Direct and Indirect Impacts

Impacts from reconstruction of gate L11 in its original location under this alternative would be similar to the proposed action. Minority and low-income populations would not be disproportionately impacted by this alternative.

Alternative 4 LPV 104 (Reconstruction of Gate W39)

Direct and Indirect Impacts

Impacts from reconstruction of gate W39 in its original location under this alternative would be similar to the proposed action. Minority and low-income populations would not be disproportionately impacted by this alternative.

3.5 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

Under ER 1165-2-132 the reasonable identification and evaluation of Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within a proposed area of construction is required. ER 1165-2-132 identifies the CEMVN HTRW policy to avoid the use of project funds for HTRW removal and remediation activities. Costs for necessary special handling or remediation of wastes (e.g., Resource Conservation and Recovery Act [RCRA] regulated), pollutants, and other contaminants, which are not regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), would 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 (ASTM) E 1527-05 Phase I Environmental Site Assessment was completed for the project area. A copy of the Phase I Environmental Site Assessment will be maintained on file at the CEMVN office in New Orleans and is incorporated herein by reference. The Phase I Environmental Site Assessment documented the Recognized Environmental Conditions (RECs) for the project area. 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, to take actions to avoid possible contaminants, and to determine if local, state, or Federal coordination is required.

Based on database review and site history of adjoining properties, RECs were not identified within the 1,000-foot radius of the Orleans Lakefront Levee (IER # 4 project area). Within the HSDRRS, two historical U.S. Department of Defense properties were suggested but not confirmed to have active or present underground storage tanks (USTs). Investigation of past activity revealed an area adjacent to an Orleans Levee District facility that contained USTs and a large aboveground storage tank (AST). These tanks contained water. Five “closed” but not “removed” USTs were located on two sites within the 1,000-foot radius of the project area. Also, a dry cleaner operates within the 1,000-foot radius of the project area. None of the storage tanks or the dry cleaner identified within the project corridor would be within the footprint of the proposed action for any LPV section of the IER # 4 project area. Details of the Phase I Environmental Site Assessment (ESA) conducted in November 2006 are available in the ESA report, which can be obtained by request from the CEMVN, or accessing it online at www.nolaenvironmental.gov.

Because the proposed action would primarily occur within the existing alignment, the probability of encountering HTRW in the project area is low. In the event of an unplanned discovery of HTRW materials during construction, work that could affect the contaminated materials would be stopped and appropriate notification and coordination would be completed. Investigations would be conducted to characterize the nature and extent of the contamination and establish appropriate resolution.

4.0 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. Direct, indirect and cumulative impacts of the proposed action are evaluated specifically for each IER, but will also be addressed within the draft CED that is being prepared by the CEMVN. A cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. Cumulative impacts were addressed for each alternative and resource in the preceding sections.

4.1 METHODOLOGY

To successfully assess cumulative impacts, a broad range of activities and patterns of environmental changes that are occurring in the vicinity of the project were considered. The following guidelines were used to assess the cumulative impacts for this document:

- The temporal and geographic proximity of the IER # 4 project to other projects;
- The probability of IER # 4 project actions affecting the same environmental resource as another project, especially resources that are susceptible to development pressures;
- The likelihood that the IER # 4 project or other relevant project would lead to a wide range of effects or additional associated projects;

- Whether the effects of other projects are similar to those of the IER # 4 project;
- The likelihood that the project would occur; and the
- Probability of the projects and related impacts being imminent.

4.2 DESCRIPTIONS OF PROJECTS CONSIDERED

Rebuilding efforts as a result of Hurricane Katrina are occurring throughout southeast Louisiana and along the Mississippi and Alabama Gulf Coast. The Insurance Information Institute (III) has estimated that the total insured losses from Hurricane Katrina were \$40.6 billion in six states, and in Louisiana the insured losses are estimated at \$25.3 billion (III 2007). Much of those insured losses would be a component of the regional rebuilding effort. Although the full extent of construction in the New Orleans area and throughout the Gulf Coast over the next 5 years to 10 years is unknown, a large-scale rebuilding effort is underway.

The WRDA of 2007 became law in November 2007. This bill authorized several additional projects and studies in the greater New Orleans area that could contribute to cumulative impacts. WRDA 07 included the following: authorization for the USACE to develop a comprehensive plan for protecting, preserving, and restoring the coastal Louisiana ecosystem; the formation of a Coastal Louisiana Ecosystem Protection and Restoration Task Force; authorization of the Morganza-to-the-Gulf hurricane risk reduction project; authorization of a hurricane risk reduction project in lower Jefferson Parish; the MRGO deep-draft de-authorization; and an EIS for the IHNC lock (Alpert 2007). The majority of these projects or studies still require specific appropriations. The WRDA does not guarantee financing of these projects, but does allow Congress to allocate money for them in future spending bills (Alpert 2007). These additional projects could contribute to resource impacts, either adversely or with long-term positive impacts.

As indicated previously, in addition to this IER, the CEMVN is preparing a draft CED that will describe the work completed and the work remaining to be constructed. The purpose of the draft CED will be to document the work completed by the USACE on a system-wide scale. The draft CED will describe the integration of individual IERs into a systematic planning effort. Overall cumulative impacts, a finalized mitigation plan, and future O&M requirements will also be included. The following discussion describes an overview of other actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed.

4.2.1 CEMVN HSDRRS IERs

Federal hurricane damage risk reduction for the greater New Orleans area is referred to as the HSDRRS and is divided into three USACE authorized projects: 1) LPV; 2) WBV; and 3) New Orleans to Venice (NOV). The NOV and WBV projects have no or limited discussion in this IER because their alignments are not located within the project region. The various projects that make up the LPV projects include the construction of 125 miles of levees, concrete floodwalls, and other structures. Many of these projects are broken out by area and referred to by their IER document number. Figure 21 shows LPV and WBV IER projects. A summary of the projects that fall within the New Orleans Metropolitan area is provided below:

- **IER # 1, LPV, La Branche Wetlands Levee St. Charles Parish, Louisiana** – evaluates the potential impacts associated with raising approximately 9 miles of earthen levees; replacing over 3,000 ft of floodwalls; rebuilding, modifying or closing five drainage structures; and modifying one railroad gate along the existing levee system on the north side of U.S. 61 (Airline Highway) between the Bonnet Carré Spillway and the northwest end of the Louis

Armstrong New Orleans International Airport near the St. Charles/Jefferson Parish line. A Decision Record was signed for this project on 9 June 2008.

- **IER # 2, LPV, West Return Floodwall Jefferson and St. Charles Parishes, Louisiana** – evaluates the potential impacts associated with the proposed replacement of 17,900 ft (3.4 miles) of floodwalls along the line between Jefferson Parish and St. Charles Parish in the northeastern portion of the Mississippi River deltaic plain. The project area is adjacent to the Parish Line Canal from the north side of the Louis Armstrong New Orleans International Airport to the south shore of Lake Pontchartrain. A Decision Record was signed for this project on 18 July 2008.
- **IER # 3, LPV, Jefferson East Bank, Jefferson Parish, Louisiana** – evaluates the potential impacts associated with the proposed rebuilding of 9.5 miles of earthen levees, upgrading of the foreshore protection, the replacement of two floodgates, and the construction of fronting protection and construction or modification of breakwaters at four pumping stations just east of the St. Charles Parish and Jefferson Parish line to the western side of the 17th Street Canal. A Decision Record was signed for this project on 25 June 2008.

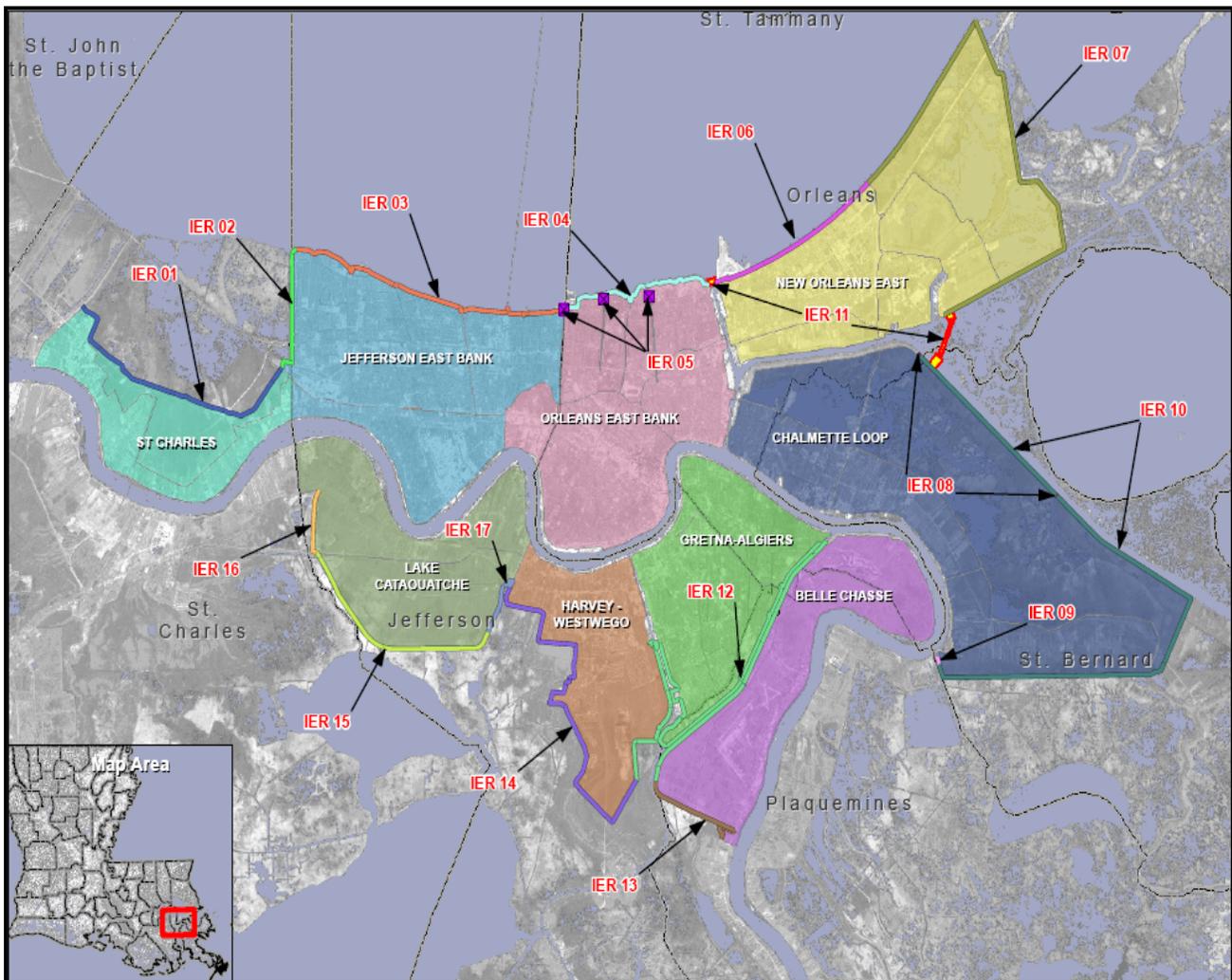


Figure 21. HSDRRS Lake Pontchartrain and Vicinity and West Bank and Vicinity IER Projects

- **IER # 5, LPV, Orleans East Bank, Outfall Canal Closure Structures, 17th Street Canal, Orleans Avenue Canal and London Avenue Canal, Orleans and Jefferson Parish, Louisiana** – investigates a range of alternatives to protect Orleans and Jefferson Parish from storm surge induced flooding through the 17th Street, Orleans Avenue, and London Avenue Outfall Canals, while not impeding the ability of the area’s internal drainage system to remove storm water. The alternatives under evaluation include improvement of floodwalls along these canals to the 100-year level of risk reduction or providing a closure structures and pump stations at or near Lake Pontchartrain. Some possible locations being considered for these pump stations could include construction in Lake Pontchartrain.
- **IER # 6, LPV, New Orleans East, New Orleans Lakefront Levee to Citrus Lakefront Levee, New Orleans Airport Floodwall to Paris Road, Orleans Parish, Louisiana** – investigates improvement of approximately 6 miles of levees, floodwalls, and floodgates that extend from the IHNC and the New Orleans Lakefront Airport east to Paris Road – locally known as the Citrus Lakefront. Foreshore protection enhancements along this reach could include the dredging of access channels in Lake Pontchartrain.
- **IER # 7, LPV, New Orleans East, New Orleans East Lakefront Levee to New Orleans East Back Levee, Paris Road to East Bank of Michoud Canal, Orleans Parish, Louisiana** – investigates improvement of approximately 19.3 miles of levee and three floodgates stretching from the New Orleans East Lakefront Levee to New Orleans East Back Levee – CSX Railroad to Michoud Canal. This portion of the LPV encompasses a large portion of the Bayou Sauvage NWR. Alternative alignments under consideration include realignment along the Maxent Canal east of Bayou Sauvage NWR. The northern portion of this reach could include foreshore protection enhancements requiring dredged access channels in Lake Pontchartrain.
- **IER # 8, LPV, Bayou Dupre Control Structure, St. Bernard Parish, Louisiana** – involves improvement or replacement of the Bayou Dupre Floodgate. Alternatives under consideration include the construction of new structures on either the flood side or protected side of the existing floodgate.
- **IER # 9, LPV, Caernarvon Floodwall, St. Bernard Parish, Louisiana** – evaluates a range of alignments as part of improvements to the Caernarvon floodwall. Depending on the chosen alignment there could be major impacts to infrastructure, residences, and wetlands; however, the proposed action alignment would seek to minimize these impacts.
- **IER # 10, LPV, Chalmette Loop Levee, St. Bernard Parish, Louisiana** – evaluates alternatives for improving the Chalmette Loop levees in St. Bernard Parish.
- **IER # 11 Tier 2 Borgne, LPV, IHNC, Orleans Parish, Louisiana** – evaluates the potential impacts associated with constructing surge barriers on Lake Borgne. This is the Tier 2 review for alternatives to protect against storm surge from the IHNC originating from Lake Borgne. This project was initially evaluated in IER # 11, Tier 1. A Decision Record was signed for IER # 11 Tier 2 Borgne on 21 October 2008.
- **IER # 11 Tier 2 Lake Pontchartrain, LPV, IHNC, Orleans Parish, Louisiana** – evaluates a new structure proposed within the Pontchartrain 2 location range which extends from the Seabrook Bridge to 2,500 ft south of the bridge on the IHNC. This is the Tier 2 review for alternatives to protect against storm surge from the IHNC originating from Lake Pontchartrain. This project was initially evaluated in IER # 11, Tier 1. A Decision Record was signed for the Tier 1 document on 14 March 2008.

