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NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
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Regional Planning and
Environmental Division, South
New Orleans Environmental Branch

Decision Record

Individual Environmental Report #27
OUTFALL CANAL REMEDIATION
ON THE 17th STREET, ORLEANS AVENUE AND LONDON AVENUE CANALS,
JEFFERSON AND ORLEANS PARISH, LOUISIANA

IER #27

Description of Proposed Action. The proposed action includes remediation of floodwalls along the three outfall canals (17th Street, Orleans Avenue, and London Avenue) in Jefferson and Orleans Parish, Louisiana. The proposed action results from a need to reduce flood risk and water damage to residences, businesses, and other infrastructure with the project area.

Draft IER #27, which detailed the impacts of the proposed action, was released for public review on September 2, 2010. Stakeholders had until October 1, 2010 to comment on the document. Comments were received from five members of the public, one public utility, two federal agencies, and one state agency. A public meeting pertaining to IER #27 occurred on 16 September 2010.

Factors Considered in Determination. The New Orleans District Corps of Engineers (CEMVN) has assessed the impacts of the proposed action on significant resources in the project area, including waters of the United States, hydrology, water quality, wildlife, threatened and endangered species, cultural resources, recreational resources, noise, air quality, traffic and transportation, aesthetics, land use, socioeconomic resources, and environmental justice.

All jurisdictional wetlands were assessed in cooperation with the US Fish and Wildlife Service (USFWS) under National Environmental Policy Act, Fish and Wildlife Coordination Act, and Section 906 (b) WRDA 1986 requirements. The impacts for the proposed action are as follows:

- **Waters of the United States –** The proposed action would not have any impacts on wetlands or waters of the United States.

- **Hydrology –** No adverse impacts to hydrology would be expected from the proposed action. Long-term direct beneficial impacts to hydrology would include increasing the operational parameters of the canals, while indirect beneficial impacts would facilitate unimpeded interior drainage.

- **Water Quality –** No direct and indirect impacts would be expected during remediation of the canal walls. Best Management Practices would be implemented to prevent sediment and pollutants from entering waterways.

- **Wildlife** – During construction temporary and localized impacts to nesting, fishing, and flyways could be impacted. Species located within the project footprint may be temporarily dispersed during construction; however the project area is highly urbanized and does not support a diverse or valuable wildlife base.

- **Threatened and Endangered Species** – No threatened or endangered species or their habitat occur within the project area, and no impacts would be expected.

- **Cultural Resources** – No direct or indirect adverse impacts to cultural resources would be expected.

- **Recreational Resources** – The greenspace along the levees and the area of City Park located adjacent to the east side of the Orleans Avenue Canal would be temporary staging areas and would be inaccessible during construction. Fishing in the canal could be temporarily inaccessible during construction. Indirect impacts to traffic moving in and out of recreational facilities would be temporarily impacted during construction.

- **Noise –** Short-term increases in noise due to construction activities would be expected from the proposed action with the highest noises experienced during daytime hours within a distance of 400-800 feet. Mitigation measures could be required to reduce these impacts to acceptable levels and comply with local noise ordinances, if necessary.

- **Air Quality** – Emissions are considered *de minimus* and would not be expected to exceed 100 tons per year of any criteria pollutant, would not be regionally significant, and would not contribute to a violation of air regulations.

- **Traffic and Transportation** – Direct impacts include temporary road and bridge closures that could lead to congestion where project construction is occurring. Indirect impacts would include road damage from heavy construction equipment from the proposed action. Principal roads directly and temporarily impacted by the proposed action would include Hammond Highway, Pontchartrain Boulevard, West End Boulevard, Lakeshore Drive, Robert E. Lee Boulevard, Canal Street, Marconi Drive, Paris Avenue, Elysian Fields Avenue, Leon C. Simon Drive, and I-10/I-610. Local roads fed by these principal roads could also be affected. Bridges that would be temporarily impacted by the proposed action include the bridges on Hammond Highway, Veterans Boulevard, Robert E. Lee Boulevard, Filmore Avenue, Harrison Avenue, Leon C. Simon Drive, Robert, and Mirabeau Avenue.

- **Aesthetics** – Visual resources of the project corridor would be temporarily impacted by construction activities. Greenspaces used as temporary staging areas for the proposed action would temporarily be impacted. No cumulative impacts on existing aesthetic resources would be expected since these areas would be returned to pre-construction condition after construction is complete.

- **Land Use** – Staging areas proposed outside the canal footprint would be temporarily converted from open greenspace to light industrial but no long-term impacts would be expected since these areas would be returned to pre-construction condition after construction is complete.

- **Socioeconomic Resources** – Temporary direct impacts to some properties necessary for staging and construction access, as well as temporary impacts to area commerce and traffic patterns. Increased level of spending, labor and capital expenditures would occur in the project area temporarily as a result of the proposed action. Decreased risk of storm-related flooding and the associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents.

- **Environmental Justice** – Direct and indirect adverse human health and environmental effects are not expected to disproportionately impact minority and/or low income communities.

- **Hazardous, Toxic and Radioactive Waste** – CEMVN completed an American Society for Testing Materials (ASTM) E 1527-05 Phase I Environmental Site Assessment (ESA), limited Phase II ESA, and Phase I ESA Addendums. All Recognized Environmental Concerns would be avoided; the probability of encountering HTRW in the project area is low.

Environmental Design Commitments. All comments made by US Fish and Wildlife Service have been incorporated into the IER under Section 6.2. USFWS does not object to the proposed project provided that they have the opportunity to review and submit recommendations on the draft plans and specifications for all work addressed in IER #27. Additionally, any proposed change in the proposed project features, locations or plans or to features associated with IER #27 shall be coordinated in advance with USFWS, National Marine Fishery Service, Louisiana Department of Wildlife and Fisheries, and Louisiana Department of Natural Resources. Finally, 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 USFWS to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

If any unrecorded cultural resources are determined to exist within the proposed project site, then no work will proceed in the area containing these cultural resources until a CEMVN staff archeologist has been notified and final coordination with the Louisiana State Historic Preservation Officer and Tribal Historic Preservation Officer has been completed.

Agency & Public Involvement. Various governmental agencies, non-governmental organizations, and stakeholders were engaged throughout the preparation of IER #27. Agency staff from US Fish and Wildlife Service, National Marine Fisheries Service, US Environmental Protection Agency, US Geologic Survey, National Park Service, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, and the Louisiana Department of Wildlife and Fisheries were part of an interagency team that has and will continue to have input throughout the Hurricane Storm Damage Risk Reduction System (HSDRRS) planning process (IER #27, Appendix D).

There have been over 100 public meetings since March 2007 about proposed HSDRRS work in the New Orleans area. Issues relating to draft IER #27 were discussed at the 16 September 2010 public meeting. CEMVN sends out public notices in local and national newspapers, news releases (routinely picked up by television and newspapers in stories and scrolls), e-mails, and mail notifications to stakeholders for each public meeting. In addition, www.nolaenvironmental.gov was set up to provide information to the public regarding proposed HSDRRS work. Below is a list of the comments received regarding IER #27.

1. Public Comments (found in IER #27, Appendix C)
    a. Mr. Paul Hubbel, Jr., letter dated September 9, 2010
    b. Sewerage and Water Board of New Orleans, letter dated September 14, 2010
    c. Sewerage and Water Board of New Orleans, letter dated September 16, 2010
    d. Mr. John Trask, letter dated September 16, 2010
    e. Ms. Natanya Black, email dated September 17, 2010
    f. Anonymous email, dated September 25, 2010
    g. SZS Consultants, letter dated September 27, 2010

2. Agency Comments (found in IER #27, Appendix E)
    a. Louisiana Department of Environmental Quality, letter dated September 21, 2010
    b. National Marine Fisheries Service letter dated September 10, 2010
    c. US Fish and Wildlife Service, letter dated 1 October 2010

Decision. In accordance with the Alternative Arrangements for NEPA Compliance, as published in the Federal Register on March 13, 2007, CEMVN has assessed the potential environmental impacts of the proposed action described in this IER, and performed a review of the above comments received for Draft IER #27, as well as a public meeting held on 16 September 2010.

Furthermore, all practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan.

The public interest will be best served by implementing the proposed action in IER #27 in accordance with the design commitments discussed above. CEMVN will prepare a Comprehensive Environmental Document (CED) that may contain additional information related to IER #27 that becomes available after the execution of the Final IER. The CED will provide a

final system wide mitigation plan, comprehensive cumulative impacts analysis, and any additional information that addresses outstanding data gaps in any of the IERs in accordance with the Federal Register notice dated March 13, 2007.

I have reviewed IER #27 and have considered agency comments and recommendations and comments received from the public during the scoping phase and comment periods. I find the recommended plan fully addresses the objectives as set forth by the Administration and Congress.

The plan is justified, in accordance with environmental statutes, and it is in the public interest to construct the actions as described in this document and IER #27, which is attached hereto and made a part hereof.

10/1/10
Date

Edward R. Fleming
Colonel, US Army
District Commander

FINAL INDIVIDUAL ENVIRONMENTAL REPORT

OUTFALL CANAL REMEDIATION ON THE 17th STREET, ORLEANS AVENUE AND LONDON AVENUE CANALS

Jefferson and Orleans Parish, Louisiana

IER # 27

US Army Corps of Engineers®

October 2010

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1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Individual Environmental Report # 27 (IER # 27) to evaluate the potential impacts associated with the proposed remediation of the canal walls on the 17th Street, Orleans Avenue, and London Avenue Outfall Canals. The proposed action is located in the New Orleans metropolitan area of Jefferson and Orleans Parishes (figure 1). The 17th Street Outfall Canal is a man-made canal approximately 2.4 miles in length, and approximately 200 feet wide, paralleled by levees with floodwalls on both sides. The canal is oriented in a north/south direction between Lake Pontchartrain and Interstate 10 (figure 2). The Orleans Avenue Outfall Canal is a man-made canal approximately 2.6 miles in length, with average bottom and top widths of 100 feet to 160 feet, paralleled by levee on the entire east side, by floodwall on the west side between the pumping station and Robert E. Lee Boulevard, and by a levee on the west side near the lake. The canal is oriented in a north/south direction between Lake Pontchartrain and Interstate 10 (figure 3). The London Avenue Outfall Canal is a man-made canal approximately 4.0 miles in length, with average bottom and top widths of 100 feet to 160 feet, respectively. Pumping Station No. 3 lies at the head of the canal near Broad Street. Pumping Station No. 4 is near Prentiss Avenue. The canal is paralleled by earthen levees topped with floodwalls or floodwalls alone from Pumping Station No. 3 to Leon C. Simon Boulevard on the east and to Robert E. Lee Boulevard on the west. From these two boulevards to Lakeshore Drive, there is an earthen levee on both sides of the canal (figure 4).

IER # 27 was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's (CEQ) Regulations (40 CFR §1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2. The execution of an IER, in lieu of a traditional Environmental Assessment (EA) or Environmental Impact Statement (EIS), is provided for in ER 200-2-2, Environmental Quality (33 CFR §230) Procedures for Implementing the NEPA and pursuant to the Council on Environmental Quality (CEQ) NEPA Implementation Regulations (40 CFR §1506.11). The Alternative Arrangements can be found at www.nolaenvironmental.gov, and are herein incorporated by reference.