- **IER # 12, WBV, GIWW, Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans, and Plaquemines Parishes, Louisiana** - Approximately 3 miles of levees and floodwalls are proposed for the GIWW West Closure Complex as an alternative to the original system alignment. This project also evaluates the raising and/or constructing of levees, floodwalls, and other structures for the Harvey -Westwego, Gretna –Algiers, and Belle Chasse IPET polders, as well as risk reduction for pump stations and backflow prevention.
- **IER # 13, WBV, Hero Canal Levee and Eastern Terminus, Plaquemines Parish, Louisiana** – evaluates 22,000 LF of levee improvements and the construction of 1,500 LF of floodwalls.
- **IER # 14, WBV, Harvey-Westwego Levee, Jefferson Parish, Louisiana** – evaluates 12 miles of levee, construction of 7,013 LF of floodwalls, and modifications to three pump stations.
- **IER # 15, WBV, Lake Cataouatche Levee, Jefferson Parish, Louisiana** – evaluates 8 miles of levee and fronting protection modifications for one pump station. A Decision Record was signed for this project on 12 June 2008.
- **IER # 16, WBV, Western Terminus Levee, Jefferson Parish, Louisiana** – evaluates construction of a new levee section to complete the western terminus of the West Bank Hurricane Protection Project.
- **IER # 17, WBV, Company Canal Floodwall, Jefferson Parish, Louisiana** – evaluates 442 LF of floodwalls and fronting protection modifications to two pump stations.
- **IER # 18 - Government Furnished Borrow Material (GFBM), Jefferson, Orleans, Plaquemines, St. Charles and St. Bernard Parishes, Louisiana and IER # 19 - Contractor Furnished Borrow Material (CFBM), Jefferson, Orleans, St. Bernard, Iberville, and Plaquemines Parishes, Louisiana, and Hancock County, Mississippi** - The purpose of these two IERs is to identify borrow areas that contain suitable material that can be excavated to supply clay material to Federal HSDRRS levee and floodwall projects. A Decision Record was signed for IER # 18 on 21 February 2008. A Decision Record was signed for IER # 19 on 14 February 2008.
- **IER # 20, LPV Hurricane Protection Project – Mitigation: Manchac Wildlife Management Area Shoreline Protection Modification, St. John the Baptist Parish, Louisiana.** This mitigation IER will be completed when unavoidable impacts are identified within the study area from the resulting actions of the aforementioned IERs # 1 to # 10, as well as IER # 11.
- **IER # 21, WPV Hurricane Protection Project – Mitigation.** This mitigation IER will be completed when unavoidable impacts are identified within the study area from the resulting actions of the aforementioned IERs # 12 to # 17.
- **IER # 22, Government Furnished Borrow Material # 2, Jefferson and Plaquemines Parishes, Louisiana** – The purpose of the IER is to identify borrow areas that contain suitable material that can be excavated to supply clay material to Federal HSDRRS levee and floodwall projects. A Decision Record was signed for this project on 30 May 2008.
- **IER # 23, Pre-Approved Contractor Furnished Borrow Material # 2, St. Bernard, St. Charles, Plaquemines Parishes, Louisiana, and Hancock County, Mississippi** – The purpose of the IER is to identify borrow areas that contain suitable material that can be

excavated to supply clay material to Federal HSDRRS levee and floodwall projects. A Decision Record was signed for this project on 5 June 2008.

- **IER # 24, Stockpile Sites for Borrow Material, Orleans and St. Bernard Parishes, Louisiana** – The purpose of this IER is to evaluate the potential impacts associated with the possible use of borrow stockpile areas. Stockpile areas would be used to store borrow material that would be used for construction of Federal HSDRRS levee and floodwall projects.
- **IER # 25, Government Furnished Borrow Material, Orleans, Jefferson and St. Bernard Parishes, Louisiana** – The purpose of the IER is to identify borrow areas that contain suitable material that can be excavated to supply clay material to Federal HSDRRS levee and floodwall projects.
- **IER # 26, Pre-Approved Contractor Furnished Borrow Material, Jefferson, Plaquemines, and St. John Parishes, Louisiana, and Hancock County, Mississippi** – The purpose of the IER is to identify borrow areas that contain suitable material that can be excavated to supply clay material to Federal HSDRRS levee and floodwall projects. A Decision Record was signed for this project on 20 October 2008.

Additional IERs are being prepared to evaluate additional potential borrow areas for the Federal HSDRRS levee and floodwall projects.

Table 10 provides a summary of the cumulative impacts to be mitigated for the HSDRRS projects completed (draft or final) to date. In addition to the impacts shown in table 10, approximately 170.5 acres of impacts to forested habitats requiring mitigation would occur as part of projects for the raising of the Mississippi River Levee.

**Table 10
HSDRRS Impacts and Compensatory Mitigation to be Completed**

IER	Parish		Non-wet BLH (acres)	Non-wet BLH AAHUs	Wetland BLH (acres)	Wetland BLH AAHUs	Swamp (acres)	Swamp AAHUs	Marsh (acres)	Marsh AAHUs	EFH (acres)
1 LPV, La Branche Wetlands Levee	St. Charles	Protected Side	-	-	-	-	137	74	-	-	-
		Flood Side	-	-	11	8	144	111	-	-	-
2 LPV, Western Return Floodwall	Jefferson, Orleans	Protected Side	-	-	-	-	-	-	17	9	-
		Flood Side	-	-	-	-	-	-	-	-	33
3 LPV, Lakefront Levee	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	26
11, Tier 2 Borgne	Orleans, St. Bernard	Both Sides	-	-	15	2.59	-	-	186	18.18	-
15 WBV, Lake Cataouatche Levee	Jefferson	Protected Side	-	-	24	6	-	-	-	-	-
		Flood Side	-	-	4	1	-	-	-	-	-
17 WBV, Company Canal Floodwall	Jefferson	Protected Side	-	-	5.5	2.69	-	-	-	-	-
		Flood Side	-	-	-	-	19	17.09	-	-	-
18 GFBM	Jefferson, Plaquemines, St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
18 GFBM	Orleans	Protected Side	226	69	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
18 GFBM	St. Bernard	Protected Side	74	44	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
19 CFBM	Hancock Co, MS; Iberville; Orleans; Plaquemines; St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
19 CFBM	Jefferson	Protected Side	7*	N/A	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
22 GFBM	Jefferson	Protected Side	158	90	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
22 GFBM	Plaquemines	Protected Side	87	29	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
23 CFBM	Hancock County, MS; Plaquemines; St. Bernard; St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
Totals		Protected Side	552	232	24	6	137	74	-	-	-
		Flood Side	-	-	15	9	144	111	17	9	59
		Both	552	232	39	15	281	185	17	9	59

* Impacts not related to Federal action – already mitigated for through the 404 program (Section 404 of the Clean Water Act [33 USC 1344]).

- = Not applicable to the IER or number impacted is 0.

AAHU – average annual habitat unit, BLH – bottomland hardwood, CFBM – contractor-furnished borrow material, GFBM – government-furnished borrow material

4.2.2 Habitat Restoration, Creation, and Stabilization Projects

Habitat restoration, stabilization, and creation projects that would contribute to cumulative impacts on resources in the IER # 4 study area are discussed below.

4.2.2.1 Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Program Projects

The CEMVN and other Federal and state agencies participate in coastal restoration projects through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). These are specific prioritized restoration projects implemented coast-wide by the USACE in cooperation with Louisiana Department of Natural Resources (LaDNR), Coastal Restoration Division and other Federal agencies. Within the Lake Pontchartrain Basin, there are 14 projects proposed or constructed under CWPPRA that are designed to restore, enhance, or build marsh habitat and prevent erosion of marsh habitat. The projects involve numerous protection and restoration methods, including rock armored shoreline protection breakwaters, dredged material marsh construction, marsh terracing and planting, fresh water and sediment diversion projects, and modification or management of existing structures. Figure 22 indicates the locations of these projects and table 10 provides additional detail on the CWPPRA projects near the study area.

4.2.2.2 Mississippi River Gulf Outlet Deep-Draft De-authorization

On 5 June 2008, the Assistant Secretary of the Army for Civil Works forwarded the USACE Chief's Report, a Legislative EIS and a signed ROD regarding the MRGO to Congress. The Report recommended de-authorization of the MRGO and construction of a closure structure across the MRGO just south of Bayou La Loutre. The WRDA of 2007 provided for the de-authorization of the MRGO. As such, the MRGO Federal navigation channel between Mile 60 at the southern bank of the GIWW to the Gulf of Mexico at Mile -9.4 is officially de-authorized and construction of the closure is forthcoming.

The de-authorization, construction of the closure structure, and the impacts of such actions were disclosed in a final Legislative EIS (January 2008). The de-authorization of the MRGO would be expected to have a positive impact on surrounding wetlands and on the wetlands adjacent to Lake Pontchartrain because the operation of the MRGO was associated with increased salinity levels in these areas. Thus, closure of the MRGO should have beneficial cumulative impacts to the estuarine waters, wetlands, fisheries, and EFH within the Lake Pontchartrain Basin and the Breton Sound Basin including those associated with the IER # 4 project area.

4.2.2.3 Coastal Impact Assistance Program

The Energy Policy Act of 2005 (Public Law 109-58) was signed into law by President Bush on 8 August 2005. Section 384 of the Act establishes the Coastal Impact Assistance Program (CIAP) which authorizes funds to be distributed to Outer Continental Shelf (OCS) oil and gas producing states to mitigate the impacts of OCS oil and gas activities. Pursuant to the Act, a producing state or coastal political subdivision can use all amounts received for projects and activities that conserve, protect, or restore coastal areas, including wetlands and for mitigation of damage to fish, wildlife, or natural resources. Amounts awarded under the provisions of the Act can also be used to develop comprehensive conservation management plans.

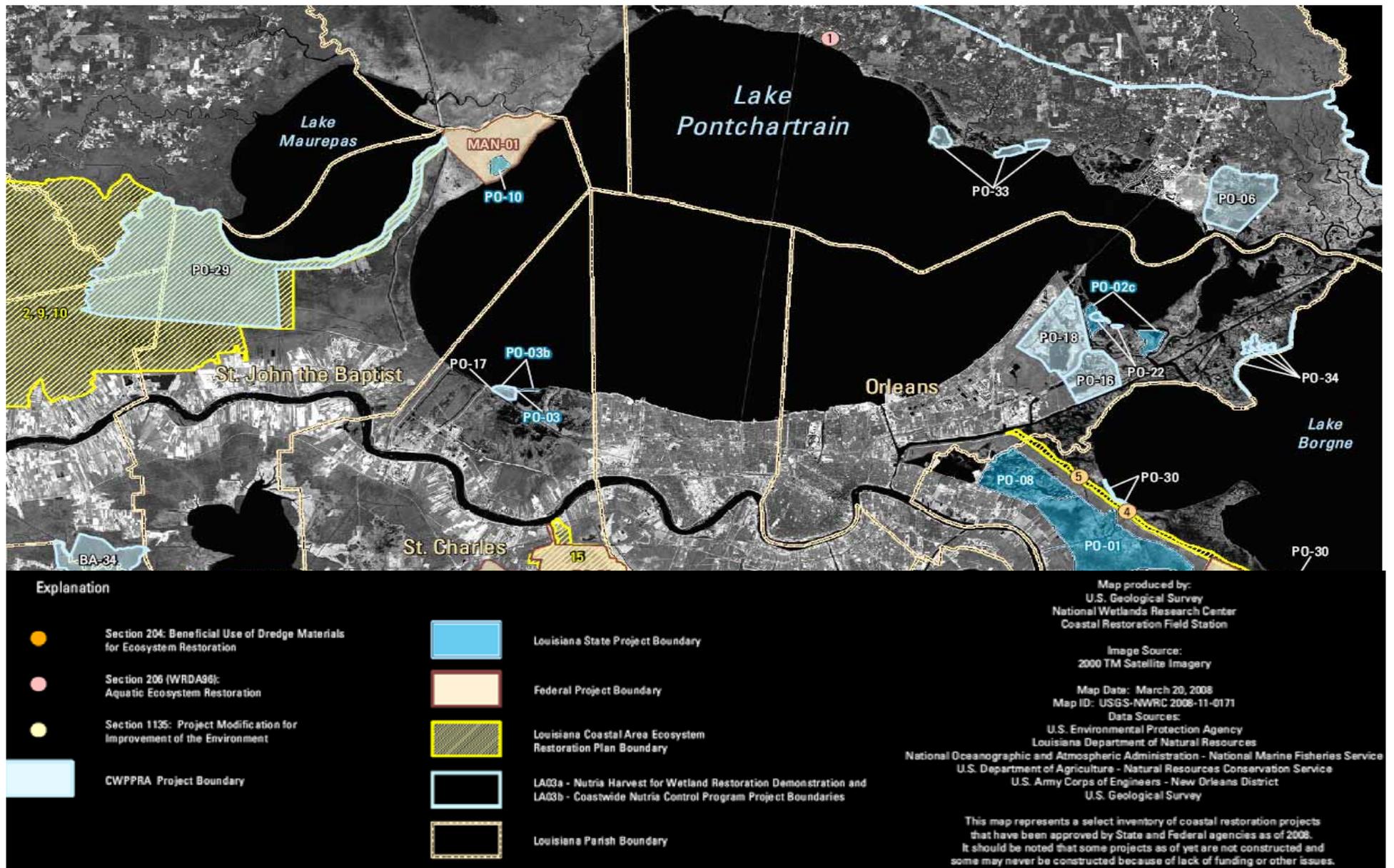


Figure 22. CWPPRA Restoration, Stabilization, and Creation Projects within the Lake Pontchartrain Basin

**Table 11.
Selected CWPPRA Projects Near the IER # 4 Project Area**

State Number	PPL	Agency	Project Name	Project Area	AAHU	Acres Created/ Restored	Acres Protected	Total Net Acres	Construction Date	Status
PO-06	2	NRCS	Fritchie Marsh Restoration	5,924	201	0	1,040	1,040	11/1/2000	Completed Feb. 2001
PO-16	1	USFWS	Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase 1	3,800	520	1,050	500	1,550	6/1/1995	Completed May 1996
PO-17	1	USACE	Bayou LaBranche Wetland Creation	487	191	203	0	203	1/6/1994	Completed April 1994
PO-18	2	USFWS	Bayou Sauvage National Wildlife Refuge Hydrologic Restoration, Phase 2	5,475	584	750	530	1,280	4/15/1996	Completed May 1997
PO-19	3	USACE	Mississippi River Gulf Outlet (MRGO) Disposal Area Marsh Protection	855	435	0	755	755	1/25/1999	Completed Jan. 1999
PO-22	5	USACE	Bayou Chevee Shoreline Protection	212	42	0	75	75	8/25/2001	Construction
PO-24	8	NMFS	Hopedale Hydrologic Restoration	3,805	269	0	134	134	1/10/2004	Construction
PO-26	9	USACE	Opportunistic Use of the Bonnet Carre Spillway	13,583	121	0	177	177		Engineering and Design
PO-27	9	NMFS	Chandeleur Islands Marsh Restoration	504	194	220	0	220	6/1/2001	Completed July 2001
PO-28	9	NMFS	LaBranche Wetlands Terracing, Planting, and Shoreline Protection	4,505	198	374	115	489		
PO-29	11	EPA	River Reintroduction into Maurepas Swamp	36,121	8,486	0	5,438	5,438		Engineering and Design
PO-30	10	EPA	Lake Borgne Shoreline Protection	192	61	0	165	165	8/1/2007	Construction
PO-31	11	EPA	Lake Borgne Shoreline Protection at Bayou Dupre	98	29	27	56	83		Engineering and Design
PO-32	12	USACE	Lake Borgne and MRGO Shoreline Protection	465	70	17	249	266		Engineering and Design
PO-33	13	USFWS	Goose Point/Pointe Platte Marsh Creation	1,384	297	424	12	436		Engineering and Design
PO-34	16	USACE	Alligator Bend Marsh Restoration and Shoreline Protection	584	166	285	45	330		
Summary Acres for All Approved Projects (including those not shown):				1,488,841		51,829	69,890	121,719		

Notes:

Agency/Sponsor: EPA=Environmental Protection Agency; NMFS=National Marine Fisheries Service; NRCS=Natural Resources Conservation Service; USFWS=U.S. Fish and Wildlife Service; USACE=U.S. Army Corps of Engineers.

PPL - Priority Project List

Project Area - the benefitted area as determined by the Environmental Work Group for purposes of conducting Wetland Value Assessments.

AAHU - Average Annual Habitat Units as determined by the Environmental Work Group.

Habitat Units represent a numerical combination of habitat quality (Habitat Suitability Index) and habitat quantity (acres) within a given area at a given point in time. Average Annual Habitat Units represent the average number of Habitat Units within any given area.

Acres Created/Restored - The acres of emergent marsh created or restored as a result of project implementation.

Acres Protected - The acres of emergent marsh protected from loss as a result of project implementation.

Total Net Acres - The net gain in emergent marsh as a result of project implementation as determined by the Environmental Work Group. This figure includes acres of emergent marsh protected, created, and restored as a result of project implementation.

The State of Louisiana worked with the coastal parishes to prepare a draft Louisiana Coastal Impact Assistance Plan that identifies restoration, conservation, and infrastructure projects to be supported by the state and each coastal parish for the 4 years of CIAP funding. This plan included projects for the enhanced management of Mississippi River water and sediment, protection and restoration of critical land bridges, barrier shoreline restoration and protection, interior shoreline protection, marsh creation with dredged material, and a coastal forest conservation initiative. This plan and the management strategies it proposed would provide beneficial cumulative impacts to the estuarine waters, wetlands, fisheries and EFH within the Lake Pontchartrain Basin and the Breton Sound Basin including those associated with the IER # 4 project area.

4.2.2.4 State Coastal Planning and Restoration

The State of Louisiana has initiated a series of programs to offset the catastrophic loss of coastal wetlands. The Louisiana State and Local Coastal Resources Management Act was passed in 1978 to regulate the developmental activities that affect wetland loss. The resulting Louisiana Coastal Resources Program became a Federally approved coastal zone management program in 1980. The Louisiana Legislature passed Act 6 in 1989 (R.S.49:213-214), and a subsequent constitutional amendment which created the Coastal Restoration Division within the LaDNR, as well as the Wetlands Conservation and Restoration Authority (Wetlands Authority).

In the First Extraordinary Session, 2005 of the Louisiana Legislature, which ended on 22 November 2005, Senate Bill No. 71 (Act No. 8), which provided for the new 16-member panel, called the Coastal Protection and Restoration Authority, which is a broader version of the previous board that was named the Wetlands Conservation and Restoration Authority. In addition, Senate Bill No. 71 also provided for the establishment of the Coastal Protection and Restoration Fund, previously named the Wetlands Conservation and Restoration Fund. The Fund is used for coastal wetlands conservation, coastal restoration, hurricane and storm damage risk reduction, and infrastructure impacted by coastal wetland losses.

The Louisiana Coastal Protection and Restoration (LACPR) project, a joint project between the Coastal Protection and Restoration Authority and the CEMVN, was established to identify risk reduction measures that could be integrated to form a system that would provide enhanced protection of coastal communities and infrastructure, as well as restoration of coastal ecosystems. The project will address the full range of flood control, coastal restoration, and hurricane and storm damage risk reduction measures available, including those needed to provide comprehensive Category 5-Hurricane risk reduction. The end result of the project will be the development of a technical document with recommendations related to enhanced hurricane risk reduction and restoration of coastal ecosystems in Louisiana.

The LaDNR Office of Coastal Restoration and Management is responsible for the maintenance and protection of the State's coastal wetlands. The Coastal Restoration and Engineering Divisions of LaDNR are responsible for the construction of projects aimed at creating, protecting and restoring the State's wetlands. These divisions provide ongoing management and restoration of resources in the Louisiana coastal zone. The LaDNR is involved in several major programs that are working to save Louisiana's coastal wetlands. These programs include the CWPPRA, Coast 2050, the Louisiana Coastal Area (LCA) Ecosystem Restoration Plan, and the Coastal Impact Assistance Plan of 2005. Other programs include state restoration projects, Parish Coastal Wetlands Restoration Program, and Vegetation Plantings.

The LCA Ecosystem Restoration Study (2004) was a comprehensive report that identified the most critical human and natural ecological needs of the coastal area. The study presented and evaluated conceptual alternatives for meeting the most critical needs; identified the kinds of restoration features that could be implemented in the near-term (within 5 years to 10 years) that

address these needs, and proposed to address these needs through features that would provide the highest return in net benefits per dollar of cost. The study also established priorities among the identified near-term restoration features; described a process by which the identified priority features could be developed, approved, and implemented; identified the key scientific uncertainties and engineering challenges facing the effort to protect and restore the ecosystem; proposed a strategy for resolving these uncertainties; and identified, assessed and recommended feasibility studies that should be undertaken within the next 5 years to 10 years to fully explore other potentially promising large-scale and long-term restoration concepts. The study concluded by presenting a strategy for addressing the long-term needs of coastal Louisiana restoration beyond the near-term focus of the LCA Plan.

4.2.2.5 Miscellaneous Wetland Restoration Projects

The New Orleans Sewerage and Water Board is pursuing a feasibility study to evaluate the potential discharge of treated effluent from the East Bank Sewer Treatment Plant (EBSTP), located off Florida Avenue and Dubreuil Street in the Ninth Ward Basin, into wetlands to provide water quality improvement, solids handling, hazard mitigation, and coastal wetland restoration.

4.2.3 Other Local Projects

State and local officials are considering other actions near the Federal HSDRRS project areas. The East Jefferson Levee District is currently placing more than 1,000 3-ton highway traffic barriers along the Lake Pontchartrain shoreline to help slow the rate of erosion in East Jefferson Parish. The Southeast Louisiana Flood Protection Authority-East is considering constructing a new breakwater along Lake Pontchartrain near portions of the IER # 3 project area. Over 100,000 tons of rock will be used, primarily along Reach 1 (the Recurve I-wall in Northwest Kenner to the Duncan Pumping Station) and Reach 4 (Suburban Canal to Bonnabel Canal), with another 8,000 tons of rock placed along Lake Pontchartrain near the remaining reaches of the IER # 3 project area. The Greater New Orleans Expressway Commission (GNOEC) is considering improvements to the Causeway near the Federal HSDRRS projects. These improvements to the Causeway could include roadway modification to maintain the new ramp height of 16.5 ft in the vicinity of the HSDRRS levee. Some of these projects could contribute to adverse impacts for some of the resources analyzed in this IER. However, many of the projects would have long-term positive impacts, including improved hurricane and storm damage risk reduction.

4.3 SUMMARY OF CUMULATIVE IMPACTS

Cumulative impacts of this proposed project were evaluated by comparing the existing environment with the expected impacts of the proposed action when combined with the impacts of other proximate actions. Projects that occur within the greater New Orleans area, within the Lake Pontchartrain Basin, and within the designated coastal zone for Louisiana were considered collectively (as appropriate) for the evaluation of cumulative impacts.

All of the HSDRRS projects are currently in the construction, planning and design stages, and impacts from these component projects will be addressed in separate IERs. Construction of levees, gates, floodwalls, and onshore breakwaters throughout the region could cause direct and indirect wetland (including open water) and upland habitat loss. Construction damage as part of the 100-year hurricane and storm damage risk reduction projects to quality wetland habitats would be avoided to the maximum extent practicable, minimized if unavoidable, and fully mitigated through formal mitigation planning. The closing of the MRGO with a plug at Bayou

La Loutre would prevent the intrusion of higher salinity waters into Lake Pontchartrain via the IHNC, which has impacted the habitat of Lake Pontchartrain and adjacent wetlands.

The primary hydrologic impact of the HSDRRS projects would reduce storm surge inundation impacts for low-lying areas on the protected side of the HSDRRS. Depending on design and maintenance, shoreline stabilization measures could alter existing shoreline habitat and block access to interior wetlands. Impacts to EFH could occur as a result of construction activities and access dredging but should return to pre-construction levels once those activities have ceased. Marsh areas with greater heterogeneity and interspersed and lower salinity levels could be a by-product of implementing wetland creation and shoreline protection projects within the Lake Pontchartrain Basin and Breton Sound Basin and closure of the MRGO. These changes would provide long-term benefit to most wildlife, fishery, and aquatic resources within the IER # 4 project area.

The cumulative effects of these projects could provide long-term and sustainable beneficial impacts to the communities within the study area by reducing the risk of damage within flood-prone areas and by generating economic growth. Economic growth could attract displaced residents and new workers and encourage repopulation within the New Orleans metropolitan area.

Cumulative adverse impacts to human populations within the study area are not expected to be permanent; however, there would be temporary adverse impacts from the increased traffic, detours, road closures, and noise associated with construction activities that could occur 24 hours a day, seven days a week for several years. It is expected that the temporary cumulative impacts to social and community facilities would result in permanent benefits because the threat to flood-prone areas would be reduced by the increased flood protection provided by area projects. Construction of these projects could cause temporary and localized decreases in air quality that would mainly result from the emissions of construction equipment during dredging and construction. However, these changes in air quality should return to pre-construction conditions shortly after construction completion. Changes in air quality are not expected to change the area's attainment status. The proposed action in conjunction with other actions in the region would not contribute to cumulative impacts from HTRW.

The proposed action would have cumulative beneficial impacts to socioeconomic resources in the New Orleans Metropolitan area. It is part of the ongoing Federal effort to reduce the threat to life, health, and property posed by flooding. The LPV HSDRRS project will provide additional hurricane and storm damage risk reduction, reducing the threat of inundation of infrastructure due to severe tropical storm events. Providing 100-year level of risk reduction within all reaches of the LPV allows for FEMA certification of that level of risk reduction. Improved hurricane, storm, and flood damage risk reduction would benefit all residents, regardless of income or race, increase confidence, reduce insurance rates, and allow for development and redevelopment of existing urban areas.

5.0 SELECTION RATIONALE

The proposed action selected for IER # 4 would modify, replace, build, or rebuild 13 vehicle access gates, one pedestrian gate, one sector gate structure, several floodwall sections, and several roadway ramps that occur within LPV reaches 101, 102, 103, and 104. The proposed action was selected after evaluating a variety of factors as listed below.

Risk and Reliability: An important component of risk considerations for this project is the relative speed by which the various alternatives can be built and, conversely, how long a given

alternative would leave the areas adjacent to the project area at their current level of risk. Various USACE studies were undertaken as part of the overall IER # 4 project, and numerous alternatives were investigated to provide reduced risk to the project area.

Constructability: Some alternatives considered for the IER # 4 project area would require complete new design and construction. The proposed action would minimize new design, construction, and time required for construction by utilizing to the extent practicable the existing risk reduction features.

Operations and Maintenance: O&M is the responsibility of the non-Federal sponsor. The proposed alternative balances the short-term design requirements with the long-term ability of the local sponsor to maintain and operate the HSDRRS. The proposed action is very similar to the existing system; therefore the O&M requirements would also be similar to the existing system.

Real Estate Requirements: Real estate requirements must be considered given the impact they can have on the speed by which hurricane and storm risk reduction can be provided to the project area. The number of properties to be acquired can influence the real estate acquisition schedule. The proposed action was selected, in part, because it would minimize ROW expansion.

Cost: Cost of each alternative was estimated and balanced with the ability of every alternative to provide adequate risk reduction as well as minimize environmental and social impacts. The proposed action would maximize risk reduction and minimize cost through the modification of several existing features instead of new design and construction. The proposed action reduces the need for ROW purchases and minimizes the necessary impacts to the natural environment.

6.0 COORDINATION AND CONSULTATION

6.1 PUBLIC INVOLVEMENT

Extensive public involvement has been sought in preparing this IER. The proposed HSDRRS projects were publicly disclosed and described in the Federal Register on 13 March 2007, and on the website www.nolaenvironmental.gov. Scoping for the HSDRRS was initiated on 12 March 2007, through 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 scope and process of the Alternative Arrangements for implementing NEPA between 27 March 2007 and 12 April 2008, 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. The public is able to provide verbal comments during the meetings and written comments after each meeting in person, by mail, and via the www.nolaenvironmental.gov website.

In public meetings held at the UNO Lindy Boggs Conference Center on 12 June 2007 and 27 March 2008; St. Paul's Episcopal Church on 25 September 2007 and 26 February 2008; Cabrini High School on 10 November 2007; Xavier University Center Room on 10 April 2008; Dillard University Stern Amphitheater on 13 May 2008; St. Dominic's Elementary School on 1 July 2008; and Desire Street Ministries on 15 July 2008, several public concerns were raised regarding improved risk reduction along the Orleans East Bank lakefront. These concerns are discussed in section 1.5.

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 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.

6.2 AGENCY COORDINATION

Preparation of this IER has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. An interagency environmental team was established for this project in which Federal and state agency staff played an integral part in the project planning and alternative analysis phases of the project (members of this team are listed in appendix C). 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 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, NOAA National Marine Fisheries Service
- U.S. Natural Resources Conservation Service
- 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

Coordination with the USFWS on the Alternative Arrangements process was initiated by letter on 13 March 2007 and was concluded on 6 August 2007.

The CEMVN received a draft programmatic Coordination Act Report (CAR) from the USFWS on 26 November 2007. The USFWS' programmatic recommendations applicable to this project will be incorporated into project design studies to the extent practicable, consistent with engineering and public safety requirements. The USFWS' programmatic recommendations, and the CEMVN's response to them, are listed below:

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

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

Recommendation 2: Minimize enclosure of wetlands with new levee alignments. When enclosing wetlands is unavoidable, acquire non-development easements on those wetlands,

or maintain hydrologic connections with adjacent, un-enclosed wetlands to minimize secondary impacts from development and hydrologic alteration.

CEMVN Response 2: This recommendation will be considered in the design of the project to the greatest extent practicable.

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

CEMVN Response 3: Concur.

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

CEMVN Response 4: No forest clearing is anticipated.

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

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

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

CEMVN Response 6: Concur.

Recommendation 7: The CEMVN should avoid impacts to public lands, if feasible. If not feasible, the CEMVN should establish and continue coordination with agencies managing public lands that may be impacted by a project feature until construction of that feature is complete and prior to any subsequent maintenance. Points of contacts for the agencies overseeing public lands potentially impacted by project features are: Kenneth Litzenger, Project Leader for the USFWS' Southeast National Wildlife Refuges, and Jack Bohannon (985) 822-2000, Refuge Manager for the Bayou Sauvage National Wildlife Refuge (NWR), Office of State Parks contact Mr. John Lavin at 1-888-677-1400, National Park Service (NPS) contact Superintendent David Luchsinger, (504) 589-3882, extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management David Muth (504) 589-3882, extension 128 (david_muth@nps.gov) and for the 404(c) area contact the previously mentioned NPS personnel and Ms. Barbara Keeler (214) 665-6698 with the USEPA.

CEMVN Response 7: Concur.

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

CEMVN Response 8: Concur.

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

CEMVN Response 9: Concur.

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

CEMVN Response 10: Concur.

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

CEMVN Response 11: This recommendation will be considered in the design of the project to the greatest extent practicable. However, the project primarily addresses modifications in height to the HSDRRS, not the construction of new levees.

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

CEMVN Response 12: Acknowledged.

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

CEMVN Response 13: Acknowledged.

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

CEMVN Response 14: This recommendation will be considered in the design of the project to the greatest extent practicable.

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

CEMVN Response 15: Not applicable. With the exception of the modifications to the sector gate at Bayou St. John, no new barriers to wetlands would be constructed.