The CEMVN implemented Alternative Arrangements on 13 March 2007 under the provisions of the CEQ's Regulations for Implementing the NEPA (40 CFR §1506.11). This process was implemented to expeditiously complete environmental analysis for any changes to the authorized system and the 100-year level of the Hurricane and Storm Damage Risk Reduction System (HSDRRS), formerly known as the Hurricane Protection System (HPS), authorized and funded by Congress and the Administration. The term "100-year level of risk reduction," as it is used throughout this document, refers to a level of risk reduction that reduces the risk of hurricane surge and wave driven flooding that the New Orleans Metropolitan area has a 1 percent chance of experiencing each year. The proposed actions are located in southeastern Louisiana and are part of the Federal effort to rebuild and complete construction of the HSDRRS in the New Orleans Metropolitan area as a result of Hurricanes Katrina and Rita.

The draft IER was distributed for a 30-day public review and comment period on September 2, 2010. Comments were received during the public review and comment period from Federal resource agencies, state resource agencies, a public utility and citizens (appendix B). A public meeting was held on September 16, 2010. The CEMVN District Commander reviewed public and agency comments, and interagency correspondence. The District Commander's decision on the proposed action is documented in the IER Decision Record.

DRAFT

Figure 1 - Site Location

Source: 2009 DOQQ

Legend

- Interstate
- Principal Road
- Local Road
- Outfall Canal
- Pump Station
- Interim Closure Structure

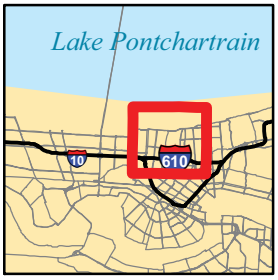


Figure 2- 17th Street Canal

Source: 2009 DOQQ

Legend

- Interstate
- Principal Road
- Local Road
- Outfall Canal
- Interim Closure Structure
- USCG Station
- Pump Station
- Park
- Marina

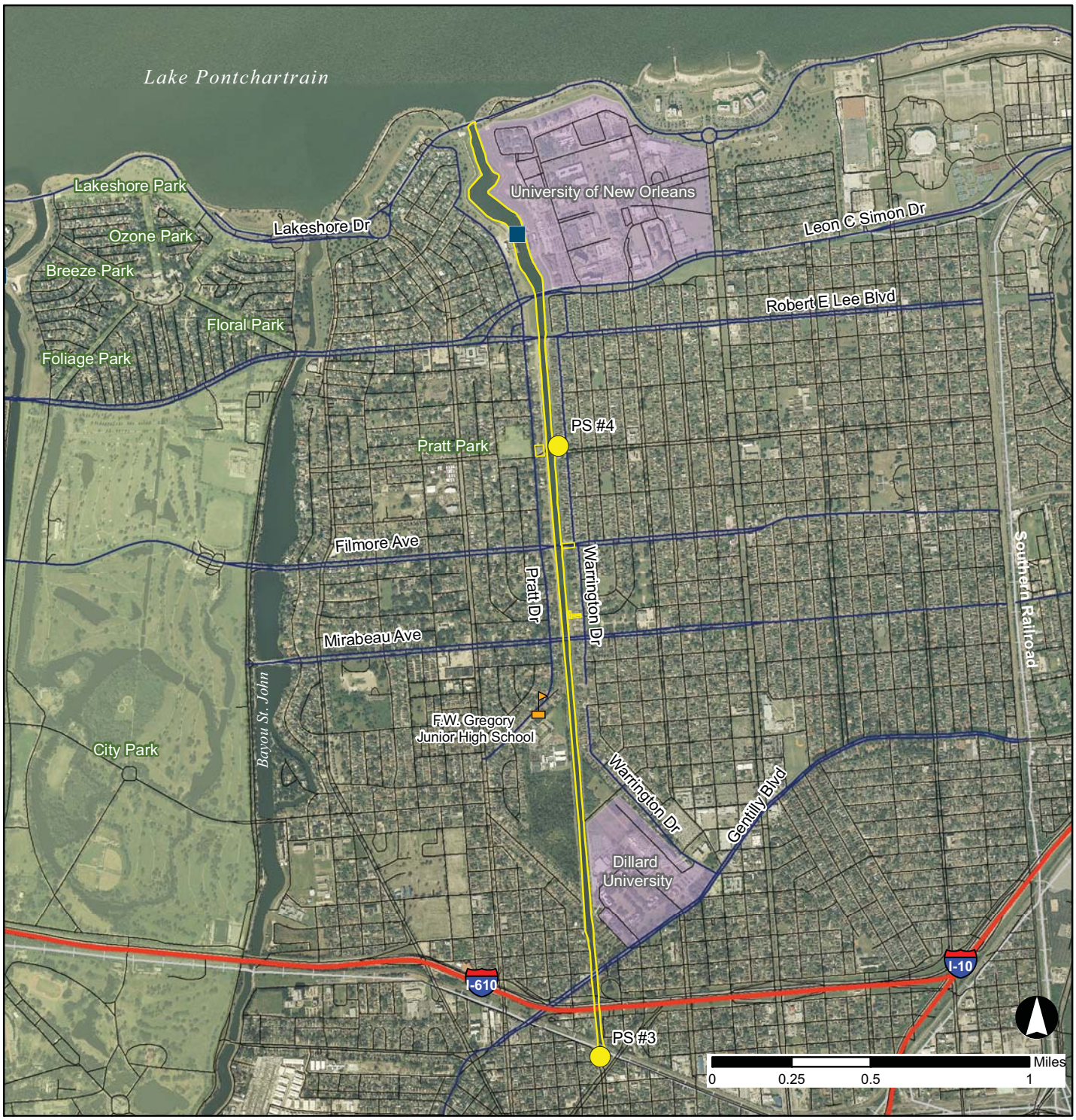
Figure 3 - Orleans Avenue Canal

Source: 2009 DOQQ

Legend

- Interim Closure Structure
- Pump Station
- Outfall Canal & ROW
- Interstate
- Principal Road
- Local Road
- Park
- Marina

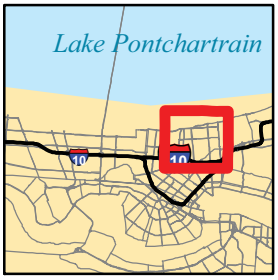
Figure 4 - London Avenue Canal



Source: 2009 DOQQ

Legend

- Interstate
- Principal Road
- Local Road
- Railroad
- Outfall Canal
- Interim Closure Structure
- Pump Station
- Park
- University
- F.W. Gregory Junior High School



1.1 Purpose and Need for the Proposed Action

The purpose of the proposed action is to strengthen approximately 7 miles of floodwalls that have been examined for stability, seepage, settlement, and deflection along the 17th Street, London Avenue, and Orleans Avenue Canals in Orleans and Jefferson Parish, Louisiana. The proposed action results from a need to reduce flood risk and water damage to residences, businesses, and other infrastructure within the project area. Strengthening of the walls of the canals is necessary to ensure that they can safely accommodate and pass rain and stormwater removed from the city by the Sewerage and Water Board of New Orleans (SWBNO). Without remediation, less rain and stormwater runoff would be able to be pumped into the canals by the SWBNO, potentially leading to localized flooding.. The remediated floodwalls and fully operational HSDRRS gates and pumps 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 and storm damage risk reduction projects spanning southeastern Louisiana, including the Lake Pontchartrain and Vicinity (LPV) Hurricane Protection Project and West Bank and Vicinity (WBV) Hurricane Protection Project. Congress and the Administration granted a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade the project systems damaged by the storms. These supplemental appropriations acts gave additional authority to the USACE to construct 100-year HSDRRS projects.

The LPV project was authorized under the Flood Control Act of 1965 (P.L. [Public Law] 89-298, Title II, Sec. 204) which amended, authorized a "project for hurricane protection on Lake Pontchartrain, Louisiana ... substantially in accordance with the recommendations of the Chief of Engineers in House Document 231, Eighty-ninth Congress." The original statutory authorization for the LPV Project was amended by the Water Resources Development Acts (WRDA) of 1974 (P.L. 93-251, Title I, Sec. 92), 1986 (P.L. 99-662, Title VIII, Sec. 805), 1990 (P.L. 101-640, Sec. 116); 1992 (P.L. 102-580, Sec. 102), 1996 (P.L. 104-303, Sec. 325), 1999 (P.L. 106-53, Sec. 324), and 2000 (P.L. 106-541, Sec. 432); and Energy and Water Development Appropriations Acts of 1992 (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 - P.L. 109-148, Chapter 3, Construction, and 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 - P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorizes construction of a 100-year level of protection; 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 H.R. 2206 (pg. 41-44) Title IV, Chapter 3, Flood Control and Coastal Emergencies, (5th Supplemental), General Provisions, Sec. 4302, and 6th Supplemental an act making Appropriations for Military Construction, the Department of Veterans Affairs, and Related Agencies for the Fiscal year ending September 30, 2008, and for Other Purposes (P.L. 110-252, Title III, Chapter 3, Flood Control and Coastal Emergencies).

1.3 Prior Reports

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

- **Flood Control, Mississippi River and Tributaries (1927).** This report 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.
- **Final Environmental Statement, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project (1974).** The purpose of this report was to describe the protective features and identify the environmental effects of the LPV Hurricane Protection Project. This project was authorized by the Flood Control Act of 1965 (Public Law 89-298), approved 27 October 1965, and described in House Document No. 231, 89th Congress, 1st Session. The proposed action for this hurricane protection project consisted of a barrier at the east end of Lake Pontchartrain to prevent storm surge from entering the lake. The barrier consisted of three major structural complexes at the Rigolets, Chef Menteur Pass, and Seabrook. Adverse environmental effects associated with this project included loss of marsh and wetlands, a decrease in the amount of secondary production of organic material in Lake Pontchartrain, and loss of wildlife habitat.
- **17th Street Canal Drainage Basin Study (1983).** This report provided the first in-depth study of the 17th Street Canal Drainage Basin comprising 7,860 acres of Orleans Parish and 2,550 acres of Jefferson Parish. Recommended improvements to the drainage system included increasing the capacity of Pumping Station #6 by 50 percent; widening and deepening the outfall canal along its entire length; increasing the capacity of the 17th Street Canal between Pumping Station #6 and Jefferson Highway; increasing the capacity of Pumping Station #1, improving the Palmetto, Hoey's, and Geisenheimer Canals; and doubling the capacity of the existing gravity systems.
- **Reevaluation Study, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project (1984).** The purpose of this study was to review the ongoing LPV Hurricane Protection Project to determine if the plan of improvement (barrier plan) originally proposed was still the most feasible method to achieve hurricane protection for the Metropolitan New Orleans area, and if not, what modifications to the plan were necessary to provide the most feasible hurricane protection project. This study was conducted in response to a 1977 Federal court injunction, which stopped construction of portions of the project on the basis that the 1975 final EIS for the project was inadequate. The court directed that the EIS be rectified to include adequate development and analysis of alternatives to the proposed action. This study determined that the high-level plan was the most feasible plan for providing hurricane protection. The high-level plan design concept consisted of raising and strengthening levees and floodwalls.
- **Environmental Assessment (EA) #76, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Orleans Avenue Outfall Canal (1988).** This EA was prepared to evaluate two alternatives of providing hurricane protection to the Orleans Avenue Canal. The USACE recommended a *butterfly valve* structure at or near the lakefront end of the canal, while the Orleans Levee Board preferred to construct a system of parallel protection by raising the existing levees and constructing floodwalls adjacent to the canal. It was concluded that impacts to fish and wildlife resources, recreation, threatened and endangered species, cultural resources, aesthetics, noise, and community cohesion would be

minimal with either plan. A Finding of No Significant Impact (FONSI) was signed 25 July 1988.