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

CEMVN Response 16: This recommendation will be considered in the design of the project to the greatest extent practicable.

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

CEMVN Response 17: The modifications recommended for the proposed action do not require the modification of the existing flow velocity for any water way.

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

CEMVN Response 18: Not applicable.

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

CEMVN Response 19: Not applicable.

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

CEMVN Response 20: Acknowledged.

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

CEMVN Response 21: Not applicable. Project area does not include the utilization of multiple structures.

Recommendation 22: Operational plans for water control structures should be developed to maximize the cross-sectional area open for as long as possible. Operations to maximize freshwater retention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible and such actions are recommended by the natural resource agencies.

CEMVN Response 22: This recommendation will be considered in the design of the project to the greatest extent practicable.

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

CEMVN Response 23: Concur.

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

CEMVN Response 24: Not applicable, no mitigation would be required for the proposed action.

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

CEMVN Response 25: Not applicable, no mitigation would be required for the proposed action.

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

CEMVN Response 26: Not applicable, no mitigation would be required for the proposed action.

A draft Fish and Wildlife Coordination Act Report (CAR) specific to IER # 4 was provided by the USFWS on 17 December 2008 (appendix D). This report concluded that there would be “no significant impact to fish and wildlife habitat as a result of the proposed project.” The draft CAR also provided fish and wildlife conservation recommendations that would be implemented concurrently with project implementation. A copy of the CAR is provided in appendix D. The USFWS project-specific recommendations for the IER # 4 proposed action are listed below. Each recommendation is followed by the CEMVN response.

Recommendation 1: The Service, LDWF, and NMFS shall be provided an opportunity to review and submit recommendations on the draft plans and specifications for all levee work addressed in this report.

CEMVN Response 1: Concur.

Recommendation 2: Any proposed change in levee, floodwall, or ramp features, locations or plans shall be coordinated in advance with the Service, NMFS, LDWF, and Louisiana Department of Natural Resources.

CEMVN Response 2: Concur.

Recommendation 3: If the proposed project has not been constructed within 1 year or if changes are made to the proposed project, the Corps should re-initiate Endangered Species Act consultation with the Service to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

CEMVN Response 3: Concur.

To initiate the consultation process for IER # 4, the CEMVN requested from the USFWS and NOAA information on the potential threatened or endangered species in the project area. On 6 August 2007, the USFWS responded with a letter identifying the potential threatened or endangered species that may be impacted by the proposed levee and floodwall replacement project. On 26 July 2007, NOAA provided a list of federally-protected species under the jurisdiction of the National Marine Fisheries Service for the State of Louisiana on 26 July 2007.

The LaDNR reviewed the proposed action for consistency with the Louisiana Coastal Resources Program (LCRP) and found it to be consistent with the LCRP, as per a letter dated 20 January 2009 (appendix D). The LaDWF reviewed the proposed action and in a letter dated 8 January 2009, determined that a Scenic River Permit would not be required (Appendix D).

Section 106 of the National Historic Preservation Act, as amended, requires consultation with the Louisiana SHPO and Indian Tribes. Eleven Federally recognized tribes that have an interest in the region were given the opportunity to review the proposed action. The SHPO concurred with the CEMVN finding of “no adverse effect” in a letter dated 26 January 2009, and the Caddo Nation of Oklahoma, Alabama-Coushatta Tribe of Texas, Seminole Nation of Oklahoma, and the Seminole Tribe of Florida concurred with the effect determination in letters dated 27 October 2008, 5 November 2008, 5 November 2008, and 24 November 2008, respectively (appendix D). No other Indian Tribes responded to the requests for comment. Per 36 CFR Part 800.5(c)(3)(i), no response implies concurrence with a “Finding of no adverse effect.”

7.0 MITIGATION

No unavoidable permanent impacts to human and natural environment would be expected to occur as a result of the proposed action. If unavoidable impacts to the human and natural environment would occur they 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 if necessary. 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 the 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 mitigation activities will be consistent with standards and policies established in appropriate Federal and state laws, and USACE policies and regulations.

8.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

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

Environmental compliance for the proposed action would be achieved upon coordination of this IER with appropriate agencies, organizations, and individuals for their review and comments; USFWS and NMFS confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species or completion of ESA Section 7 consultation; LaDNR concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; receipt of a Water Quality Certificate from the State of Louisiana; public review of the Section 404(b)(1) Public Notice and

signature of the Section 404(b)(1) Evaluation; coordination with the Louisiana SHPO; receipt and acceptance or resolution of all Fish and Wildlife Coordination Act recommendations; receipt and acceptance or resolution of all Louisiana Department of Environmental Quality comments on the air quality impact analysis documented in the IER; and receipt and acceptance or resolution of all EFH recommendations.

9.0 CONCLUSIONS

9.1 INTERIM DECISION

The proposed action consists of rebuilding and/or modifying earthen levees and floodwalls, replacing or adding new floodgates, modifying the Bayou St. John gate structure, and rebuilding roadway ramps. With the proposed action, the elevations of the existing HSDRRS would be raised to heights ranging from 16 ft to just over 21 ft; providing 100-year level of flood and storm protection. Specifically, the proposed action consists of replacing the existing I-walls, L-walls, and T-walls with new T-walls, replacing and raising existing gates, and constructing floodwalls to an elevation of 16 ft on top of the existing east and west end levees in reach LPV 101; raising the existing roadway ramp on Canal Boulevard to an elevation of 21.1 ft in reach LPV 102; raising the height of the Bayou St. John sector gate, replacing the existing I-walls along Bayou St. John with T-walls, strengthening the existing I-walls on the east bank of Orleans Canal by converting them to L-walls, strengthening the Marconi Drive gate, and constructing gates to raise the Lake Terrace Drive and Rail Street ramps to an elevation of 18 ft in reach LPV 103; and raising levees, replacing and rebuilding gates L-10 and L-11, converting I-wall floodwalls to L-walls, reconstructing Seabrook gates W-39 and W-40, demolishing the Seabrook I-wall and constructing a new T-wall, and raising the ramps at Leroy Johnson Drive and Franklin Avenue and two ramps at Lakeshore Drive (east and west of UNO Research Park) in reach LPV 104.

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

Lake Pontchartrain/Canals/Drainageways

- LPV 101 – Mostly temporary demolition and construction related impacts.
- LPV 102 – No water resources impacted.
- LPV 103 – Mostly temporary demolition and construction related impacts.
- LPV 104 – Mostly temporary demolition and construction related impacts.

Fisheries

- LPV 101 – Possible temporary indirect impacts to fisheries resources such as increased turbidity and decreased water quality from construction-related activities.
- LPV 102 – No impacts to fisheries would result from the proposed action.
- LPV 103 – Possible temporary indirect impacts to fisheries resources such as decreased water quality from construction-related activities.
- LPV 104 – Mostly temporary demolition and construction related impacts.

Essential Fish Habitat

- LPV 101 – Mostly temporary demolition and construction related impacts.
- LPV 102 – No EFH resources impacted.

- LPV 103 – Mostly temporary demolition and construction related impacts.
- LPV 104 – Mostly temporary demolition and construction related impacts.

Wildlife

- LPV 101, 102, 103, and 104 – Minor reduction in terrestrial wildlife habitat within the project area, with temporary additional impacts during construction, and negligible impacts on aquatic habitat.

Threatened and Endangered Species

- LPV 101, 102, 103, and 104 – Potential threatened and endangered species that could occur in the project area are aquatic and not likely to be adversely affected.

Cultural Resources

- LPV 101, 102, 103, and 104 – No Effect: SHPO consultation for this project concluded that no cultural resources would be impacted under the proposed action.

Recreation

- LPV 101 – Mostly short-term, construction-related impacts to parking and access to recreational resources.
- LPV 102 – Possible impacts associated with a temporary construction easement could affect approximately 19 acres of Lakeshore Park during construction.
- LPV 103 – Possible short-term impacts from easements and staging areas to approximately 28 acres of green space within Lakeshore and London Parks and along the banks of Bayou St. John.
- LPV 104 – Temporary construction easement-related impacts to approximately 6 acres of green space associated with the Lake Oaks Park or the UNO Lakefront arena could occur during construction. Another 4 acres of green space on the western side of Senator Ted Hickey Bridge could also be impacted during construction. Vehicle access to the boat ramps under the Senator Ted Hickey Bridge could be disabled due to a reduction in roadway for 10 months to 12 months; however, the fishing piers would remain accessible by pedestrian traffic.

Aesthetic (Visual) Resources

- LPV 101, 102, 103, and 104 – Adverse impacts would be minimal: construction activities would temporarily reduce the aesthetic appeal of the project area along the lakefront, but the permanent changes resulting from the project would not substantially change the appearance of the area.

Air Quality

- LPV 101, 102, 103, and 104 – Temporary site-specific construction effects including exhaust and dust emissions.

Noise

- LPV 101, 102, 103, and 104 – Temporary impacts to receptors within 1,000 ft of the project area during construction.

Transportation

- LPV 101, 102, 103, and 104 – Worker and truck traffic resulting from the project would temporarily impact traffic on highways within the vicinity of the project area.

Socioeconomic Resources

- LPV 101, 102, 103, and 104 – Beneficial: impacts on population, land use, and employment due to heightened flood protection and construction-generated employment.

Environmental Justice

- LPV 101, 102, 103, and 104 – All populations, including minority and low-income populations, outside of the flood risk reduction system would be exposed to storm surges as they are now.

9.2 PREPARED BY

The point of contact for this IER is Elizabeth Behrens, USACE, CEMVN-PM-RS. Table 12 lists the preparers of relevant sections of this report. Ms. Behrens can be reached at the U.S. Army Corps of Engineers, New Orleans District,; Protection and Restoration Office, P.O. Box 60267, 7400 Leake Avenue; New Orleans, Louisiana 70118.

Table 12.
IER Preparation Team

EA Section	Team Member
Environmental Team Leader	Gib Owen, USACE
Environmental Manager	Elizabeth Behrens, USACE
Task Manager/Proposed Action/Alternatives	Roberta Hurley, Earth Tech
Fisheries/Wetlands/Recreational Resources	Leslie Howard, Earth Tech
Wildlife/Threatened and Endangered Species	Stephen Dillard, Earth Tech
Socioeconomics/Land Use	Susan Provenzano, AICP, Earth Tech
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Cultural Resources	Michael Swanda, USACE
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HTRW	Leslie Howard, Earth Tech
Administrative Support	Bonnie Freeman, Earth Tech
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Independent Technical Review	Thomas Keevin, USACE

9.3 LITERATURE CITED

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- 16 USC 1531. United States Code, Title 16, *Conservation*, Section 1531, “Congressional Findings and Declaration of Purposes and Policy.”
- 16 USC 1802. United States Code, Title 16, *Conservation*, Chapter 38, “Fishery Conservation and Management,” Section 1802, Definitions.
- 16 USC 1853. United States Code, Title 16, *Conservation*, Chapter 38, “Fishery Conservation and Management,” Section 1853, Contents of Fishery Management Plans.
- 33 USC 1344. United States Code, Title 33, *Navigation and Navigable Waters*, Chapter 26, “Water Pollution Prevention and Control,” Section 1344, Permits for Dredged or Fill Material.
- 42 USC 4601. United States Code, Title 42, *The Public Health and Welfare*, Chapter 61, “Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs,” Section 4601, Definitions.
- 33 CFR 230. Code of Federal Regulations, Title 33, *Navigation and Navigable Waters*, Chapter II - “Corps of Engineers, Department of the Army, Department of Defense,” Part 230, Procedures for Implementing NEPA.
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- 33 CFR 329. Code of Federal Regulations, Title 33, *Navigation and Navigable Waters*, Chapter II - “Corps of Engineers, Department of the Army, Department of Defense,” Part 329, Definition of Navigable Waters of the United States.
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APPENDIX A

LIST OF ACRONYMS AND DEFINITIONS OF COMMON TERMS

ACB	articulated concrete blocks
AST	aboveground storage tank
BMP	Best Management Practices
CAA	Clean Air Act
CAR	Coordination Act Report
CED	Comprehensive Environmental Document
CEMVN	Corps of Engineers, Mississippi Valley Division, New Orleans District
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CWPPRA	Coastal Wetlands Planning, Protection, and Restoration Act
CY	cubic yard
dB	decibel
dBA	A-weighted decibel
DNL	day-night average sound level
EA	Environmental Assessment
EBSTP	East Bank Sewer Treatment Plant
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency (see USEPA)
ER	Engineering Regulations
ESA	Endangered Species Act
F	Fahrenheit
ft	feet
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMC	Fishery Management Council
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
GMFMC	Gulf of Mexico Fishery Management Council
GIWW	Gulf Intracoastal Waterway
GNOEC	Greater New Orleans Expressway Commission
HSDRRS	Hurricane and Storm Damage Risk Reduction System
HTRW	hazardous, toxic, and radioactive waste
ICS	interim control structure
I-10	Interstate 10
I-610	Interstate 610
IER	Individual Environmental Report
IHNC	Inner Harbor Navigation Canal
III	Insurance Information Institute

LaCPR	Louisiana Coastal Protection and Restoration
LaDOTD	Louisiana Department of Transportation and Development
LaCA	Louisiana Coastal Area
LaDEQ	Louisiana Department of Environmental Quality
LaDNR	Louisiana Department of Natural Resources
LaDOL	Louisiana Department of Labor
LaDWF	Louisiana Department of Wildlife and Fisheries
lft	linear feet
LOS	level-of-service
LPV	Lake Pontchartrain and Vicinity
mi ²	square miles
mph	miles per hour
MRGO	Mississippi River Gulf Outlet
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NAVD88	North American Vertical Datum
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966, as Amended
NHTSA	National Highway Traffic and Safety Administration
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOCP	New Orleans City Planning Commission
NWUS	Navigable Waters of the United States
O ₃	ozone
O&M	operations and maintenance
OCS	Outer Continental Shelf
Pb	lead
PDT	Project Delivery Team
PL	Public Law
PM	particulate matter
ppm	parts per million
ppt	parts per thousand
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
ROD	Record of Decision
ROW	right-of-way
SHPO	State Historic Preservation Office
SIR	Supplemental Information Report
SLFPA	Southeast Louisiana Flood Protection Authority
SO ₂	sulfur dioxide
TRB	Transportation Research Board
TRM	Turf reinforcement mattress
UNO	University of New Orleans
U.S.	United States
USC	United States Code

USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
WBV	West Bank and Vicinity
WoUS	Waters of the United States
WRDA	Water Resources Development Act

APPENDIX B
PUBLIC COMMENTS

Robert W. Drouant

Mr. Gib Owen
PM-RS
P. O. Box 60267
New Orleans, LA 70160-0267

Re: IER No. 4

Dear Mr. Owen:

As a lake front and concerned New Orleans citizen, I recently attended several of your meetings and wish to express my support for a lake front barrier at the lake for the outfall canals.

Also, while I understand the U. S. Army Corp of Engineers is not presently considering a barrier plan out at the Rigolets, Rigoletes/Chef and Industrial Canal, I think such a plan would be an even more appropriate plan to safeguard the citizens of this community.

Certainly, at the London Avenue outfall canal, a barrier at the lakefront, or predominately on the parking lot of the UNO campus is ideal for the local residents.

Sincerely,



Robert W. Drouant

RWD/jlc

---Original Message-----

From: Tina Kennedy

Sent: Tuesday, November 20, 2007 2:22 PM

To: MVN Environmental

Subject: Project IER4

Dear Mr. Owen:

We own the 441 unit apartment community known as The Esplanade at City Park. I attended the recent town hall meeting on November 10th, 2007. It is unfortunate that the Orleans Levee Board was not in attendance as many of the questions and comments should have been addressed by them as they will ultimately be responsible for the operation and maintenance of any of the proposed changes by the Corps of Engineers.

The Esplanade Apartments represents a 50 million dollar investment in this small New Orleans submarket. As such, we have a vested interest in the preservation and prosperity of the local community and neighborhood. It is our position that the levee walls currently running parallel to the bayou be replaced with T or L walls and raised to the Corps suggested height of 16 ft. In addition, we feel the existing flood gates should be made functional and that it be a requirement of the Orleans Levee Board to leave these gates in the open position unless a storm is imminent.

During the town meeting it became evident that the local community generally supports the repair of existing levees along with the repair and opening of the current flood gate. There is concern over the existing flood gate which is not operational and which has remained closed rather than open to maintain water quality of the bayou.

The alternative option proposed regarding a levee along Lakeshore Drive with sluice gates is NOT an option we support. The neighborhood property owners seem to echo our position.

Thank you for taking the time to meet with the local residents. I hope that additional meetings will continue to produce insightful comments from the community.

Sincerely,
Tina Kennedy
RCG Longview Realty Services, LLC

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

From:

Sent: Tuesday, November 27, 2007 1:58 PM

To: (Landrieu)

Subject: CF_MAIL

<MESSAGEBODY>The U.S. Army Corps of Engineers is prepared to build a levee across the mouth of Bayou St. John and turn it into a lagoon.

This email may be a bit lengthy but it concerns an extremely important issue that is falling through the cracks. Please take time to read it.

The Lake Pontchartrain Basin Foundation sponsored a meeting on November 10, 2007 at Cabrini High School to allow the Corps to explain their plans for lakefront hurricane protection and the impact on Bayou St. John. Over 100 neighborhood residents attended.

Kevin Wagner with the Corps explained that they would pursue one of two alternatives:

- A. Raise the height of the existing flood control structure at the mouth of the bayou just south of Lakeshore Drive, or
- B. Construct a new levee across the mouth of the bayou just north of Lakeshore Drive.

In the late 1980s the Orleans Levee Board tried to build a levee across Bayou St. John. Only because of public outcry, enabling legislation and a lawsuit was the OLB forced to construct the existing floodgate in 1992. The agreement called for the OLB to remove the waterfall dam on the bayou at Robert E. Lee Blvd. and keep the floodgate open for recreational access to the lake unless closure was required for salinity control or tidal events including flood protection from storms. In a "we'll show you" response, the OLB never removed the dam and only opened the floodgate for occasional maintenance purposes.

Carlton Dufrechou with the LPBF asked for a show of hands and fully 100% of those in attendance were strongly in favor of an operable floodgate and were opposed to a levee.

Kevin Wagner then explained that the Corps would build whatever the people wanted but, as the Corps has stated on record, the levee alternative "is being evaluated to ensure that there is not a safer and more cost effective solution than (sic) raising the existing structure". According to Wagner, the Corps is not responsible for post-construction maintenance costs regardless of the alternative ultimately chosen. Therefore, the Corps will not select an alternative, regardless of what the people want, if the local levee authorities do not agree to that choice and indicate an ability and willingness to fund the ongoing maintenance costs.

The Corps will make a decision within the next few months. The Southeast Louisiana Flood Protection Authority East, created as a result of the recent levee board consolidation legislation, is the agency charged with ultimate oversight of lakefront flood protection but they are still in their formative stages and don't even have a permanent office yet.

Is it possible that we will end up with a levee at the mouth of Bayou St. John? Is it possible that SLFPA will choose the most cost effective alternative and throw some mud in the water?

SLFPA has the authority to instruct the Corps not to build a levee but instead proceed with improvements to the existing flood structure. However, SLFPA is short on funding and has a lot on their plate with responsibility for the Orleans Levee District, the East Jefferson Levee District and the Lake Borgne Basin Levee District.

What do the people of New Orleans want? We want a flood control structure that provides improved flood protection, improved control of salinity and nutrient levels, improved water flow, improved fish populations and

non-motorized, recreational access to the lake. This also entails removal of the dam at Robert E. Lee Blvd.

We do not want a levee.

We do not want Bayou St. John closed for time eternal.

As Mr. Wagner admitted at the Cabrini meeting, closing off Bayou St. John with a levee would officially declassify it as a bayou. It would become a lagoon. Lagoon St. John.

Bienville came up Bayou St. John in 1699 to found the City of New Orleans.

How will history judge SLFPA and the citizens of New Orleans if we miss the opportunity to rescue, preserve and improve one of our most valuable and historic natural resources?

Please urge SLFPA to do the right thing.</MESSAGEBODY>

<AddressTo>General</AddressTo>

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

From: Gregory P. Di Leo

Sent: Thursday, November 29, 2007 11:18 AM

To:

Cc:

Subject: RE: Help prevent construction of a levee across Bayou St. John

Mr. Timothy P. Doody, President

Via Email

Southeast Louisiana Flood Protection Authority-East

203 Plauche Court, Suite B

Harahan, LA 70123

Gib Owen, PM-RS

U.S. Army Corps of Engineers

P.O. Box 60267

New Orleans, LA 70160-0267

RE: Opposition to Consideration of a Levee Alternative at Bayou St. John

Dear President Doody and Mr. Owen:

This is to voice my strong opposition to your consideration of the alternative to close Bayou St. John by placing a levee at its mouth at Lake Pontchartrain. I am a resident of Park Island, with a property directly on the Bayou at a point once known as "Devil's Elbow."

Bayou St. John may be the last, largest, and is certainly the most famous natural Bayou in the City of New Orleans. Its prominence in history is without dispute, but my opposition is also based on environmental, economic and social concerns.

Environmentally, this natural and once navigable waterway, once traveled by ships from Spain, France and England, (and pirates as well!), was the main shipping channel from the gulf via the lake to the river. Once the connection to the river was closed, it was still fed by the lake. Shipping stopped, and once again, the pristine quality of this natural waterway emerged, undisturbed by man. It is now teeming with both avian and aquatic life. A sunset on the Bayou is certainly one of the few stunning sites left to behold in this City. If you build a levee at the mouth of the bayou, there will be no infusion of lake water, no migration of aquatic life from or to the lake, and it will become a stagnant pond or lagoon, like all the ones in City Park. This would be a wasteful shame, given the minimal benefits of closing the bayou.

The negative economic impact of closing the Bayou would be devastating to dozens of homeowners along Park Island and Bancroft Drive who purchased and built extremely expensive properties, with the justified reliance that they would have waterfront properties for their homes, in which they have heavily invested. These homes will have significantly lower values if instead of abutting up to a beautiful living Bayou, they were to instead abut up to a

dead pond or lagoon. One need only cast a glance at the lagoons in City Park, which smell, are green with algae and are breeding grounds for mosquitoes to imagine the result of a permanent levee. At a time when we are trying to encourage people to have faith in this city and put their incomes on the line to support it, it would be devastating to the continued growth of the city to kill the strong tax base that lives along the bayou. After all, who wants to live next to a stagnant lagoon?

From a social standpoint, New Orleans thrives on tourism. It is the oft used location in numerous film projects that pass through the area, and Bayou St. John gives the people, tourists and film makers a place to meet, picnic, sightsee or just meditate on its beauty.

Park Island did not flood when Hurricane Katrina came. In fact, it is my understanding that the flooding that occurred to the homes along Bancroft Drive came from across City Park from the levee breach at the 17th Street Canal. If that is the case, then this disaster would have occurred whether Bayou St. John was closed by a levee or not. Since the flooding to the adjacent properties along Bayou St. John did not occur from the Lake to the Bayou, there is no justifiable interest whatsoever served by closing the bayou with a levee when a movable flood gate, if properly constructed, would serve the same purpose.

The flood gate alternative is an acceptable and viable option, and all efforts should be made to use any funding available to "beef up" the flood gates there. This would satisfy the environmental and economic concerns alluded to above, while adding the necessary flood protection needed in the event of another catastrophic storm, without destroying this unique and historic landmark or the value of the homes in the area.

In summary, we need this Bayou to stay as pristine as God made it, with all the life which thrives both above and below its surface. Please abandon consideration of the any alternative which would close off this beautiful, natural waterway and turn it into a stagnant lagoon.

Sincerely,

Gregory P. DiLeo

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

From:

Sent: Thursday, November 29, 2007 10:44 AM

To: MVN Environmental

Subject: re: building levee at mouth of Bayou St. John

Our family has resided on Bayou St. John since 1967. We have witnessed numerous floods in the city, but have never experienced any serious flooding from the Bayou. During Katrina, the flooding along Wisner Avenue and St. Bernard Ave was not caused by lakewaters topping the locks to the Bayou, but from the breaches that flooded Lakeview and Gentilly.

The fish, crustaceans and wildlife that live along the Bayou have long adapted to the ebb and flow of the water. For the past seven years or so we have even had pelicans fishing along the Bayou! There are many lagoons in City Park and they do not support the variety of species found in Bayou St. John.

A levee at the mouth of the Bayou, in our opinion, would be a mistake.

Sincerely,

David B. Bernstein

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

From:

Sent: Thursday, November 29, 2007 2:50 PM

To: MVN Environmental

Subject: NOLA Environmental Comment - New Orleans East

I have a comment concerning the Bayou St. John projects to either build a levee across the bayou or heighten the levees. There is the ruins of an old fort just north of Robert E. Lee and west of the bayou, any levee work may threaten the remains. The bayou supplies water to the lagoon in City Park.

Closing off the Bayou would affect those lagoons The intake crosses under Wisner between Esplanade and DeSaix. How about moving the control structure for the bayou to the lake and removing the levees along the bayou to open up the view? Similar to the other projects where you are considering moving the pumping stations to the lake. I'd like to hear your comments.

Thanks,

Michael Zaiontz

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

From: Ann O'Connell

Sent: Friday, November 30, 2007 9:43 AM

To:

Subject: Please protect Bayou St. John

As both residents of a Gentilly neighborhood near Bayou St. John and as fish biologists who conduct research in this ecosystem, we are writing this letter to fully support the views of the Gentilly Civic Improvement Association and Bancroft Park Civic Association that a levee should not be built across the mouth of this historic and environmentally significant water way. We also support their wishes for, "...a flood control structure that offers improved protection, improved control of salinity and nutrient levels, improved water flow, improved fish populations, and non-motorized access to Lake Pontchartrain." Besides its current and potential value as fisheries habitat, we would like to emphasize the historical significance of this system. For example, the world record sheephead, a popular gamefish, was collected in Bayou St. John, yet the proposed levee would destroy the valuable estuarine fishery habitat that produced a record fish. We cannot support any actions that would jeopardize either current restoration efforts to save this ecosystem or efforts to improve its fishery for the benefit of all New Orleanians. Thank you.

Martin and Meg O'Connell

Burbank Gardens, Gentilly, New Orleans

CATHEY L. WETZEL
December 1, 2007

Gib Owen, PM-RS
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Owen:

I am writing to voice my concern about the possible construction of a levee at Lake Pontchartrain which would close Bayou St John. This would, in my opinion, have a serious negative effect on the environment of the Bayou and would turn this historic and once navigable bayou into a stagnant lagoon. Without the water flow, this natural fish habitat would be devastated and the environment for recreational non-motorized boating would be greatly compromised. I have lived in my family home since 1966 and I can only imagine that a stagnant lagoon in front of my home would not be as healthy as the free flowing bayou that has existed for such a long time in the history of the city.

Please do not ruin this unique feature of our city by building a levee which would close Bayou St. John. Please consider a flood control structure that would not only provide protection, but improved control of nutrients, salinity, fish populations and improved flow of water. Please do not turn this historic bayou into a stagnant unhealthy lagoon.

Once Bayou St. John is closed, not only would the city lose this beautiful and unusual part of our history but our environment would be compromised. Please consider an alternative, such as a flood gate, to the levee.

Sincerely,

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

From: Olinde, John

Sent: Monday, December 03, 2007 1:20 PM

To: MVN Environmental

Cc:

Subject: Comments on proposals related to the Orleans Canal

I live in the Lake Vista subdivision that is close to the Orleans Canal. I was present at the meeting last week at St. Paul's Church in Lakeview. My concern is protection first and aesthetics second. If a ring levee and pump stations in the lake (proposal 6f) provide the most protection, I strongly encourage you to adopt that proposal. On the other hand, if that proposal is not accepted, I would encourage you to adopt location D for the Orleans Ave canal pumping station location. One concern I have about location D, however, is the level of risk reduction this provides between Lake Pontchartrain and Robert E. Lee Blvd. Will the existing levees along the canal withstand the surge or topping with water? Thank you.

CAROL M. LaNASA

December 7, 2007

Gib Owen PM-RS
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Owen:

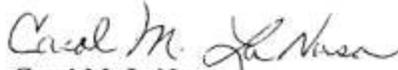
I am writing to voice my opposition to the consideration of the Corps of Engineers that a levee be built across the mouth of Bayou St. John just north of Lakeshore Drive. I have lived on Park Island since the mid-1960's and have always enjoyed the beautiful and historic landscape.

I have spoken with a number of residents who live in this area and we are all opposed to the idea. If a levee is built, we foresee the closing of Bayou St. John which is essentially what would happen if the current suggestion is implemented. We are all greatly concerned about the negative effect this would have on the environment of the Bayou.

We fully support improving the existing structure by raising the height of the floodgate. This would continue the flow of water as well as improve the fish population and water quality.

Please help us preserve and improve the Bayou as a unique, historic and natural resource.

Sincerely,


Carol M. LaNasa

**No levee across Bayou St. John!
No waterfall dam at Robert E. Lee Blvd!
No permanently closed flood structure at the lake!**

From the Bayou St. John Comprehensive Management Plan (September 1, 2006):

Page 6: "In the late 1970s and early 1980s the Orleans Levee Board... began discussions about closing the mouth of the bayou entirely... (Record of Public Hearing, 1979). The public, supported by neighborhood groups and elected officials, fought to instead implement alternative flood control methods resulting in construction of a new flood control structure near the mouth of the bayou.

Page 8: "When the new control structure was proposed in the 1980s, the old structure (Robert E. Lee dam, text in parentheses added) was to be removed. Due to funding limitations... it has not been removed. Based upon recent committee and public meetings, there is consensus to remove this structure."

Page 9: "The Orleans Levee Board would like to keep the sector gates closed ... while residents, biologists, boaters and other public and nonprofit groups would like to see the gates left open except during potential flooding or during periods of poor Lake Pontchartrain water quality." ... "The sector gates are kept sealed except to periodically ensure operational capability."

Page 12: "Preferred over fish stocking programs is the natural flow of species from Lake Pontchartrain into the bayou and connecting lagoon system. This process would be enhanced by periodically opening the sector gates ..."

From the Louisiana Legislature:

LA HB 961, the "Louisiana Scenic Rivers Act" was passed in 1988 as a response to the Orleans Levee Board's attempt to close off the mouth of Bayou St. John. The OLB then proceeded to disregard the wishes of the citizens and only opened and closed the gates for operational maintenance.