- **EA #79, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, London Avenue Outfall Canal (1988)**. This EA was prepared to evaluate two alternatives of providing hurricane protection to the London Avenue Canal. The USACE recommended a *butterfly valve* structure at or near the lakefront end of the canal, while the Orleans Levee Board preferred to construct a system of parallel protection by raising the existing levees and constructing floodwalls adjacent to the canal. It was concluded that impacts to fish and wildlife resources, recreation, threatened and endangered species, cultural resources, aesthetics, noise, and community cohesion would be minimal with either plan. A FONSI was signed on 17 October 1988.
- **EA #102, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, 17th Street Outfall Canal (1990).** This EA was prepared to evaluate two alternatives of providing hurricane protection to the 17th Street Canal. The two alternatives were a *butterfly valve* structure and construction of a system of parallel protection by raising the existing levees and constructing floodwalls adjacent to the canal. The USACE recommended the parallel protection plan. It was concluded that impacts to fish and wildlife resources, recreation, threatened and endangered species, cultural resources, aesthetics, noise, and community cohesion would be minimal with either plan. A FONSI was signed on 12 March 1990.
- **EA #279, Lake Pontchartrain Lakefront, Breakwaters, Pump Stations 2 and 3 (1998).** This EA evaluated 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. A FONSI was signed on 30 October 1998.
- **Project Information Report, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Orleans Parish, Orleans East Bank (2006).** The purpose of this project information report was to identify requirements to remove storm water at the three outfall canals (17th Street, Orleans Avenue, and London Avenue). It was recommended that the total capacity of the temporary pumps, at the interim closure structures, be increased from 6,000 cubic feet per second (cfs) to 7,700 cfs at the 17th Street Canal closure structure and be decreased from 5,600 cfs to 5,000 cfs at the London Avenue Canal closure structure. These recommendations would not result in significant environmental impacts.
- **EA #433, Response to Hurricanes Katrina and Rita in Louisiana (2006).** This EA was prepared to evaluate the potential impacts associated with the response actions taken by the USACE as a result of Hurricanes Katrina and Rita. Response actions included de-watering flooded areas, repair of levee breaches, construction of temporary gravel access roads, repair of pump stations, and construction of temporary pumps. Evaluation of potential impacts was conducted for the following significant resources: water quality, wetlands, fisheries, wildlife, threatened and endangered species, essential fish habitat, air quality, uplands, prime/unique farmland, and cultural resources. A FONSI was signed on 24 July 2006.
- **Performance Evaluation of the New Orleans and Southeast Louisiana Hurricane Protection System – Interior Drainage and Pumping (2006).** This Interagency Performance Evaluation Task Force (IPET) report contained the background, overview, and summary of performance during Hurricane Katrina for the interior drainage system and the pump stations. It was determined that the drainage canals and interior drainage system performed well during the storm, but were overwhelmed by the overtopping and breaching of levees and floodwalls due to the large water volume and flood elevations reached.
- **Decision-Making Chronology for the Lake Pontchartrain and Vicinity Hurricane Protection Project (2007).** This report was prepared to document and examine the decision-making process for the LPV Hurricane Protection Project. Chapter 4 (Design Decisions for

the Outfall canals) focuses on the project design decisions for the 17th Street, Orleans Avenue, and London Avenue Canals, including incorporation of the outfall canals into the Hurricane Protection Project.

- **IER #19, Pre-Approved Contractor Furnished Borrow Material, Jefferson, Orleans, St. Bernard, Iberville, and Plaquemines Parishes, Louisiana, and Hancock County, Mississippi (2008).** 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 February 2008, the CEMVN Commander signed a Decision Record on IER # 19.
- **IER #18, Government Furnished Borrow Material, Jefferson, Orleans, Plaquemines, St. Charles, and St. Bernard Parishes, Louisiana (2008).** 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 21 February 2008, the CEMVN Commander signed a Decision Record on IER #18.
- **IER #11, Improved Protection on the Inner Harbor Navigation Canal, Tier 1, Orleans and St. Bernard Parishes, Louisiana (2008).** The document was prepared to evaluate potential impacts associated with building navigable and structural barriers to prevent storm surge from entering the Inner Harbor Navigation Canal from Lake Pontchartrain and/or the Gulf Intracoastal Waterway-Mississippi River Gulf Outlet-Lake Borgne complex. This document also cites specific prior reports for MRGO projects and Coastal Wetlands Planning Protection Restoration projects. On 14 March 2008, the CEMVN Commander signed a Decision Record on IER # 11 (Tier 1).
- **IER #23, Pre-Approved Contractor Furnished Borrow Material # 2, St. Bernard, St. Charles, Plaquemines Parishes, Louisiana and Hancock County, Mississippi (2008).** The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavation borrow areas for use in construction of the HSDRRS. On 6 May 2008, the CEMVN Commander signed a Decision Record on IER # 23.
- **IER #3, Lake Pontchartrain and Vicinity, Lakefront Levee, Jefferson Parish, Louisiana (2008).** The proposed action includes rebuilding earthen levees, upgrading foreshore protection, replacing floodgates, constructing fronting protection for four pumping stations, and constructing or modifying breakwaters at four pumping stations in Jefferson Parish, Louisiana. On 25 July 2008, the CEMVN Commander signed a Decision Record on IER #3.
- **IER #26, Pre-Approved Contractor Furnished Borrow Material # 3, Jefferson, Plaquemines, and St. John the Baptist Parishes, Louisiana and Hancock County, Mississippi (2008).** 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 20 October 2008, the CEMVN Commander signed a Decision Record on IER # 26.
- **IER #11, Improved Protection on the Inner Harbor Navigation Canal, Tier 2 Borgne Orleans and St. Bernard Parishes, Louisiana (2008).** The document was prepared to evaluate the potential impacts associated with constructing a surge barrier near Lake Borgne. On 21 October 2008, the CEMVN Commander signed a Decision Record on IER #11.
- **IER #25, Government Furnished Borrow Material, Orleans, Plaquemines and Jefferson Parishes, Louisiana (2009).** 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 3 February 2009, the CEMVN Commander signed a Decision Record on IER # 25.
- **IER #4, Lake Pontchartrain and Vicinity, Orleans East Bank, New Orleans Lakefront Levee, West of Inner Harbor Navigation Canal to Eastbank of 17th Street Canal,**

Orleans Parish, Louisiana (2009). The document was prepared to evaluate the potential impacts associated with improving the Orleans lakefront hurricane risk reduction features. On 13 March 2009, the CEMVN Commander signed a Decision Record for IER # 4.

- **IER #5, Permanent Protection System for the 17th Street, Orleans Avenue, and London Avenue Canals (2009).** The document was prepared to evaluate the potential impacts associated with the construction and maintenance of a permanent protection system for the 17th Street, Orleans Avenue, and London Avenue Canals. On 30 June 2009, the CEMVN Commander signed a Decision Record for IER # 5.
- **EA #474, Orleans Parish Pump Stations Stormproofing Activities (2009).** This EA was prepared to evaluate stormproofing activities for 22 Orleans Parish pump stations, the Carrollton Frequency Changer Building, the Old River Intake Station, the New River Intake Station, and the Carrollton Water Plant and Power Complex. It was concluded that the proposed action would have no significant impact on the human environment. A FONSI was issued on 16 June 2009.
- **EA #475, Jefferson Parish Pump Station Stormproofing Activities (2009).** This EA was prepared to evaluate stormproofing activities for 21 of the existing drainage pump stations in Jefferson Parish, Louisiana. It was concluded that the proposed action would have no significant impact on the human environment. A FONSI was issued on 16 June 2009.
- **IER # 7, Lake Pontchartrain and Vicinity, New Orleans Lakefront to Michoud Canal, Orleans Parish, Louisiana (2009).** The document evaluates the potential effects associated with proposed improvements to three reaches of the East Orleans Hurricane Risk Reduction Levee that were originally constructed as part of the LPV project. On 19 June 2009, the CEMVN Commander signed a Decision Record on IER #7.
- **IER # 6, Lake Pontchartrain and Vicinity, New Orleans East Citrus Lakefront Levee, Orleans Parish, Louisiana (2009).** The document evaluates the potential effects associated with proposed improvements to three reaches of the East Orleans Hurricane Risk Reduction Levee that were originally constructed as part of the LPV project. On 25 June 2009, the CEMVN Commander signed a Decision Record on IER #6.
- **IER # 28, Government-Furnished Borrow Material #4, Plaquemines, St. Bernard and Jefferson Parishes, Louisiana (2009).** The document evaluates the potential impacts associated with approving government-furnished borrow areas and an access route for use in construction of the HSDRRS. On 31 July 2009, the CEMVN Commander signed a Decision Record on IER # 28.
- **IER #29, Contractor-Furnished Borrow Material #4, Orleans, St. John the Baptist, and St. Tammany Parishes, Louisiana (2009).** The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrows areas for use in construction of the HSDRRS. On 20 September 2009, the CEMVN Commander signed a Decision Record on IER #29.
- **IER #30, Contractor-Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana, and Hancock County, Mississippi (2009).** The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrows areas for use in construction of the HSDRRS. On 28 September 2009, the CEMVN Commander signed a Decision Record on IER #30.
- **IER #32, Contractor-Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana (2010).** The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrows areas for use in construction of the HSDRRS. On 22 January 2010, the CEMVN Commander signed a Decision Record on IER #32.

- **IER #11, Tier 2, Pontchartrain for Improved Protection on the Inner Harbor Navigation Canal (IHNC), Orleans Parish, Louisiana.** This IER was prepared as a second tier evaluation for the portion of the flood risk reduction project that occurs near Lake Pontchartrain and is referred to as "Tier 2 Pontchartrain." This document provides an evaluation of the potential impacts associated with the proposed construction of a storm surge risk reduction structure on the IHNC where it meets Lake Pontchartrain. On 1 April 2010, the CEMVN Commander signed a Decision Record for IER #11 Tier 2 Pontchartrain.

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 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 and future operations and maintenance requirements will also be included. Additionally, the draft CED will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review.

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

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

1.5 Public Concerns

The foremost public concern is reducing risk of hurricane, storm, and flood damage for businesses and residences, and enhancing public safety during major storm events in the Greater New Orleans metropolitan area. A public meeting for IER #27 is scheduled on September 16, 2010.

The taking of homes or property is a major issue for residents who live in the vicinity of the three outfall canals. Residents are concerned their recently rebuilt homes or homes in the process of rebuilding would be taken in order to construct the proposed action. They have expressed concerns regarding potential air and noise pollution, the aesthetics of the constructed features, and potential loss of property values. Their concerns focus mainly on the actual construction activities and associated dust drifting onto adjacent properties and roadways. Residents have requested implementation of measures to reduce air and noise pollution, and efforts to keep area bridges open during construction to minimize impacts on neighborhood traffic patterns. While some citizens are concerned about the construction noise, traffic, and air quality impacts, other citizens have urged the USACE to operate on a 24-hour work schedule for this project to provide permanent 100-year hurricane and storm damage risk reduction for the city as quickly as possible.

1.6 Data Gaps and Uncertainties

At the time of submission of this report, engineering evaluations were not complete for the proposed action and alternatives. Final selection and engineering details of the proposed action could vary based on final engineering reports. Substantial changes to the proposed action,

resulting in further impact to the natural or human environment, would be addressed in a supplemental IER.

These data gaps affect the impacts analysis of some resource areas, including traffic and transportation, aesthetics, air and noise, and socioeconomics. The construction of the proposed project could have impacts on home values in the immediate vicinity of the outfall canals, either raising or lowering the value of these homes. However, the degree of such an impact cannot be empirically predicted, nor would it be compensable. These resource areas cannot be precisely analyzed without knowledge of specific engineering details; therefore, the impacts analysis was completed utilizing information currently available based upon a maximum footprint scenario for each canal.