From the U. S. Army Corps of Engineers:

"The Corps of Engineers is currently evaluating two alternatives for providing a 100-year level of hurricane protection in the Bayou St. John area. The first is to strengthen and raise the Bayou St. John Sector Gate Structure ... An alternative... would be to construct a levee and sluice gate structure across Bayou St. John... This alternative is being evaluated to ensure that there is not a safer and more cost effective solution available than raising the existing structure." (USACOE email, 10/8/2007)

What do we want?

1. Provide a flood control structure that allows for:
 - a. flood protection
 - b. control of salinity and nutrient levels
 - c. recreational access to Lake Pontchartrain
 - d. improved water flow
 - e. improved fish populations
2. Get rid of the waterfall dam at Robert E. Lee Blvd.
3. Full implementation of the BSJ Comprehensive Management Plan
4. Don't make this decision based on "the more cost effective solution".

If we didn't want a levee back then, why would we want one now?

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

From: Franklin Beahm
Sent: Thursday, March 27, 2008 9:11 AM
To: MVN Environmental
Subject: Bayou St. John

Sir-

I live at. My backyard stops at Bayou St. John. I am opposed to turning the Bayou into a lagoon/pond by placing a levy across the Bayou at the Lake. Disruption of the Bayou's communication with he lake will ultimately lead to loss of fish and waterfowl along the Bayou. Please consider any other alternative.

Franklin D. Beahm
Beahm & Green

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

From: harry hoskins

Sent: Saturday, May 03, 2008 4:29 PM

To: MVN Environmental

Cc: Times Picayune Schleifstein, Mark; AskTheCorps MVN

Subject: 5/7/8 meeting postponed to 7/1/8

Dear Sir or Madam:

Please advise whether the 5/7/8 meeting postponed refers to the meeting of said date in Lakeview concerning levees for outflow canals.

I ask that COE be prepared to address and address at that meeting:

1. plans to close levee gap at canal blvd and the levee. the gap is about 150-180 feet wide and from 3-6 feet deep. the middle of the gap, about 60-90 feet has a significantly narrower levee base. The gap at Marconi and the levee is filled with a gate, but there is no gate at canal blvd.
2. plans to close the four gaps in the West Lakeshore levee berns on the subdivision side of the levee. This levee was strengthened by the addition of a bern added to the base on the subdivision side, but there are four gaps of about 30-40 feet wide in the berns, where there are small electrical bldgs into the levee and berns. These are weak points in the levee.
3. plans to raise the berns on the east Lakeshore levee to the same height as those on the west lakeshore side. the berns on the subdivusuib sude if the west lakeshore levees are about four feet high, but the berns on the east lakeshore levees are only about one foot height.

The above observations are on based on my personal inspection of the Lakeshore levee last week, when I walked the the entire levee fronting the Lakeshore subdivision. My concerns are based on my training as a graduate of the United States Military Academy, my

35 years experience as an attorney investigating and presenting claims for clients and the location of my home at 910 Emerald street in East Lakeshore.

Connsidering the findings of Federal District Court Judge Duval that COE was at fault in destroying the thousands of homes, my home included, I can not rely on the COE to address these issues, without knowing what you are going to do about them and without these issues being addressed in a public forum. I am concerned that these apparent, obvious and glaring gaps in the Lakeshore levee protection be given the same urgent attention as the short sections of the flood walls on Orleans and London canals.

Harry Hoskins

cc:

The President of the
Lakeshore Property Owners' Association
141 Robert E. Lee Blvd
Box 121
New Orleans, LA 70124

LAKE TERRACE PROPERTY OWNERS ASSOCIATION

www.laketerrace.net

May 20, 2008

[REDACTED]
Col. Alvin Lee
U.S. Army Corps of Engineers
New Orleans District

[REDACTED]
Col. Jeffrey Bedey
U.S. Army Corps of Engineers
New Orleans District

[REDACTED]
Kevin G. Wagner
Senior Project Manager - HPO
U.S. Army Corps of Engineers

[REDACTED]
Timothy P. Doody
President
Southeast Louisiana Flood Protection Authority – East

Re: Roadway work planned for Lakeshore Drive at London Avenue Canal

Gentlemen,

Over the last two and one-half years, we have tirelessly attended meeting after meeting, continually working to help restore our great City, all the while urging State and Federal officials to keep us advised of plans that affect the Lake Area neighborhoods. Throughout this process, Corps officials have repeatedly committed to keeping us informed about, and working to secure our acquiescence in, work planned for the Lakefront. Nonetheless, I was surprised to learn yesterday that the Corps has finalized plans to raise the roadway at Pratt Drive and Lakeshore Drive, and has gone so far as to notify property owners that the Corps will be purchasing their property for this purpose.

We are extremely disappointed that the Lakefront neighborhood associations were not alerted to the fact that the Corps has apparently finalized plans to address that intersection nor invited to discuss what impact that plan will have on residents affected by this construction. At one of the meetings referenced above, we specifically asked about such roadway work, and the Corps told us that there were several options to be considered and that no plans had been finalized. Again, we were assured that we would be included in future discussions to talk about the

Lake Terrace Property Owners Association

various options. Despite these assurances, our residents, thus far, have been left out of the process.

Neither State officials nor the Corps is operating in a vacuum. Your decisions have immediate impact on peoples' lives – both financially and in terms of families trying to bring about some stability and normalcy to their lives post-Katrina. To avoid any misinterpretation of this letter, let me be clear. I am not suggesting that safety be compromised in any way. To the contrary, we want to make sure that this City never floods again. I am, however, imploring our state and federal officials to understand and remain mindful that as you undertake measures to improve hurricane and flood protection, the decisions you make and the work you approve affects people directly and immediately. All we ask is that you advise us of plans while they are under consideration and before they are finalized, so that we can inform those affected and raise issues that from our perspective are significant, and which you may have not given sufficient consideration.

The project at issue, for example, will apparently involve raising the roadway several feet for some distance along Lakeshore Drive, and result in the taking of private property. This obviously will dramatically impact those whose property you plan to take. Remember that these are families that have chosen to return to and reinvest in New Orleans. Further, I am sure that property owners adjacent to that property which you plan to buy will also be seriously affected by the project which, I suspect may include redirecting the roadway in some fashion, perhaps altering Pratt Drive, et cetera.

In addition, the construction itself will certainly present serious issues with respect to traffic flow and control, storage of materials and equipment, inadvertent damage to adjacent properties, mitigation and restoration of the site to pre-construction conditions, coordination with other work ongoing and planned along the Lakefront, et cetera, all of which need to be addressed prior to construction. We have seen the result of quick construction that includes inadequate consideration of environmental impacts, insufficient consideration of alternative designs and poor mitigation specifications, with the temporary closure structures and reinforcement of the levees between those structures and the Lake as prime examples.

Simply put, this is a major project and the Corps should have discussed it with us sooner. Now that we have been alerted to it, we insist that you meet with us without delay to discuss the scope of work, plans, specifications and the considerations set forth above. For example, one issue that we certainly need to discuss is whether the Corps has considered installing flood gates as opposed to

Lake Terrace Property Owners Association

taking private property, and why the Corps has not pursued that option. The SLFPA-East has several floodgates under its direction and I am certain that they are able to maintain and operate an additional one. I expect that Lakefront residents would certainly prefer the installation of flood gates as opposed to the Corps taking private property and families' homes.

I will also point out that this lack of communication causes us great concern because of its implications for future projects such as the construction of the permanent pump stations and closure structures. As it stands now, with respect to the proposed locations for these structures, citizens are asked to vote on their preferred site while having been given only vague concepts about the size and layout of the structures. As such, we are asked to make monumental decisions on the basis of few details. If effective and timely communication is a problem for a project the size of the Pratt Drive & Lakeshore Drive intersection, what problems, and surprises, will we face once construction of the permanent pump stations and closure structures is underway?

I suggest that if you have similar plans for the intersections of Canal Blvd. and Lakeshore Drive, and Rail St. and Lakeshore Drive, you should notify those property owners associations and have the same dialogue with them that we are asking for with respect to Pratt Drive and Lakeshore Drive.

We look forward to meeting with you. Thank you.

Sincerely,

Lambert J. Hassinger, Jr.

Lambert J. Hassinger, Jr.
President - LTPOA

[REDACTED]

cc:

John Barry, Secretary, SLFPA-East - [REDACTED]

Robert A. Turner, Jr., SLFPA-East - [REDACTED]

John Ashley, P.E., USACE- HPO - [REDACTED]

Lake Vista Property Owners Association - [REDACTED]

Lakeshore Property Owners Association - [REDACTED]

Lake Oaks Property Owners Association - [REDACTED]

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

From: On Behalf Of Conrad

Sent: Wednesday, July 02, 2008 7:00 PM

To: MVN Environmental

Subject: Bayou St. John Levee vs. Gates Issue

My family and I live near the Bayou St. John since 1989 in the Faubourg St.

John Neighborhood. We oppose the levee option for the mouth of the bayou.

We favor an operational gate, instead. The present bayou gates protected the bayou from the surge and should be replaced or made operational for the continued historic preservation of the bayou and Lake Pontchartrain.

Regards,

Conrad Abadie

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

From: Mona McMahon

Sent: Thursday, July 03, 2008 8:07 PM

To: MVN Environmental

Subject: Bajou St. John

Greetings:

I don't know who put the Corps of Engineers in charge of destroying my Bajou but I mean to get to the bottom of it. You have no right to close off Bajou St. John. It is a historic waterway in a thriving historic neighborhood. Turning it into a stinking pool of stagnant water with my tax dollars won't be tolerated by those of us who live near the Bajou and care very much what happens to it. I don't know where you are from but in New Orleans, we live near water anywhere we are. Bajou St. John is just as cherished today as it was 100 years ago. I pay you to protect my Bajou, not ruin its ecology.

Mona McMahon

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

From: Barbara J L

Sent: Thursday, July 03, 2008 9:48 AM

To: MVN Environmental

Cc:

Subject: Bayou St. John

Dr. Mr. Owen,

It would be most insensitive of the Corp to close off our historic Bayou St.

John. We have circulated petitions against this in great numbers but no one seems to be hearing. If the Bayou is closed this will not only take away an historic waterway, it will also decrease the value of the homes along this habitat. That would bring serious damages to the neighborhood and the individual citizens who pay taxes, vote and personally and as a group maintain and keep this Bayou clean and beautiful. I for one, and I know many others, will stop at nothing to prevent this closing.

Barbara Jean Lichtfuss

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

From: Michael Nuwer

Sent: Friday, July 04, 2008 7:35 AM

To: MVN Environmental

Cc: Fieklow, Arnie Council Member-At-Large; Midura, Shelley Councilmember Dist A

Subject: Closure of Bayou St John

RE: Army Corp of Engineers plan to Close Bayou St John

Mr. Owen:

The option of closing the Bayou is not consistent with the needs of the community. There were 300 person objecting to the closure. This was not mentioned in the presentation given earlier this week.

We need flood gate that can be closed when a storm approaches. If you must close the Bayou there needs to be a way to keep the water flowing to ensure it remains a vital natural resource to the community.

Michael Nuwer

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

From: Ann O'Connell [mailto:mego_connell@hotmail.com]

Sent: Monday, January 12, 2009 3:28 PM

To: MVN Environmental

Subject: Bayou St. John Conservation

Dear Mr. Owen:

As a resident of Burbank Gardens, Gentilly, New Orleans and a biologist, I greatly value Bayou St. John and hope that it can be restored. I am aware of studies that are being conducted to better understand the biology of this system and plans to restore this treasure based on input from experts from a variety of fields.

Therefore, I support the Bayou St. John Conservation Alliance resolution of December 16, 2008, copy attached, that calls for keeping the bayou's sector gate open as often as possible, removal of the "waterfall dam" at Robert E. Lee Blvd., and assistance in managing the bayou based on science. I urge you to work for implementation of these objectives.

Thank you. Meg O'Connell

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

From: Rachel Dangermond

Sent: Wednesday, January 14, 2009 9:49 AM

To: MVN Environmental

Subject: Save Bayou St. John

Please see attached,

--

Rachel Dangermond



Scene on Bayou St. John
August Norieri, 1860 - 1898

**Bayou St. John Conservation Alliance
P.O. Box 820134
New Orleans, LA 70182**

Bancroft Park
Civic Association

Bayou St. John
Improvement Association

Cabrini High School

Christian Brothers School

The Esplanade at City Park

Faubourg St. John
Neighborhood Association

Friends of Lafitte Corridor

Holy Cross School

Holy Trinity Greek
Orthodox Cathedral

Lake Pontchartrain
Basin Foundation

Lake Terrace Property
Owners Association

Lake Vista Property
Owners Association

Louisiana Landmarks Society
Pitot House Museum

Mid-City
Neighborhood Organization

New Orleans City Park

New Orleans Museum of Art

Parkview
Neighborhood Association

Parkview St. John
Homeowners Association

Martin T. O'Connell, Ph.D.
Ichthyologist

RESOLUTION

WHEREAS, we are a diverse group of entities that believe Bayou St. John is one of our city's most valuable cultural and historic natural resources, and

WHEREAS, we believe Bayou St. John deserves preservation and conservation, and

WHEREAS, we have assembled to form the Bayou St. John Conservation Alliance to promote the health of Bayou St. John, and

WHEREAS, we have been duly authorized by our respective organizations to lend their name to this cause, and

WHEREAS, past public sentiment led to a permit and agreements that the Bayou St. John sector gate remain open as often as possible with the exception of storm/surge events and that the Robert E. Lee Blvd. "waterfall dam" be removed, and

WHEREAS, we believe these permit conditions and agreements will lead to a healthier Bayou St. John, and

WHEREAS, we believe these permit conditions and agreements are still binding and need to be honored by the levee authorities, and

WHEREAS, we acknowledge flood protection is our first priority and we believe it can be achieved while we still honor these agreements, and

WHEREAS, we believe that the Bayou St. John sector gate needs to be inspected, repaired and proven to be fully operational for flood protection purposes and then properly maintained, and

WHEREAS, we recognize the U.S. Army Corps of Engineers in concert with various state and local authorities and elected officials are prepared to soon make decisions that will affect Bayou St. John for many years to come.

BE IT HEREBY RESOLVED, that the Bayou St. John Conservation Alliance urges the members of the Coastal Protection and Restoration Authority, the Southeast Louisiana Flood Protection Authority East and the U.S. Army Corps of Engineers to work with the Orleans Levee District to provide us with:

- a. a Bayou St. John sector gate in good working order that remains open as often as possible and provides 100-year hurricane protection.
- b. removal of the "waterfall dam" at Robert E. Lee Blvd.
- c. assistance in managing the Bayou St. John ecosystem based on science and storm protection.

Bancroft Park Civic Association
Robert R. Counce, President

Bayou St. John Improvement Association
Phil Shall, President

Cabrini High School
Ardley R. Hanemann, Jr., President

Christian Brothers School
Joey M. Scaffidi, Principal

The Esplanade at City Park
Ralph L. Godwin, Jr., President

Faubourg St. John Neighborhood Association
Michael Pearce, President

Friends of Lafitte Corridor
Daniel Samuels, President

Holy Cross School
Charles DiGange, Headmaster

Holy Trinity Greek Orthodox Cathedral
Chris Kanellakis, President, Church Council

Lake Pontchartrain Basin Foundation
Carlton Dufrechou, Executive Director

Lake Terrace Property Owners Association
Lambert J. Hassinger, Jr., President

Lake Vista Property Owners Association
John M. Davis, Jr., President

Louisiana Landmarks Society, Pitot House Museum
Anne Morse, President, Board of Trustees

Mid-City Neighborhood Organization
Jennifer Weishaupt, President

New Orleans City Park
Bob Becker, Chief Executive Officer

New Orleans Museum of Art
E. John Bullard, Director

Parkview Neighborhood Association
Susan G. Guidry, President

Parkview St. John Homeowners Association
William Baquet, President

Martin T. O'Connell, Ph.D.
Ichthyologist

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

From: Bauer, Allison Noel (US - New Orleans)

Sent: Saturday, January 17, 2009 11:33 PM

To:

Subject: Please Help Save Bayou St John

I support the Bayou St. John Conservation Alliance resolution of December 16, 2008, copy attached, that calls for keeping the bayou's sector gate open as often as possible, removal of the waterfall dam at Robert E. Lee Blvd., and assistance in managing the bayou based on science. I urge you to work for implementation of these objectives. Please visit www.savebayoustjohn.org to learn more.