A study to determine the impacts related to the transportation of construction materials for the HSDRRS was completed March 2010 and published on Nolaenvironmental.com. It is the CEMVN's goal to publish a comprehensive write-up of the transportation impacts in the CED.

2. ALTERNATIVES

2.1 Alternatives Development and Preliminary Screening Criteria

NEPA requires that in analyzing alternatives to a proposed action a Federal agency consider an alternative of "No Action." Likewise, Section 73 of the WRDA of 1974 (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 proposed action, a no action alternative, an alternative involving modified operation of the planned pump stations at the mouths of the outfall canals and deepening of the canals, alternatives involving diversion of water from the 17th Street Canal, and non-structural measures in this IER, discussed in sections 2.4 and 2.5, respectively.

2.2 Description of the Alternatives

2.3 Proposed Action

This project includes remediation of floodwalls along the three outfall canals (17th Street, Orleans Avenue, and London Avenue) in Jefferson and Orleans Parish, Louisiana to strengthen the canal walls in order to facilitate interior drainage at current and future capacities. Remediation of the canals is necessary to ensure that the canal walls can support the requirements of the Sewerage and Water Board of New Orleans (SWBNO) in removing rain water from the city unimpeded.

2.3.1 Proposed Remediation Methods

Various remediation methods are proposed for addressing three possible failure mechanisms along the three outfall canals: seepage, stability and deflection.

Seepage is the migration of water through soil from an area where there is higher water pressure to an area where there is lower water pressure. Uncontrolled seepage occurs when seepage is strong enough to move the soil it's migrating through, eventually opening up a pathway for water to flow through unobstructed.

Stability is the ability of a structure (such as a levee or a floodwall) to resist sliding or being moved as one large piece by the weight or pressure of whatever it's trying to hold back (such as water or soil).

Deflection is how much something moves under the weight or pressure of something else. Particularly applied to I-Walls, deflection describes movement of the I-Wall in relation to the levee.

The remediation which would be used to address each failure mechanism is listed below and described in the next section.

- Failure mechanism 1: Seepage
  - Installation of pressure relief system at the toe of the protected side of an earthen levee to reduce pressure to safe levels, by providing controlled seepage locations (figure 5).
  - Installation of a sheet pile wall on the flood or protected side to prevent the flow of water through the sand layer below the existing wall (figure 6 and figure 7)
  - Installation of a deep soil mixed wall on the protected side to prevent the flow of water through the sand layer below the existing wall (figure 8)
- Failure mechanism 2: Stability
  - Installation of a deep soil mixed wall on the protected side to prevent the flow of water through the sand layer below the existing wall (figure 8)
  - Addition of a stabilization berm on the protected side (figure 9)
- Failure mechanism 3: Deflection
  - Net protected side embankment increase (figure 10)
  - Net flood side embankment increase
  - Net protected and flood side embankment increase

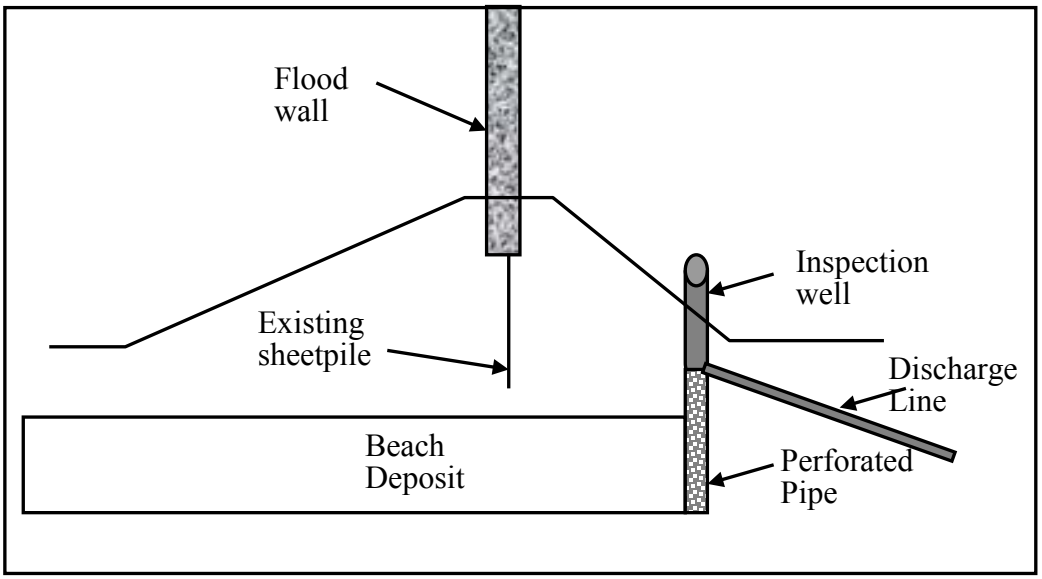


Figure 5 – Conceptual layout of pressure relief

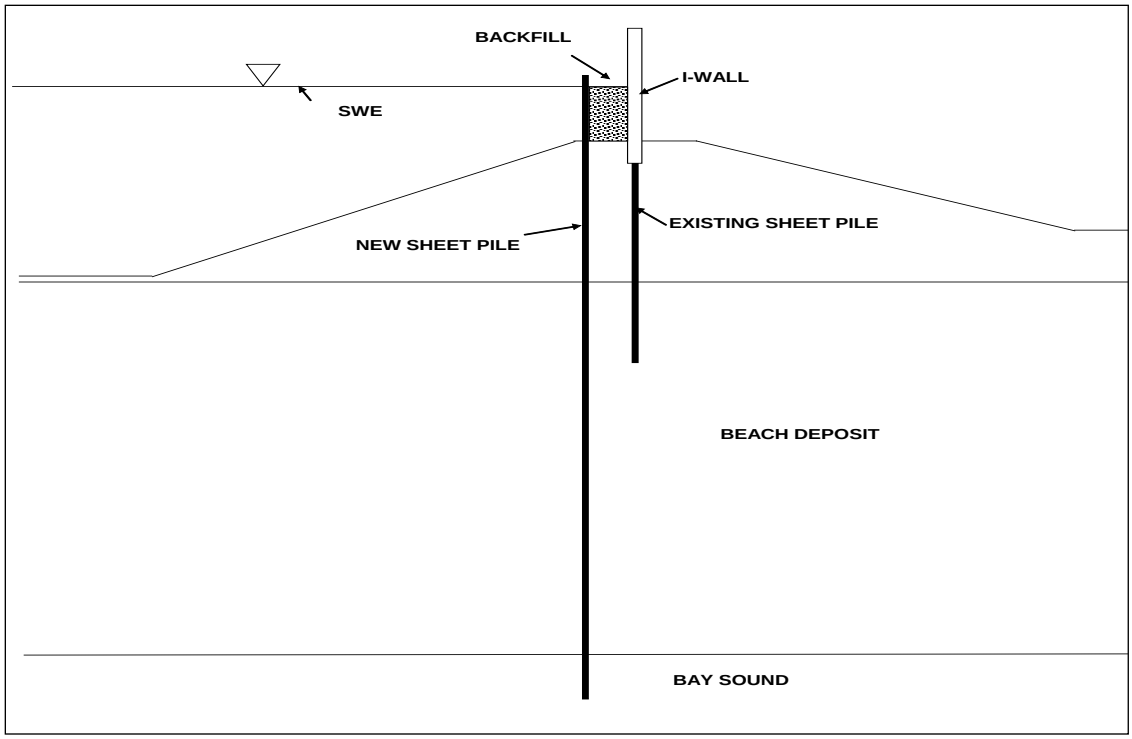


Figure 6 - Conceptual drawing of flood side sheet pile cutoff wall

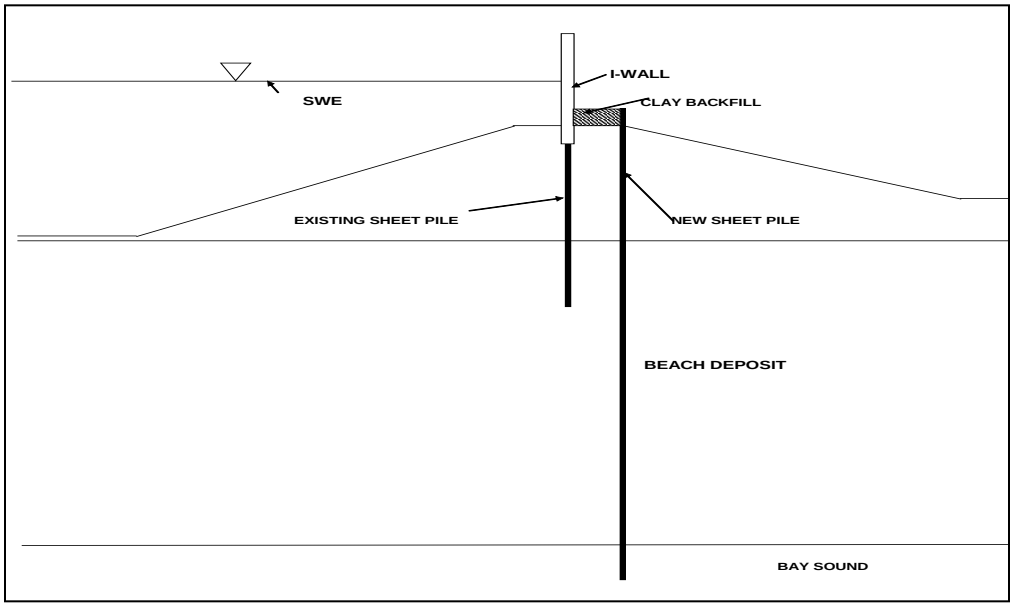


Figure 7 – Conceptual drawing of protected side sheet pile cutoff wall

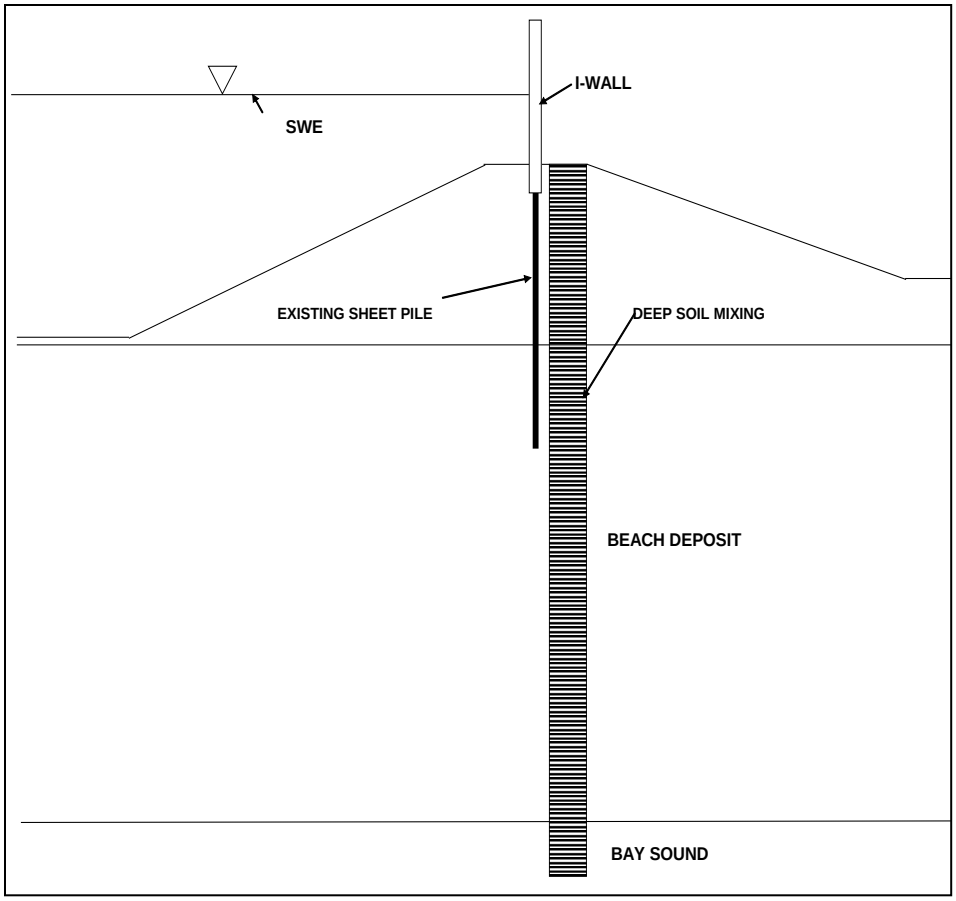


Figure 8 – Conceptual drawing of deep-soil mixed panel for cut-off wall or soil strengthening

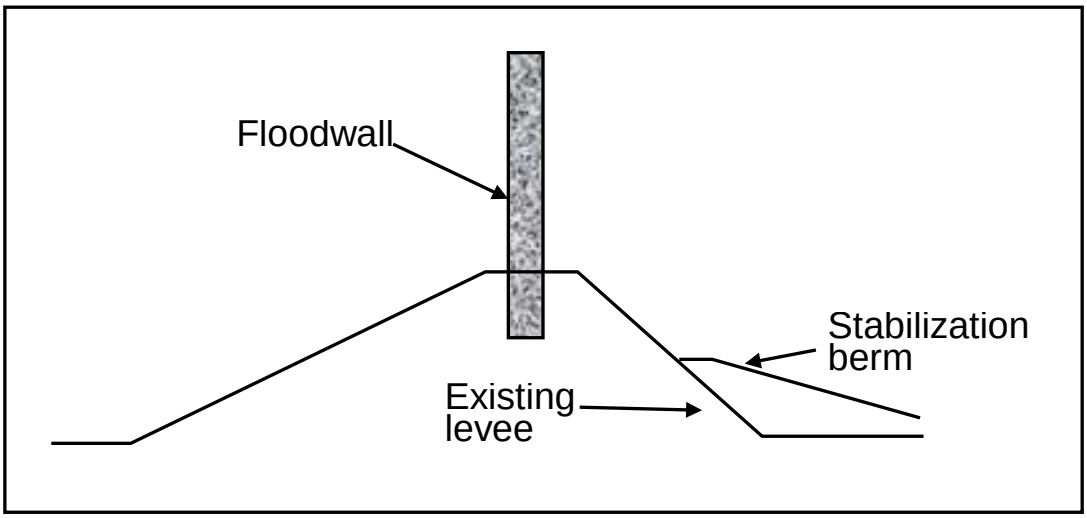


Figure 9 - Conceptual figure of addition of stabilization berm

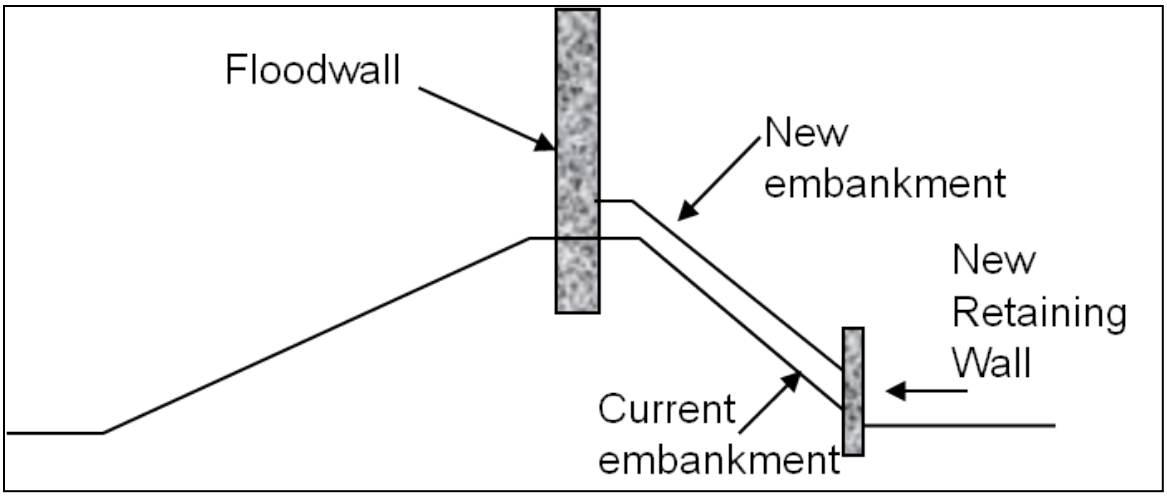


Figure 10 - Conceptual figure of net embankment increase

2.3.2 Remediation Methods

Engineering analyses to determine which reaches along each canal require remediation are not finalized; therefore, work along the entire length of all three canals is assumed for the purpose of impacts analysis. Because all restoration/reinforcement methods would be conducted within approximately the same footprint, within existing right of way and provide the same level of risk reduction, they are not considered separate alternatives and are all evaluated as part of the proposed action. No private property, with the exception of the staging areas identified in figures 11, 12, and 13, would be utilized by the proposed action.

2.3.2.1 Deep Soil Mixing

Using an auger, a mixture of Portland cement and bentonite would be mixed with subsurface soils to create an impermeable wall to cut-off subsurface flow through the subsurface sand layer. Maneuverability would be simpler if the construction took place from the protected side of the existing floodwall; however work on the protected side would only be done if it is not feasible to work from the floodside. Equipment would be located on a barge on the floodside and extended over the wall to construct the cutoff wall on the protected side. If the work had to be constructed from the protected side, all work would occur within existing ROW.

2.3.2.2 Net Embankment Increase/Concrete Slab

The net embankment increase would require adding fill on the protected side of the I-Wall, the flood side of the I-Wall or both sides of the I-Wall to address deflection problems. A concrete slab tying the cut-off wall to the I-wall may be used to increase the embankment if the deflection issue cannot be resolved by adding fill alone. Construction of this alternative would require access on the protected and flood sides for equipment and material delivery. The increased embankment height would not be expected to exceed 2 feet above the existing embankment. All work would be within existing ROW.

2.3.2.3 Sheet pile cut-off

The sheet pile cut-off method requires sheet pile to be installed on the protected or flood side of the I-Wall through the Beach Sand Deposits and into the Bay Sound formation. The sheet piles would be installed using a sheet pile press-in device. Staging of materials and loading of the press-in device would either be from work barges assembled from modular sections placed

within the canal on the flood side of the I-walls or from the ROW on the protected side of the I-walls. Construction access on the protected side of the flood wall may be necessary but the actual footprint of the installation operation will be relatively small due to the size of the required machinery. It is anticipated that the sheet pile would be installed in relatively close proximity to the existing I-wall so construction would be confined to the existing right of way.

Along the London Avenue Canal, as the new sheet pile cut-off wall approaches Filmore Avenue, it would turn perpendicular to the canal (parallel to Filmore Avenue) and extend approximately 50 feet along Filmore Avenue. The extension along Filmore is necessary to provide an acceptable factor of safety for seepage in this reach. The extent of this additional sheet pile is shown in red on figure 13.

2.3.2.4 Stability Berm

This alternative includes placement of fill at the toe of the levee to provide additional weight that would increase the factor of safety against a rotational or translational failure during construction or storm loading. Berms are generally used to concentrate the additional fill where it is needed most. The berm thickness and width are determined from stability analyses currently underway. The toe of the berm would remain within the existing right-of-way.

Figure 11 - Proposed canal wall remediation on 17th Street Canal

Source: 2009 DOQQ

Legend

- Interstate
- Principal Road
- Project Area
- Potential Staging Area
- Pump Station
- Interim Closure Structure

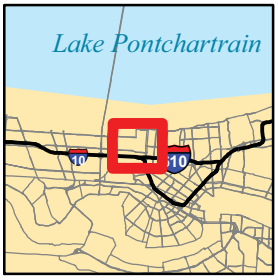
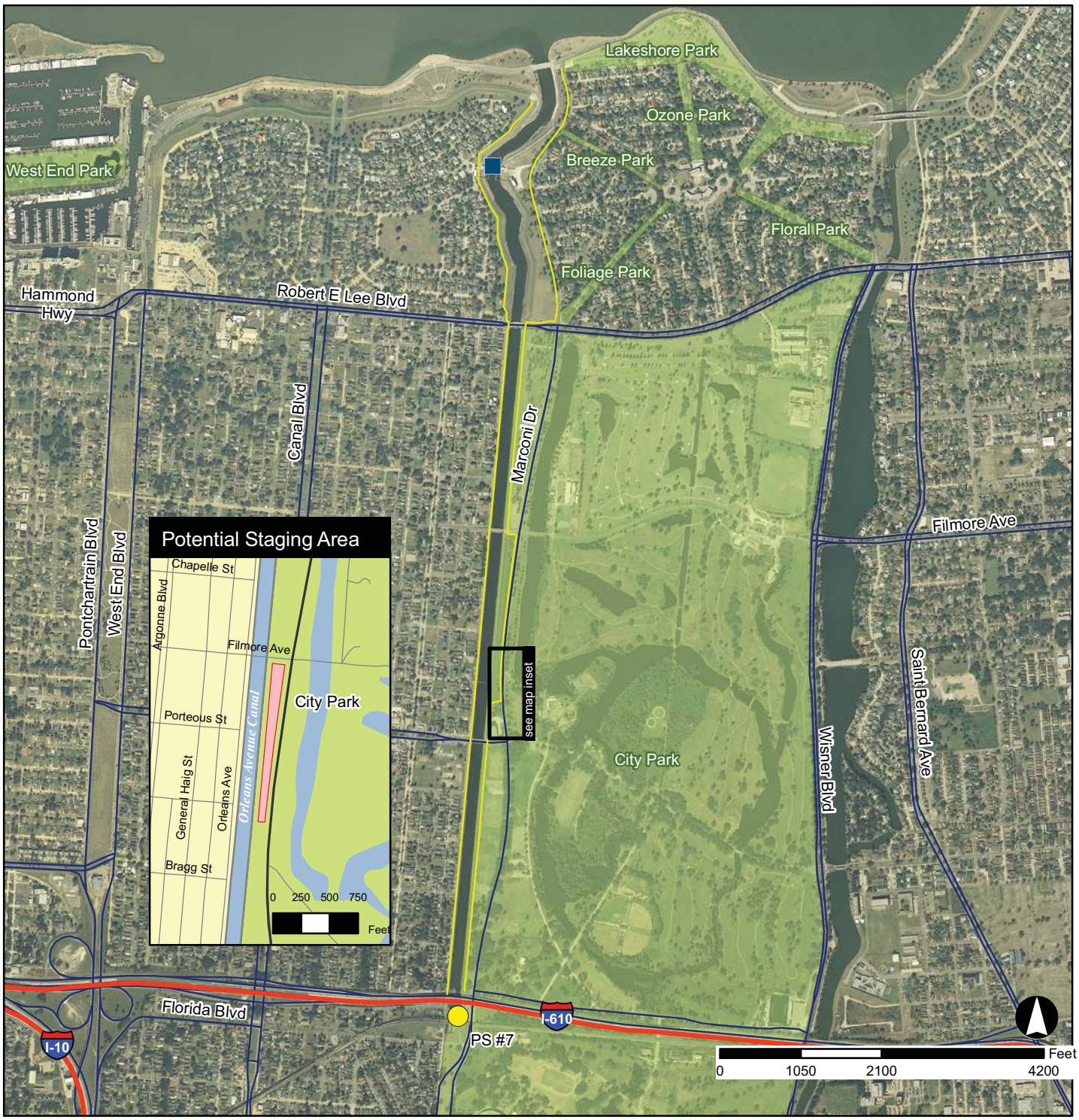