Allison Bauer

APPENDIX C

MEMBERS OF INTERAGENCY ENVIRONMENTAL TEAM

Kyle Balkum	Louisiana Dept. of Wildlife and Fisheries
Brian Marcks	Louisiana Department of Natural Resources
Catherine Breaux	U.S. Fish and Wildlife Service
David Castellanos	U.S. Fish and Wildlife Service
Frank Cole	Louisiana Department of Natural Resources
John Ettinger	U.S. Environmental Protection Agency
Jeffrey Harris	Louisiana Department of Natural Resources
Richard Hartman	NOAA National Marine Fisheries Service
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 Department of Wildlife and Fisheries
David Muth	U.S. National Park Service
Clint Padgett	U.S. Geologic Survey
Jamie Phillippe	Louisiana Department of Environmental Quality
Molly Reif	U.S. Geologic Survey
Manuel Ruiz	Louisiana Department of Wildlife and Fisheries
Reneé Sanders	Louisiana Department of Natural Resources
Angela Trahan	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

Swanda, Michael L MVN

From: Robert Cast [rcast@caddonation.org]
Sent: Monday, October 27, 2008 10:09 AM
To: Swanda, Michael L MVN
Subject: RE: IER #4 - October 23, 2008 Caddo Nation of Oklahoma Request to Continue Consultation - Part 1

Mr. Swanda- We agree with the "no adverse effect" finding

Robert Cast
Tribal Historic Preservation Officer/Director
Caddo Nation
P. O. Box 487
Binger, Oklahoma 73009
Phone: 405-656-2901 or 2344, ext. 245
Fax: 405-656-2386
Email: rcast@caddonation.org

From: Swanda, Michael L MVN [mailto:Michael.L.Swanda@usace.army.mil]
Sent: Thursday, October 23, 2008 3:04 PM
To: preservation@caddonation-nsn.gov
Subject: IER #4 - October 23, 2008 Caddo Nation of Oklahoma Request to Continue Consultation - Part 1

Dear Mr. Cast,

The U.S. Army Corps of Engineers, New Orleans District (the Corps), proposes to construct flood reduction improvements along the Orleans East Bank portion of the Lake Pontchartrain and Vicinity project, which is part of the Greater New Orleans Hurricane and Storm Damage Risk Reduction System. Information relating to these proposed improvements will appear in the Individual Environmental Report #4, a National Environmental Policy Act document.

Based on a review of recent cultural resources investigations, the Corps has found that the improvements proposed for the Orleans East Bank project will have no adverse impact on historic properties. A copy of our letter to Chairperson Parker and project documentation is attached herein. If you wish to respond, please review these attachments and provide our office with your opinion regarding our "no adverse effect" finding within 30 days of receipt of this email. If you have any questions or require additional information, please contact me at (504) 862-2036.

Thank you.

Michael Swanda
Archaeologist
U.S. Army Corps of Engineers, New Orleans District
(504) 862-2036

<<IER #4 - Project Features Map.doc>> <<April 9, 2007 SHPO Letter Request to
Initiate.pdf>> <<IER #4 - Management Summary - Part 1.pdf>> <<IER #4 - October 23, 2008
Caddo Nation of Oklahoma Request to Continue Consultation.pdf>>



ALABAMA-COUSHATTA TRIBE OF TEXAS

571 State Park Rd 56 • Livingston, Texas 77351 • (936) 563-1100

November 5, 2008

U.S. Department of the Army
New Orleans District, Corps of Engineers
Attn: Michael Swanda
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Swanda:

On behalf of Chief Oscola Clayton Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your efforts to consult with us concerning the Orleans East Bank (Individual Environmental Report #4) in Orleans Parish.

Our Tribe maintains ancestral associations within the state of Louisiana despite the absence of written records to completely identify Tribal activities, villages, trails, or grave sites. However, it is our objective to ensure any significances of Native American ancestry including the Alabama-Coushatta Tribe are administered with the utmost attention.

Upon reviewing your October 23, 2008 information packet submitted to our Tribe, a determination of immediate impact of burial, cultural, or historical significance to the Alabama-Coushatta Tribe of Texas could not be established. Orleans Parish is within approximate migratory routes utilized by the Alabama and the Coushatta Tribes. Due to the absence of significant cultural resources to our Tribe, we concur with the "no adverse effect" recommendation.

However, in the event of inadvertent discovery of any human remains and/or archaeological artifacts, we appreciate your compliance with your statement, "work will be halted and *your* office will be contacted for further consultation." Should you be in need of additional assistance, please do not hesitate to contact us.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Bryant J. Celestine".

Bryant J. Celestine
Historic Preservation Officer

Telephone: 936-563-1181

celestine.bryant@actribe.org

Fax: 936-563-1183



Seminole Nation of Oklahoma

Historic Preservation Office

Department of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160-0267
Attn: CEMVN-PM-RN

November 5, 2008

RE: Request to continue Consultation Under Section 106 of the National Historic Preservation Act for the Lake Ponchartrain and Vicinity Hurricane Protection Project, Orleans East Bank, Individual Environmental Report #4, Orleans Parish, Louisiana.

Dear Ms. Elizabeth Wiggins:

At this time, we have no interest in this site. However, we would like to reserve the right to participate in future consultation if discoveries are made or resources are impacted that are of significance to the Seminole Nation of Oklahoma.

If you have any further questions, please do not hesitate to contact my office.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer Johnson".

Jennifer Johnson, M.Ed

Tribal Historic Preservation Officer

TRIBAL HISTORIC
PRESERVATION OFFICE
SEMINOLE TRIBE OF FLORIDA
AH-TAH-THI-KI MUSEUM
HC-61, BOX 21A
CLEWISTON, FL 33440
(863) 903-6549



TRIBAL OFFICERS:
MITCHELL CYPRESS
CHAIRMAN
MOSES OSCEOLA
VICE CHAIRMAN
PRISCILLA D. SAYEN
SECRETARY
MICHAEL D. TIGER
TREASURER

SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE

Michael Swanda
Planning, Programs, and
Project Management Division
Environmental Planning and
Compliance Branch
Attn: CEMVN-PM-RN

Monday, November 24, 2008

Subject: IER #4

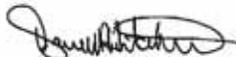
THPO # 002754

Dear Mr. Swanda,

The Tribal Historic Preservation Office of the Seminole Tribe of Florida (STOF-THPO) has received your email correspondence concerning the aforementioned project. The STOF-THPO concurs with your findings of "no adverse effects" to cultural properties within the APE. However, the STOF-THPO would like to be informed should any additional archaeological and/or historic resources be discovered inadvertently during the construction process. We thank you for the opportunity to review the information that has been sent to date regarding this project. Please refer to **THPO-002754** in any further correspondence regarding this project.

We look forward to working with you in the future.

Sincerely,



FOR

Direct routine inquiries to:

Willard Steele,
Tribal Historic Preservation Officer

Dawn Hutchins,
Compliance Review Supervisor

Ah-Tah-Thi-Ki Museum, HC-61, Box 21-A, Clewiston, Florida 33440
Phone (863) 902-1113 ♦ Fax (863) 902-1117



United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506
December 17, 2008



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) Lake Pontchartrain and Vicinity (LPV) Orleans East Bank, New Orleans, Louisiana (IER4). That study was 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 some existing hurricane protection projects to provide protection against a 100-year hurricane event. This report contains an analysis of the impacts on fish and wildlife resources that would result from the implementation of 100-year hurricane protection for that area, and provides recommendations to minimize and/or mitigate project impacts on those resources.

The proposed project was authorized by Supplemental 4 which instructed the Corps to proceed with engineering, design, and modification (and construction where necessary) of the LPV and the West Bank and Vicinity (WBV) 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 precluded the normal procedures for fully complying with the FWCA. The FWCA requires that our Section 2(b) report be made an integral part of any report supporting further project authorization or administrative approval. Therefore, to fulfill the coordination and reporting requirements of the FWCA, the Fish and Wildlife Service (Service) will be providing post-authorization 2(b) reports for each IER.

This draft report incorporates and supplements our FWCA Reports that addressed impacts and mitigation features for the WBV of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the LPV (dated July 25, 1984 and January 17, 1992) Hurricane Protection projects and the November 26, 2007 Draft Programmatic FWCA Report that addresses the hurricane protection improvements authorized in Supplemental 4. However, this report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of

the FWCA. This report has been provided to the Louisiana Department of Wildlife and Fisheries (LDWF) and the National Marine Fisheries Service (NMFS); their comments will be incorporated into our final report.

DESCRIPTION OF THE STUDY AREA

The IER4 project area runs along the existing Orleans east bank levee system on the north side of Orleans Parish where it meets Lake Pontchartrain (Figure 1). The project consists of the rebuilding of 4.4 miles of earthen levee, and the replacement of 7,600 feet (ft) of floodwalls, 16 vehicle access gates, and one sector gate.

Reach 101 extends from just south of the intersection of Topaz St. and Lakeshore Dr. on the east to the west bank of the 17th St. Canal. The existing protection system consists of earthen embankments (levees) on the east and west ends of the reach and concrete floodwalls in between. The existing floodwalls are a combination of I-wall, L-wall and T-wall. There are six vehicular gates through the line of protection (L1 through L5 and L1A) and one pedestrian gate (L1B). The elevations of the existing protection system components range from 12 ft to 13 ft. The required protection level for the floodwalls, levees and gates is 16.0 ft

Reach 102 starts at the west end near the intersection of Topaz Street and Lakeshore Drive proceeds easterly to west side of the Orleans Avenue Canal. The features of reach 102 being addressed in this study include the lakefront levees, one miter gate closure, and an asphalt paved ramp crossings where Canal Boulevard crosses the levee. The required protection level ranges from 15 to 19 ft.

Reach 103 extends from the east side of the Orleans Avenue Canal east to the floodwall on the west side of the London Avenue Canal. The reach includes Bayou St. John from Lake Pontchartrain to the existing sector gate closure structure. The existing protection system consists of earthen levees, I-walls, ramps, and gates. The elevation of the existing floodwall varies from 13.3 to 17.3 ft. Although some of the existing floodwall elevations are currently below the 100-year level of protection, the authorized heights (which will be achieved during Phase I construction) for these sections are at or above the 100-year level of protection. The section of floodwall on the western bank of Bayou St. John, north of Lakeshore Drive, is at an existing height of 16.6 ft with an authorized height of 17.1 ft. This section of floodwall needs to be brought to a height of 18.5 ft to provide the required 100-year level of protection.

Reach 104 extends from the west side of the Inner Harbor Navigation Canal (IHNC) to the east side of the London Avenue Canal. The existing protection system consist of earthen levees with an average elevation of 19 ft and floodwall with an average elevation of 18.3 ft, I-walls, T-walls, four roadway ramps and seven gated closures with heights ranging from 14 to 19.5 ft. The Lakeshore Drive ramps east and west of University of New Orleans (UNO) Research Park have existing elevations of 14.7 and 14.6 ft, respectively; the Franklin Avenue ramp is at 13.7 ft; and the Leroy Johnson Drive ramp is at 13.4 ft. The majority of this LPV reach is currently at the 100-year level of protection or has been brought to the 100-year level of protection during Phase 1 (previously authorized) construction activities. However, the required 100-year level of protection elevations are 21.7 ft for both of the Lakeshore Drive ramps, 22.6 ft for the Franklin Avenue ramp, and 22.1 ft for

the Leroy Johnson Drive ramp (all built to the elevation of the adjacent levees plus overbuild base course and pavement thickness).

Figure 1. Individual Environmental Report (IER) Lake Pontchartrain and Vicinity (LPV) Orleans East Bank, Jefferson, Louisiana (IER4).



FISH AND WILDLIFE RESOURCES

The Service has provided a November 26, 2007 draft programmatic FWCA Report for the LPV project. That report contains a thorough discussion of the significant fish and wildlife resources (including those habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein.

ALTERNATIVES UNDER CONSIDERATION

No-Action Alternative

Under the no-action alternative, the current levee reaches, floodwalls, floodgates, and associated structures would remain at or be brought to the authorized height. Routine maintenance of the levee system would continue, but no additional height would be added to the system.

Alternatives Considered for Reach 101

The existing West End Levee would be raised to an elevation of 16.0 ft before overbuilds, with a slight flood side shift or the existing levee would be raised to an elevation of 16.0 ft in a straddle configuration (levee footprint growth would be equally distributed on both the flood and protected sides of the levee).

Gate L4 would be demolished and replaced in its current location to an elevation of 16.0 ft. The existing floodwalls adjacent to Gate L4 (running along both sides of Pontchartrain Blvd.) would also be demolished and replaced with new T-walls to an elevation of 16.0 ft.

The existing levee reach embankment south of Topaz St to Gate L5 would be increased from an elevation of 12.5 ft to 16.0 ft in a straddle configuration; no additional right-of-way would be required and retaining walls would likely be constructed to minimize the levee footprint due to space restrictions.

Alternatives Considered for Reach 102

A new gate across Canal Boulevard would be constructed across to an elevation of 19.0 ft.

Alternatives Considered for Reach 103

New 19 ft gates would be constructed across the Lakeshore Drive Ramps west of Rail St and west on London Ave.

A levee with sluice or sector gates across Bayou St. John would be constructed on the lake side of the Bayou St. John Bridge. With this alternative, breakwaters at the mouth of the canal could be required.

Alternatives Considered for Reach 104

New gates would be constructed at the Franklin Avenue ramp and also across the Lakeshore Drive, east and west of the UNO Research Facility and north of Leroy Johnson Drive. The new gates would be constructed to an elevation of 19.0 ft.

Other alternatives that were eliminated from further consideration because they did not adequately meet the screening criteria included, hollow Core Levee, Reach 101 and Reach 104 Floodwall Retrofit, Reach 101 - Replace Gate L1A with Ramp, Reach 101 - Realign Floodwall Segments 2A and 2B to Edge of Harbor, Reach 101 - Relocation of a Portion of the Floodwall to the Marina Harbor Seawall, and Reach 104 - Gates W-39 and W-40. Additionally, non-structural alternatives included elevating all residential and commercial properties and public acquisition of properties in areas subject to flooding. Both these alternatives were eliminated due to excessive cost.

DESCRIPTION OF SELECTED PLAN

The proposed action for the IER 4 project area would provide 100-year level of protection for Orleans Parish by rebuilding and/or modifying earthen levees and floodwalls, replacing or adding new floodgates, modifying the Bayou St. John gate structure, and rebuilding roadway ramps.

With the proposed action, the elevations of the existing hurricane and storm damage risk reduction system would be raised to heights ranging from 16 ft to just over 21 ft. No additional action is proposed nor are any additional right-of-way (ROW) clearances required in specific areas where the existing authorized heights are already at or higher than the 100-year level of protection.