Figure 12 - Proposed canal wall remediation on Orleans Avenue Canal



Source: 2009 DOQQ

Legend

- Interstate
- Project Area
- Principal Road
- Potential Staging Area
- Park
- Interim Closure Structure
- Pump Station

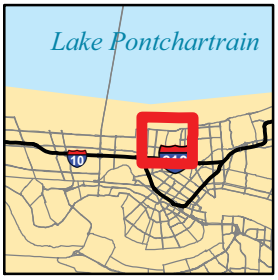
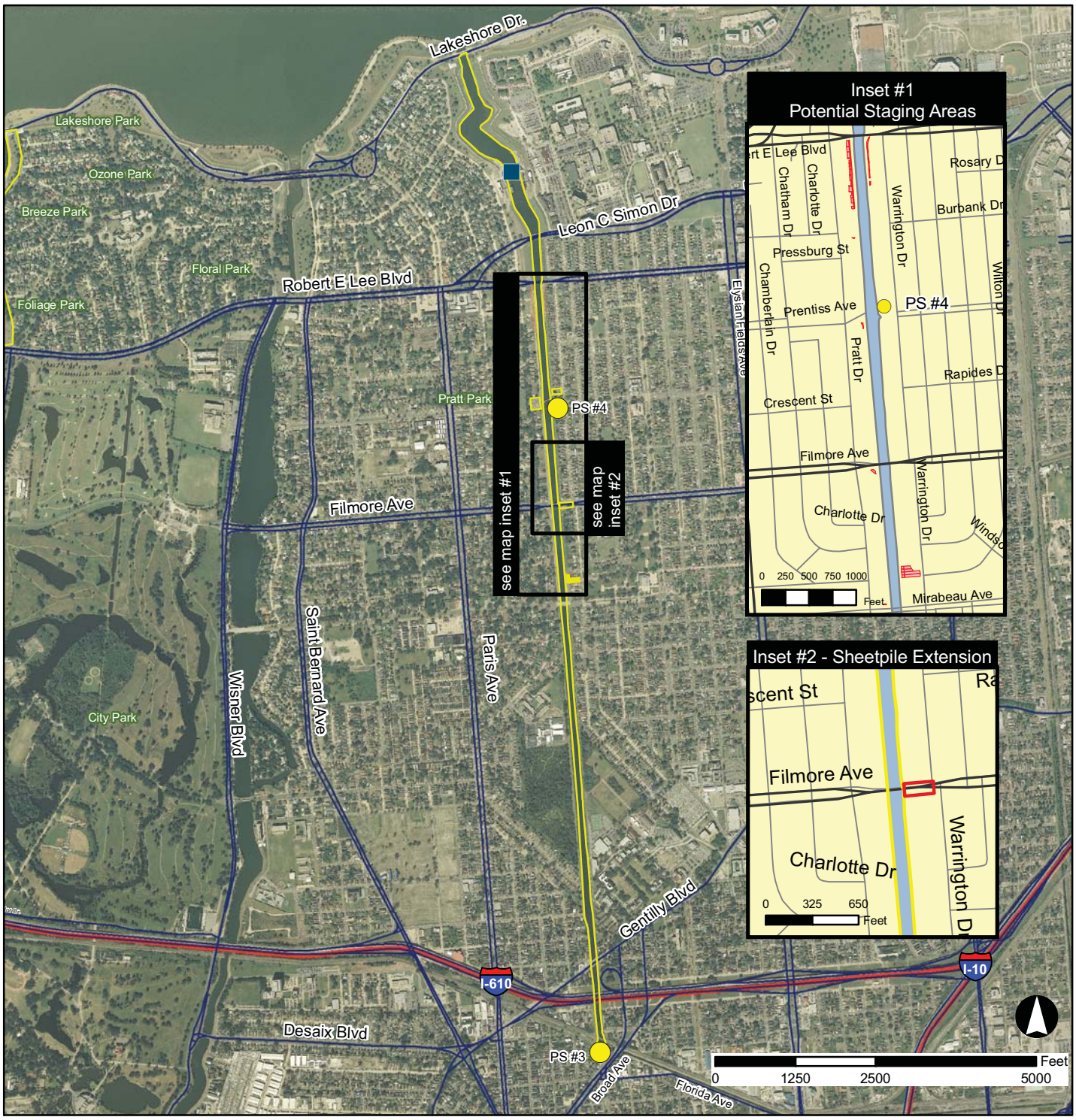


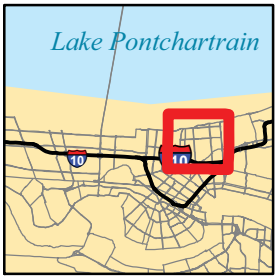
Figure 13 - Proposed canal wall remediation on London Avenue Canal



Source: 2009 DOQQ

Legend

- Interim Closure Structure
- Pump Station
- Principal Road
- Interstate
- Potential Staging Areas
- Canal
- Park
- Sheetpile Extension



2.4 Alternatives to the Proposed Action

2.4.1 No Action Alternative

The alternative to the proposed action considered in detail for each canal was the no action alternative. The CEQ regulations require inclusion of the no action alternative, which serves as a baseline against which the impacts of the proposed action and alternatives can be evaluated. Under the no action alternative, no remediation of the canal walls and levees would take place. The previously authorized level of risk reduction under the no action alternative would be lower than the 100-year level of risk reduction; however, the permanent pump stations, located on the canals may reduce the risk.

2.5 Alternatives Eliminated from Further Consideration

2.5.1 Permanent Pump Stations at the Mouths of the Outfall Canals

This alternative consists of constructing new permanent pump stations at or near the mouths of the outfall canals and necessary canal modifications that would allow gravity-flow of storm water to the new pump station. The existing SWBNO pump stations (#3, #4, #6, and #7) would be taken out of commission and no longer convey storm water to the lakefront. The entire length of the outfall canals would be redesigned and deepened to allow the water that is currently pumped by the existing SWBNO pump stations to gravity-flow to the new pump stations. Gates are not required for this alternative, and the new pumping stations would operate anytime storm water flows in the canals. This would be expected to occur for most rain events. With the canals deepened, the existing floodwalls that flank the outfall canals would no longer remain an integral part of the city's internal flood protection system and would not require any improvements.

Reason for elimination: This alternative would not address the purpose and need of this project in a timely manner. This alternative could take 8-12 years for full implementation. This alternative would leave the project area vulnerable to increased risk of flooding and/or failure of the canal floodwalls until full implementation of the project was achieved. This alternative also exceeds the cost and is not congressionally authorized.

2.5.2 Permanent Pump Stations at the Mouths of the Outfall Canals with Diversion of water from Outfall Canals

This alternative would include the features described in 2.5.1. In addition, storm water flow would be redirect stormwater from the outfall canals to other canals and drainage areas such as the Inner Harbor Navigation Canal or Mississippi River. A number of diversion options were described in IER #5, in section 2.5.8.1. One such diversion would divert storm water from Hoey's Canal near Jefferson Highway to the Mississippi River via a new pump station to provide flood reduction levels in the east end of the Geisenheimer Culvert where the Hoey's Canal joins with the Geisenheimer Culvert to carry storm water into the 17th Street Canal in Orleans Parish. This project would drain all 2,500 acres of Hoey's Basin, resulting in a decrease in the volume of water entering the 17th Street Canal during a rain event. A1,600 cfs pump station would be constructed on the south bank of Hoey's Canal. A 13-foot diameter pipe carrying 1,600 cfs would convey water discharged from the pump station to the Mississippi River as shown in figure 25. The Jefferson Parish option would allow both Orleans and Jefferson Parish to operate separate drainage systems.

Reason for elimination: This alternative would not completely address the purpose and need of safely passing rainwater through the canals in a timely manner. This alternative could take 8-12 years for

full implementation. This alternative would leave the project area vulnerable to increased risk of flooding and/or failure of the canal floodwalls until full implementation of the project was achieved. This alternative also exceeds the cost and is not congressionally authorized.

2.5.3 Nonstructural Alternative

As described in Engineer Regulation (ER) 1105-2-100 (USACE 2000), Section 73 of the WRDA of 1974 requires consideration of nonstructural alternatives in flood reduction studies. These alternatives can be considered independently or in combination with structural measures. 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, relocating structures, flood warning and preparedness systems, and regulating floodplain uses.

Orleans Parish 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 relocating structures would be considered nonstructural alternatives. The flood proofing measure to be evaluated would be raising structures in place per Federal Emergency Management Agency (FEMA) guidelines. The relocation of structures is defined as a buyout or permanent physical relocation.

2.5.3.1 Flood Proofing

Flood proofing would require elevating all residential and commercial properties subject to flooding above the expected levels of flooding in the Orleans east and Jefferson basins. This alternative also considers elevating roadways, public buildings, and some aspects of infrastructure that need to continue operations during and after storm events. Residential structures would be elevated according to FEMA guidelines issued on 12 April 2006 (FEMA 2006). With this guidance, FEMA issued base flood elevations and building elevation guidelines for hurricane-affected areas in Orleans Parish, Louisiana.

In the levee areas of sub-basins “a” to “h” of the parish, FEMA recommends the following: new construction and substantially damaged homes and businesses within a designated FEMA floodplain should be elevated to either the advisory Base Flood Elevation shown on the Preliminary Flood Insurance Rate Map or at least 3 feet above the highest adjacent existing ground elevation at the building site, whichever is higher; and new construction and substantially damaged homes and businesses not in a designated FEMA floodplain should be elevated at least 3 feet above the highest adjacent existing ground elevation at the building site.

This guidance is similar to the National Flood Insurance Program rules for areas protected by levees being restored to provide 1-percent-annual-chance base flood protection. FEMA has stated that the 3-feet-minimum elevation requirement is a reasonable standard given current levels of protection, the temporary nature of the risk, and commitments to restore the system. The reason for raising homes 3 feet is to provide for protection as floodwaters flow from high ground to low ground.

The average cost of elevating a residential structure has been estimated at $95 per square foot (USACE 2007b). This estimate includes the cost of administration, design, inspection, costing, project management, and all other costs associated with elevating the structure, as well as the costs of the occupants being relocated to temporary housing during the elevation activities.

According to the Greater New Orleans Community Data Center (GNOCDC 2007), in 2000 there were 147,772 housing units in the Lakeview, Gentilly, Bywater, Mid-City, French Quarter/Central Business District, Central City/Garden District, and Uptown/Carrollton neighborhoods. These are the Orleans Parish neighborhoods that were directly impacted by floodwaters resulting from breaches in the 17th Street and London Avenue Canals. The $95 per square foot average cost results in a cost of $152,000 to raise a 1,600-square-foot-residence above the expected level of flooding. Using these assumptions, the cost to elevate all the residences in the vicinity of the outfall canals in Orleans Parish would be approximately $22.5 billion. Similar costs in Jefferson Parish would be expected.

Other costs associated with the flood proofing alternative would include elevating non-residential buildings, roads and railroads, and other infrastructure. Information is not available on the costs associated with elevating commercial, industrial, or public buildings because these structures are non-homogenous, which would require information be developed for each individual structure. It can be reasonably assumed that the costs of elevating other infrastructure would be double the costs of elevating residential structures.

Elevating the existing transportation network would be equivalent to converting all roadways and railroads to bridges. The costs to repair roadways and railroads damaged by a storm event appear to be more economical than conversion to a bridge network. Repair costs to the roadway network in Orleans Parish have been estimated at $891.2 million for each storm event that exceeds the level of flood risk reduction. Railroad repair costs in Orleans Parish for each storm event that exceeds the level of flood risk reduction has been estimated at $60.2 million. Information is not available on the costs associated with elevating other infrastructure, such as airport facilities, electrical distribution and transmission grids, gas distribution lines, drainage, sewerage and water distribution facilities, communication networks, public transit, and waterborne navigation facilities. However, the cost associated with elevating all flood-prone infrastructure would exceed the costs of other structural alternatives.

Reason for Elimination: This alternative would be considered only complementary to the alternatives that reduce flooding risks. In addition, the costs associated with implementing this alternative could exceed appropriations for the authorized project. The total estimated costs as outlined previously for elevating all flood-damaged properties in the study area could likely approach, if not exceed, $50 billion, which greatly exceeds the funds appropriated by Congress to achieve the purpose and need of the entire 100-year HSDRRS. However, because these costs are based on the number of homes flooded as a result of Hurricane Katrina, this cost clearly overestimates the cost to raise those homes susceptible to flooding from the 100-year storm. Nonetheless, even if the cost of this alternative were reduced by 50 percent to account for the differences between pre-Katrina and post-Katrina population estimates and the difference between flooding potential from a Hurricane Katrina-like event and a 100-year event, this cost would still greatly exceed funds appropriated for the entire 100-year HSDRRS.

2.5.3.2 Real Estate Acquisition and Relocation

Public acquisition of properties in areas subject to flooding can also reduce the damages from extreme rain events and tropical storms. 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 (U.S.C.) Section 4601, et seq., as amended (the Relocation Assistance Act). Accordingly, the displacement of individuals, families, businesses, farms, and nonprofit organizations would have to be organized and a system established to minimize the impacts on displaced persons.

There are several options that could be offered for the acquisition and relocation alternative: selling the site and home or commercial structure to the local sponsor for demolition, selling the site to the local sponsor and relocating the structure to a comparable site outside the area of flooding, or relocating 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, and necessary expenses for reestablishing a displaced farm, nonprofit organization, or small business at its new location.

Reason for Elimination: The reasons for elimination are similar as described for the flood proofing alternative in section 2.5.3.1.

2.6 Summary Table

Table 1 provides a summary of the remediation alternative methods to raise the operational water level in the outfall canals.

Table 1 - Preliminary Alternative Screening Results

Alternative	**17th Street Canal**	**Orleans Avenue Canal**	**London Avenue Canal**
No Action	☑	☑	☑
Non-Structural	X	X	X
Proposed Action	☑	☑	☑
Permanent Pump Stations at the Mouths of the Outfall Canals	X	X	X
Permanent Pump Stations at the Mouths of the Outfall Canals with Diversion of water from Outfall Canals	X	X	X
X = Eliminated from further study; ☑ = Considered in detail; N/A = Not applicable; this alternative was not formulated for this canal because it was not an appropriate method for the canal.			

3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Environmental Setting

The project area includes the area bounded by Lake Pontchartrain to the north, the IHNC to the east, the Mississippi River to the south, and most of Orleans Parish east bank to the west. The project features being investigated are levee and floodwalls of the three outfall canals (17th Street, Orleans Avenue, and London Avenue Canals). Figure 1 depicts the project area potentially impacted by the proposed actions in this document.

3.1.1 Geologic Setting

The project area is on the south shore of Lake Pontchartrain in the northeastern portion of the Mississippi River deltaic plain. Dominant physiographic features in the vicinity include Lake Pontchartrain, the lakefront hurricane and storm damage risk reduction levee, and the outfall canals. The natural surface environment of marsh and swamp has been altered by filling and drainage for development.

The shallow subsurface in the vicinity of the outfall canals is composed of approximately 15 feet of hydraulic fill from Lake Pontchartrain. Fill deposits contain sand, silt, and clay. Fill deposits overly lacustrine deposits except at the 17th Street Canal where they overly approximately 10 feet of swamp before entering lacustrine deposits. Lacustrine deposits are characterized by soft to medium clays with some silt and sand layers, and shells, and are approximately 20 feet thick. Swamp deposits are mainly very soft to medium organic clays and clays with peat and wood. Beach deposits are beneath lacustrine deposits and are approximately 15 feet thick. Beach deposits are related to the Pine Island Beach Ridge and are generally composed of silty, fine sand and sand with shells. Beach deposits overly 10 feet to 30 feet of bay-sound deposits, which are characterized by soft to medium clays, silts, and some sand containing shell fragments. Pleistocene deposits are beneath bay-sound deposits at approximate elevation -60 NAVD88. These deposits are mainly stiff to very stiff, oxidized clays, silts, and sands.

The study site contains Aquents soils, which are poorly drained soils that are stratified and clayey to mucky throughout, resulting from hydraulically dredged material (NRCS 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 0.50 foot per century. Eustatic sea level is predicted to rise an additional 1.3 feet over the next century (IPCC 2001). Therefore, the natural, long-term, relative subsidence rate at the project area is estimated to be 1.8 feet 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 area.

3.1.2 17th Street Canal

The 17th Street Canal is an approximately 13,500-foot-long outfall canal in the cities of Metairie and New Orleans in Jefferson and Orleans Parishes and forms the boundary between the parishes and cities (see figure 2). The canal is bounded on the north by Lake Pontchartrain, on the south by Sewerage and Water Board of New Orleans (SWBNO) PS #6, on the east and west by the foot of the floodwall and levee complex. The surrounding vicinity of the canal is composed of a mixture of residential homes and commercial businesses and includes West End Park, Municipal Yacht Harbor, Orleans Marina, and a USCG station near the mouth of the canal. An interim

closure structure (ICS) is on the northern end of the canal immediately north of the Hammond Highway Bridge. Bellaire Drive runs parallel to the eastern side of the canal, and Orpheum and Lake Avenues run parallel to the western side of the canal. Three bridges cross the canal, including Hammond Highway at the northern end of the canal, and Veterans Boulevard, and Interstate 10 (I-10)/I-610 near the southern end of the canal.

3.1.3 Orleans Avenue Canal

The Orleans Avenue Canal is an approximately 11,000-foot-long outfall canal in New Orleans in Orleans Parish between the 17th Street Canal and Bayou St. John (see figure 3). The canal is bounded on the north by Lake Pontchartrain, on the south by SWBNO PS #7, on the east and west by the foot of a floodwall and levee complex. The surrounding vicinity of the canal is composed of a mixture of residential homes, commercial businesses, and green space, including City Park, Tourmaline Park, Orleans Park, and Lakeshore Park. The ICS is on the northern end of the canal, south of Lakeshore Drive near the intersection of General Haig Street and Crystal Street. Marconi Drive and City Park run parallel to the eastern side of the canal and Orleans Avenue, and General Haig Street runs parallel to the western side of the canal. Five bridges cross the canal, including Lakeshore Drive, Robert E. Lee Boulevard, Filmore Avenue, Harrison Avenue, and I-610.

3.1.4 London Avenue Canal

The London Avenue Canal is an approximately 15,000-foot-long outfall canal in New Orleans in Orleans Parish, between Bayou St. John and UNO (see figure 4). The canal is bounded on the north by Lake Pontchartrain, on the south by SWBNO PS #3, and on the east and west by the foot of a floodwall and levee complex. The surrounding vicinity of the canal is composed of a mixture of residential homes, commercial businesses, green space, UNO, and Dillard University. The ICS is on the northern end of the canal between Lakeshore Drive and Leon C. Simon Drive, adjacent to UNO. Warrington Drive, UNO, and Dillard University run parallel to the eastern side of the canal, and Pratt Drive and Francis W. Gregory Junior High School run parallel to the western side of the canal. Eight bridges cross the canal, including Lakeshore Drive, Leon C. Simon Drive, Robert E. Lee Boulevard, Filmore Avenue, Mirabeau Avenue, Gentilly Boulevard, I-610, and Southern Railroad tracks.

3.1.5 General

The project area is of mostly low relief and characteristic of an alluvial plain. The area is within the Pontchartrain Basin, which is near the center of the Gulf Coastal Plain in the lower reaches of the Mississippi Embayment. The land in Orleans Parish and Jefferson Parish was created relatively recently in geologic history by sedimentary processes of the Mississippi River. Land elevations within the area range from below sea level to a maximum of 7 feet above sea level. The current land use adjacent to the canals is urban, characterized mainly as residential mixed with commercial.

The project area has a subtropical marine climate; warm and humid with mild winters and hot summers. Rainfall averages 60 inches per year, and tropical storms and hurricanes periodically impact the area. The biological community contains populations of resident and transient estuarine fish and shellfish, small mammals, resident and wintering waterfowl, wading birds, and other avian species.

The SWBNO is responsible for operating and maintaining the existing drainage pumping stations at the head of each of the canals. The SWBNO and Orleans Levee District are responsible for maintaining the outfall canals. SWBNO PS #6 is on the 17th Street Canal, PS #7 is on the Orleans Avenue Canal, and PS #3 and PS #4 are on the London Avenue Canal. In 1997, the USACE entered into a Project Cooperation Agreement with the SWBNO to improve drainage. Under the authority of the Southeast Louisiana Project (SELA), drainage improvements consist

of channel improvement projects, adding capacity to existing pumping stations, and constructing new pumping stations.

3.2 Significant Resources

This section discusses 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 are caused by the action taken and occur at the same time and place (40 CFR §1508.8(a)). Indirect impacts are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8(b)).

Cumulative impacts considers the effects on the resource that result from the incremental impact of the action being considered 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. Cumulative impacts can result from individually minor, but collectively significant, actions taken place over a period of time (40 CFR §1508.7). A complete description of the known projects considered for the cumulative impacts analysis is provided 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 2 presents those significant resources found within the project area, and notes whether they would be impacted by the proposed alternative.

Table 2 - Significant Resources in Project Study Area

Significant Resource	Impacted	Not Impacted
Waters of the United States		X
Wildlife	X	
Threatened and Endangered Species	X	
Cultural Resources		X
Recreational Resources	X	
Noise	X	
Air Quality	X	
Water Quality		X
Hydrology	X	
Traffic and Transportation	X	
Aesthetics	X	
Land Use	X	
Socioeconomics	X	

3.2.1 Waters of the United States

3.2.1.1 Existing Conditions

Section 404 of the Clean Water Act (CWA) of 1977 (PL 95-217) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States (CWA Section 328.3[2]) are those waters used in interstate or foreign commerce, subject to the ebb and

flow of the tide, and all interstate waters including interstate wetlands. Waters of the United States are further defined as all other waters such as intrastate lakes, rivers, streams, mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or impoundments of waters, tributaries of waters, and territorial seas.

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE 1987). Jurisdictional boundaries for these water resources are defined in the field as the ordinary high water mark, which is that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural lines impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (USACE 1987).

National Wetland Inventory (NWI) maps were consulted for identifying waters of the United States in the vicinity of the project area (NWRC 1988). See figure 14 for a presentation of the mapped potential waters of the United States in the project area.

The 17th Street Canal is shown in the NWI from approximately Veterans Boulevard north to the mouth of the canal as an excavated, lower perennial, riverine system and from Veterans Boulevard south to PS #6 as an excavated, estuarine system. The Orleans and London Avenue Canals are shown as excavated, sub tidal, and estuarine. Lake Pontchartrain, mapped as sub tidal, estuarine, is the northernmost boundary of each of the canals. Other mapped potential waters of the United States include Bayou St. John, areas within City Park and a small area on the west side of the London Avenue Canal adjacent to Dillard University. Because of the lack of wetlands in the project area, the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and Louisiana Department of Wildlife and Fisheries (LDWF) have concurred that a habitat evaluation analysis (i.e., wetland value assessment) of the impacts is not necessary for this project.