Reach 101

The proposed action (Figure 2) for providing the required 100-year level of protection is to replace existing I-walls, L-walls, and T-walls with new T-walls and to construct floodwalls to an elevation of 16 ft on top of the existing levees at the east and west ends of the reach. The proposed action for the I-walls, L-walls, T-walls, and gates in LPV 101 is the demolition of the existing wall segments and gates, which are at a height of approximately 12.5 ft, and replace them with new T-walls and/or gates to a height of 16 ft. The proposed action for the west and east end levees is to construct new floodwalls on top of the existing West End Levee (currently at 12.0 ft) and the existing East End Levee (currently at 12.5 ft) to bring these to a height of 16 ft.

Figure 2. Proposed Action at Reach 101



Reach 102

As part of Phase 1 construction (work to bring the protection system to previously authorized heights) in LPV 102 (Figure 3), gate L6 at Topaz Street was removed and a levee embankment was constructed in its place. At the end of Phase 1 construction, the levee at Topaz Street, including overbuild, was at an elevation of 17.5 ft. The proposed action for the existing roadway ramp on Canal is to raise the ramp from its current elevation of 13.5 ft to an elevation of 21.1 ft (19 ft plus overbuild). The footprint of the raised ramp could vary slightly from existing conditions to account for construction using current design requirements.

Figure 3. Proposed Action at Reach 102



Reach 103

The proposed action for the LPV 103 reach (Figure 4) includes the following:

- Construction of a new T-wall to replace the existing L-wall on the western bank of Bayou St. John, north of Lakeshore Drive. The required elevation of 18.5 ft for this section of floodwall is above the previously authorized height of 17.1 ft.
- Construction of new roller gates across Lake Terrace Drive and Rail Street. Roller gates would be added to the ramps, raising them to the 100-year level of protection of 19 ft from previously authorized (18ft) elevations. Since 1 ft ramps would be a safety concern, gates 4 ft high would be installed to meet the 100 year level of protection and to provide visibility for motorists.
- Strengthening of the floodwalls along Bayou St. John through the demolition and replacement of the existing I-walls with T-walls. The T-walls lakeward of the Lakeshore Drive bridges would be constructed to an elevation of 18.5 ft, which is the previously authorized height for this floodwall. The T-walls between and on the protected side of the Lakeshore Drive bridges would be constructed to an elevation of 16.0 ft, which is below previously authorized heights for these floodwall sections of 18-19 ft. The small existing segments of T-walls (at the interface of the existing I-walls and the sector gate structure) also would be demolished and replaced with new T-walls at an elevation of 16.0 ft. The existing sector gate closure structure would be retrofitted to bring it to an elevation of 16 ft.
- Strengthening of the Marconi Drive gate by the addition of steel plates to the top of the gate and through the conversion of the adjacent I-walls to L-walls. The existing gate structure and adjacent walls would remain at their present elevation since they are higher than the required

elevation of 16 ft. An armored transition (scour protection) would be installed between the Marconi Drive gate structure and the levee to the east.

- Strengthening of the existing I-walls behind two electrical transformers on the east bank of Orleans Canal by converting them to L-walls and installation of a water stop (rubber membrane) between the L-wall and concrete seepage protection.

Figure 4. Proposed Action at Reach 103



Reach 104

The proposed action for the LPV 104 reach includes the following (Figure 5):

- Replacement of Gate L-10 (currently at elevation 16.7 ft) with a levee to elevation of 19 ft;
- Strengthening of Gate L-11 with a steel plate along the top to stiffen the girder to meet current design standards;
- Strengthening of the American Standard and Pontchartrain Beach floodwalls by conversion of its I-walls to L-walls in their existing alignments, maintaining current heights of 18.5 to 19.0 ft.
- Re-construction of Gate W-39 (across the railroad tracks) to an elevation of 18 with a 60 ft floodside shift. The old gate (currently at elevation 14.0 ft) would be left in place to provide interim protection during construction. The final disposition of the old gate would be the responsibility of the local sponsor;
- Re-construction of a new gate (W-40) to an elevation of 16.5 ft with a 60 ft floodside shift, tied into the existing alignment. The old gate (currently at elevation 14.0 ft) would be left in place

to provide interim protection during construction. The final disposition of the old gate would be the responsibility of the local sponsor;

- Demolition of the Seabrook I-wall (currently at elevation 14.0 ft) and construction of a new T-wall to the 100-year design elevation of 16.5 ft. The floodwall would be shifted 10-15 ft toward the floodside on the northwestern end and 60 ft toward the floodside underneath Senator Ted Hickey Bridge. The T-wall would tie back into the IHNC levee south of the railroad tracks;
- Raising of the ramps at Leroy Johnson Drive and Franklin Avenue and two ramps at Lakeshore Drive (east and west of the UNO Research Park) from existing elevations of 14.0 to 15.0 ft to final elevations (constructed to the height of adjacent levees plus overbuild) ranging from 21.7 to 22.6 ft. The footprint of the raised ramps could vary slightly from existing conditions to account for current design requirements. The new ramp at Franklin Avenue would also require the UNO perimeter road to be relocated 85 ft to the east.

Figure 5. Proposed Action at Reach 104



Armoring of Levees and Floodwalls

Armoring could be incorporated as an additional feature to protect against erosion and scour on the protected, flood, or both sides of critical portions of levees and floodwalls. These critical areas include: transition points (where levees transition into any hardened feature such as other levees, floodwalls, pump stations, etc.), utility pipeline crossings, floodwall-protected side slopes, and earthen levees that are exposed to wave and surge overtopping during a 500-year hurricane storm event. The proposed method of armoring could be one of the following: cast-in-place reinforced concrete slabs, articulated concrete blocks (ACB) covered with soil and grass, turf reinforcement mattress (TRM), ACB/TRM, TRM/grass, or good grass cover. The armoring would be incorporated into the existing levee or floodwall footprint, and no additional environmental impacts would be anticipated.

Borrow

The earthen fill material would be obtained from the Bonnet Carré Spillway. Impacts from borrow are being addressed in separate IERs.

PROJECT IMPACTS

There will be no significant impact to valuable fish and wildlife habitat as a result of the proposed project. As with the future without project, fish and wildlife and their habitats, in the future with project scenario, are expected to remain relatively stable with some decline from development, subsidence, and erosion.

No Federally listed threatened or endangered species presently occur within the proposed project area. There is no threatened or endangered species habitat in the project area, though West Indian manatee (*Trichechus manatus*) and the Gulf sturgeon (*Acipenser oxyrinchus desotoi*) may occur adjacent to the project area. If project construction has not been initiated within 1 year, consultation should be accomplished prior to making expenditures for construction. If the scope or location of the proposed work is changed, both threatened and endangered species and FWCA consultation should be reinitiated as soon as such changes are made.

FISH AND WILDLIFE CONSERVATION MEASURES

Coastal marshes are considered by the Service to be aquatic resources of national importance due to their increasing scarcity and high habitat value for fish and wildlife within Federal trusteeship (i.e., migratory waterfowl, wading birds, other migratory birds, threatened and endangered species, and interjurisdictional fisheries). Because of the Services' close coordination with the Corps on this project, and because the project is not expected to have any adverse impacts to wetlands, the Service has no conservation measures to offer at this time.

SERVICE POSITION AND RECOMMENDATIONS

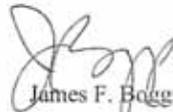
There will be no fish and wildlife resources impacted as a result of the proposed project. The Service does not object to the construction of the proposed project provided the following fish and wildlife conservation recommendations are implemented concurrently with project implementation:

1. The Service, LDWF, and NMFS shall be provided an opportunity to review and submit recommendations on the draft plans and specifications for all levee work addressed in this report.
2. Any proposed change in levee, floodwall, gate, or ramp features, locations or plans that would impact wetlands or fish and wildlife habitat (including open water) shall be coordinated in advance with the Service, NMFS, LDWF, and Louisiana Department of Natural Resources.

3. If the proposed project has not been constructed within 1 year or if changes are made to the proposed project, the Corps should re-initiate Endangered Species Act consultation with the Service to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

We appreciate the opportunity to provide comments in the planning stages of the proposed project. If you or your staff have further questions, or would like to meet and discuss our recommendations, please contact Catherine Breaux of this office at (504) 862-2689.

Sincerely,



James F. Boggs
Supervisor
Louisiana Field Office

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

From: Cascio, Keith [mailto:kcascio@wlf.louisiana.gov]
Sent: Thursday, January 08, 2009 8:59 PM
To: brian.marcks@la.gov
Cc: Behrens, Elizabeth H MVN; Balkum, Kyle
Subject: C20080597 IER#4 COE

Mr. Marcks,

The Department of Wildlife and Fisheries Scenic Rivers Program has reviewed the attached proposal for replacement of the I-walls along Bayou St. John, a Louisiana designated Historic and Scenic River. As to the replacement of the existing I-walls, we anticipate no negative ecological impacts to Bayou St. John resulting from that aspect of the project so long as adequate sediment control practices are utilized during the removal of the old I-walls after the new T-walls are in place. As to the addition of two feet to the height of the existing sector gates, we anticipate no negative ecological impacts provided that it does not, in any way, hinder or interfere with the ability of those gates to be operated as they were designed, permitted and constructed to be operated.

Therefore, so long as this project will in no way hinder the operation of, or compromise the structural integrity of, the sector gates and adequate erosion control measures are utilized, we anticipate no negative ecological impacts to Bayou St. John as a result of this project and no Scenic River Permit will be required.

Thank you for the opportunity to review and comment on this project and please do not hesitate to contact me if I can be of further assistance.

Keith Cascio

Scenic Rivers Coordinator
Louisiana Department of Wildlife and Fisheries
368 CenturyTel Drive
Monroe, Louisiana 71203
Phone: (318) 343-4045
Fax: (318) 345-0797



REPLY TO
ATTENTION OF:

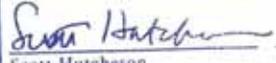
DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

January 13, 2009

Planning, Programs, and
Project Management Division
Environmental Planning
and Compliance Branch
Attn: CEMVN-PM-RN

Mr. Scott Hutcheson
State Historic Preservation Officer
Office of Cultural Development
Department of Culture, Recreation, and Tourism
P.O. Box 44247
Baton Rouge, Louisiana 70804

We concur that the proposed undertaking will have no adverse effect on historic properties. This effect determination could change should new information come to our attention.

 1/26/09
Scott Hutcheson Date
State Historic Preservation Officer

RE: Request to Continue Consultation Under Section 106 of the National Historic Preservation Act for the Lake Pontchartrain and Vicinity Hurricane Protection Project, Orleans East Bank, Individual Environmental Report #4, Orleans Parish, Louisiana.

Dear Mr. Hutcheson:

The U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District (CEMVN), is proposing to construct flood reduction improvements within the Lake Pontchartrain and Vicinity Hurricane Protection Project, Orleans East Bank, Orleans Parish, Louisiana. This improvement project is currently being studied under the emergency alternative arrangements approved by the Council on Environmental Quality for the Lake Pontchartrain and Vicinity Hurricane Protection Project, Individual Environmental Report (IER) #4. Additional information on the Emergency Alternative Arrangements and IER's can be found on web page [HTTP://www.nolaenvironmental.gov](http://www.nolaenvironmental.gov).

In our letter to your office dated October 23, 2008, the CEMVN provided project documentation in support of a "no adverse effect" finding for construction activities proposed within the project's area of potential effect (APE). Your office responded in a letter dated December 5, 2008 and requested additional maps showing the project APE in relationship to the boundaries of the Spanish Fort Site (16OR19) and Locus 04-02 (16OR448). Definitive recommendations concerning the National Register of Historic Places (NRHP) eligibility of the Milneburg Lighthouse was also requested. Copies of these letters are attached herein.

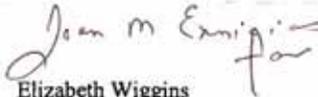
The CEMVN asked Nathanael Heller (R. Christopher Goodwin & Associates, Inc.) to prepare a map showing the project APE boundary and the boundaries for the Spanish Fort Site (16OR19) and Locus 04-02 (16OR448). Heller conducted the recent Phase 1 testing that delineated the boundaries for both sites (Heller et al. 2008). He prepared the enclosed map (see Enclosure #1) and confirmed that the northern boundary of the Spanish Fort Site (16OR19) does not extend into the project APE. In order to ensure avoidance of Locus 04-02 (16OR448), Heller recommended that the southern boundary of the APE bordering the northern boundary of Locus 04-02 (16OR448) be moved slightly to the north along an alignment shown as a dashed red line (see Enclosure #1). The District has revised the project plans in accordance with Heller's recommendation (see Enclosure #2).

In order to further ensure that project impacts will be avoided, project plans have also been revised to clearly delineate a 75 foot radius "no work zone" around the Milneburg Lighthouse (see Enclosure #3). The Milneburg Lighthouse is located outside of the APE and will not be impacted by proposed construction. It is our view that preparation of definitive recommendations concerning NRHP eligibility is not required.

The District will include information concerning the Camp Leroy Johnson Site (16OR219) in the summary discussion of the pending draft Phase 1 report, as requested.

Based on the information summarized above, it is our view that the proposed project will have no adverse impacts on significant cultural resources. Please review this additional documentation and provide our office with your opinion regarding our "no adverse effect" finding within 30 days of receipt of this letter. If you have any questions and/or concerns, please contact Mr. Michael Swanda at (504) 862-2036.

Sincerely,



Elizabeth Wiggins
Chief, Environmental Planning
and Compliance Branch

Enclosures

CF: Jones, SHPO
Galouse, SHPO
Rivet, SHPO
Varnado, SHPO

References Cited

Heller, Nathanael, Troy Nowack, Kathryn A. Ryberg, Katy Coyle, Lindsay Hannah, Ginny Jones, and Lauren Bair

2008 *Management Summary: Phase 1 Cultural Resources Survey and Inventory, and Marine Remote Sensing Survey Performed for Lake Pontchartrain and Vicinity Project, Individual Environmental Report Area 4 (IER #4): Orleans Parish, Louisiana*. R. Christopher Goodwin & Associates, Inc., New Orleans. Prepared for the U.S. Army Corps of Engineers, New Orleans District under Contract W91P8-07-D-0042, Delivery Orders 002/003.

BOBBY JINDAL
GOVERNOR



SCOTT A. ANGELLE
SECRETARY

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL RESTORATION AND MANAGEMENT

January 20, 2009

Elizabeth Wiggins
Chief, Environmental Planning and Compliance Branch
U. S. Army Corps of Engineers, New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160-0267

RE: **C20080597**, Coastal Zone Consistency
U. S. Army Corps of Engineers, New Orleans District
Direct Federal Action
IER #4 for New Orleans Lakefront Levee, West of the Inner Harbor Navigation Canal,
Lake Pontchartrain and Vicinity Hurricane Storm Damage Risk Reduction System, New
Orleans, **Orleans Parish, Louisiana**

Dear Ms. Wiggins:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP. If you have any questions concerning this determination please contact Brian Marcks of the Consistency Section at (225) 342-7939.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Jim Rives".

Jim Rives
Administrator

JR/JDH/bgm

cc: Dave Butler, LDWF
Elizabeth Behrens, COE-NOD
Wynecta Fisher, Orleans Parish
Tim Killeen, CMD FC
Ismail Mehri, OCPRA

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