The waters of the United States within the project area consist of the 17th Street Canal, the Orleans Avenue Canal, the London Avenue Canal, and southern shoreline of Lake Pontchartrain in the vicinity of the three outfall canals. These areas would be regulated by the USACE under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act or both. The proposed action does not include construction and filling within these waters of the United States.

3.2.1.2 Discussion of Impacts

3.2.1.2.1 No Action Alternative

Direct and Indirect Impacts to waters of the United States
There would be no direct or indirect impacts under the no action alternative. Without implementation of the proposed action, no direct or indirect impacts to waters of the United States would occur.

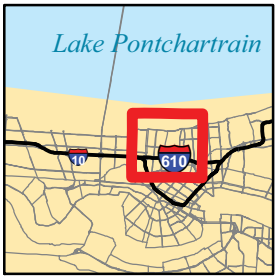
Cumulative Impacts to waters of the United States
Cumulative impacts would not be expected, since there would be no direct impacts to waters of the United States.

Figure 14 - Potential Waters of the United States

Source: 2009 DOQQ

Legend

- Estuarine, sub-tidal
- Estuarine, sub-tidal, excavated
- Lacustrine, Limnetic, excavated
- Palustrine, excavated
- Riverine, lower perennial
- Riverine, lower perennial, excavated
- Unknown, semipermanently flooded
- Delineated Wetland
- Interim Closure Structure
- Pump Station



3.2.1.2.2 Proposed Action

The impacts for the proposed action would be similar for 17th Street, Orleans Avenue, and London Avenue Canals.

Direct Impacts to waters of the United States

Under the proposed action, direct impacts to waters of the United States would not be expected to occur. The existing canal footprints have already impacted waters of the United States, and further direct impacts would not be expected under the proposed action.

Indirect Impacts to waters of the United States

Indirect impacts are not expected to occur as a result of the proposed action. Construction best management practices (BMPs) and a storm water pollution prevention plan (SWPPP) would be employed to decrease erosion and runoff from disturbed soils, temporary increases in turbidity, and to prevent leakages and spills from construction-related equipment and activities from impacting water quality that could indirectly impact waters of the United States.

Cumulative Impacts to waters of the United States

Cumulative impacts to waters of the United States would occur around the project area when considered with other HSDRRS projects. Construction of HSDRRS permanent pump stations at the mouths of the outfall canals and construction along the Lake Pontchartrain shoreline associated with HSDRRS projects in the area would impact riverine and estuarine wetlands. The use of construction BMPs and SWPPPs for this project and others would minimize the incremental impacts of each project.

3.2.2 Hydrology

3.2.2.1 Existing Conditions

Topographically, much of New Orleans lies below sea level, which leaves the city prone to flooding during storm events. As a result, a complex drainage network removes storm water from the city. As part of this drainage network, New Orleans has approximately 90 miles of open canals and 90 miles of subsurface canals drained by 23 pump stations operated by the SWBNO. The pumping system has a pumping capacity of greater than 29 billion gallons per day and a flow rate of 45,000 cfs (SWBNO 2010).

Hydrology in the project area is influenced by the internal drainage infrastructure and natural features of Orleans and Jefferson Parishes, including pump stations, control structures, canals, and Bayou St. John. The pump stations and canals are responsible for evacuating storm water out of the project area into Lake Pontchartrain or the Mississippi River. The major canals and SWBNO pump stations in the project area include the 17th Street, Orleans Avenue, and London Avenue Canals, and SWBNO PS #3, #4, #6, and #7. Each canal flows north toward Lake Pontchartrain, draining the Orleans East Bank sub basin in Orleans Parish, and in the case of the 17th Street Canal, some portions of the East Bank Drainage Basin of Jefferson Parish. With the exception of the Canal Street Pump Station, which the Jefferson Parish Department of Drainage owns, the SWBNO owns and operates all pump stations that discharge into the three canals. An overview of each of these drainage features is presented below.

17th Street Canal, SWBNO Pump Station #6, and Interim Closure Structure

The 17th Street Canal conveys drainage water from the western portion of Orleans Parish and the eastern portion of Jefferson Parish north to Lake Pontchartrain. The canal was constructed during the late 1800s and early 1900s and has undergone improvements since its initial construction. Four pump stations discharge directly into the canal, including SWBNO PS #6, the Canal Street Pump Station (160 cfs), the I-10 Pump Station (860 cfs). The canal is

approximately 13,500 feet long, with an average width of 175 feet, and a total area of 50 acres and has earthen banks and bottom. The project corridor is bounded on the north by Lake Pontchartrain, on the south by SWBNO PS #6, on the east by the foot of the eastern floodwall and levee complex, and on the west by the foot of the western floodwall and levee complex. It is lined with a combination of concrete and sheet pile floodwalls. It has both railroad and automobile bridges (I-10, Veterans Boulevard, and Hammond Highway) that span its width. The channel geometry has various configurations along its length.

SWBNO PS #6 is on the 17th Street Canal and lifts drainage water to allow gravity flow from the pump station to Lake Pontchartrain. The station is manned full-time, has smaller pumps sized to operate for dry-weather flows, and has larger pumps dedicated to the higher flows experienced during storm events. The dry-weather flow pumps are piped to discharge to the Mississippi River. The total pump capacity of SWBNO PS #6 is 9,480 cfs. The 17th Street Canal ICS is located less than a quarter of a mile south from the mouth of the canal near Hammond Highway. The pumping capacity of the 17th Street Canal ICS is 8,800 cfs to 9,200 cfs.

Orleans Avenue Canal, SWBNO Pump Station #7, and Interim Closure Structure

The Orleans Avenue Canal conveys drainage water from the central area of Orleans Parish to Lake Pontchartrain. It was constructed between 1897 and 1900 and has undergone improvements since its initial construction. The canal is approximately 11,100 feet long, with an average width of 145 feet, and an approximate area of 37 acres with earthen banks and bottom. It is lined with a combination of concrete and sheet pile flood walls. The project corridor is bounded on the north by Lake Pontchartrain, on the south by SWBNO PS #7, on the east by the foot of the eastern floodwall and levee complex, and on the west by the foot of the western floodwall and levee complex. Five automobile bridges (I-610, Harrison Avenue, Filmore Avenue, Robert E. Lee Boulevard, and Lakeshore Drive) span its width. The channel geometry has various configurations along its length.

SWBNO PS #7 is at the head of the Orleans Avenue Canal and lifts drainage water to allow gravity flow from the pump station to Lake Pontchartrain The station is manned full-time, has smaller pumps sized to operate for dry-weather flows, and has larger pumps dedicated to the higher flows experienced during storm events. The total pump capacity of SWBNO PS #7 is 2,690 cfs. The Orleans Avenue Canal ICS is located approximately one-quarter mile south of the mouth of the canal and 2,200 feet north of Robert E. Lee Boulevard. The pumping capacity of the Orleans Avenue Canal ICS is 2,200 cfs.

London Avenue Canal, SWBNO Pump Stations #3 and #4, and Interim Closure Structure

The London Avenue Canal conveys drainage water from the eastern portion of Orleans Parish to Lake Pontchartrain. It was constructed between 1901 and 1931 and has undergone improvements since its initial construction. SWBNO PS #3 and #4 discharge drainage water into the London Avenue Canal. The canal is approximately 14,835 feet long, with an average width of 115 feet, and an approximate area of 40 acres with earthen banks and bottom. The area of the canal under remediation is bordered by Lake Pontchartrain to the north, SWBNO PS #3 to the south, on the east by the foot of the eastern floodwall and levee complex and on the west by the western floodwall and levee complex. It is lined with a combination of concrete and sheet pile floodwalls. Railroad and automobile bridges (I-610, Gentilly Boulevard, Mirabeau Avenue, Filmore Avenue, Robert E. Lee Boulevard, Leon C. Simon Drive, and Lakeshore Drive) span its width. The channel geometry has various configurations along its length.

SWBNO PS #3 is at the head of the London Avenue Canal and lifts drainage water to allow gravity flow from the pump station to Lake Pontchartrain. The station is manned full-time, has smaller pumps sized to operate for dry-weather flows, and has larger pumps dedicated to the

higher flows experienced during storm events. The total pump capacity of SWBNO PS #3 is 4,260 cfs.

SWBNO PS #4 is at the midpoint of the London Avenue Canal, approximately 1.9 miles north of SWBNO PS #3, and lifts drainage water to allow gravity flow from the pump station to Lake Pontchartrain. The station is manned full-time, has smaller pumps sized to operate for dry-weather flows, and has larger pumps dedicated to the higher flows experienced during storm events. The total pump capacity of SWBNO PS #4 is 3,720 cfs. The London Avenue Canal ICS is located one-quarter mile south from the mouth of the canal and one-quarter mile north of Leon Simon Drive. The pumping capacity of the London Avenue Canal ICS is 5,000 cfs to 5,200 cfs.

Bayou St. John

Bayou St. John is north of downtown New Orleans along the south shore of Lake Pontchartrain. Water flows naturally from Lake Pontchartrain into Bayou St. John because of wind, currents, tides, and storm surges that affect the lake and because of the lake's higher elevation to the bayou. Bayou St. John is approximately 4 miles long and is as wide as 700 feet and as narrow as 200 feet, bound by Lake Vista and Lakeview neighborhoods, City Park, Mid-City and other residential neighborhoods. City Park lagoons depend on the bayou and draw water from it in several locations. The Orleans Levee Board has jurisdiction from the mouth of the bayou, past the new flood control structure near the mouth, to the old flood control structure at Robert E. Lee Boulevard. The Orleans Levee Board's interest is to protect the city from flooding by operating and maintaining the 1992-built flood control structure, which has both sector and sluice gates to manage water flow. Water movement from the lake is controlled by a flood control structure built in 1992 and operated by the Orleans Levee Board. The Orleans Levee Board decides to open and close the sluice gates on the basis of water levels and potential storm events, but the gates generally remain closed.

Influences on Hydrology

Major water bodies in the project vicinity include Lake Pontchartrain to the north and the Mississippi River to the south. Hydrology in the New Orleans area is influenced by two major forces: tidal flows within Lake Pontchartrain and seasonal fluctuations of the Mississippi River. Tidal exchange between the Gulf of Mexico and Lake Pontchartrain occurs through Lake Borgne and the Chef Menteur and Rigolets passes. Salinity entering from these tidal movements is partially flushed out by freshwater entering the lake from the Pearl River system. The Chicot equivalent aquifer system located below the New Orleans does not contain freshwater. The groundwater table is determined by the water level in Lake Pontchartrain and groundwater movement is generally towards the south and east and recharged by Lake Pontchartrain and storm water infiltration in the New Orleans area (USGS 2002).

3.2.2.2 Discussion of Impacts

3.2.2.2.1 No Action Alternative

Direct and Indirect Impacts

Without implementation of the proposed action direct and indirect impacts to hydrology would occur. Hydrology would continue to be influenced by existing internal drainage infrastructure including pump stations and canals and would require the SWBNO to regulate pumping rate as to not exceed the existing operational water level for each canal. Lower operational levels in the canals could restrict the pumping of the SWBNO and reduce the rate at which water is extracted from the system. Under the no action alternative, water could drain from streets at a slower rate, which could increase frequency and intensity of flooding in the drainage area.

Cumulative Impacts
IERs #3, #4, #5, #6, #7 and #11 are HSDRRS projects that could have an impact on non-storm hydrologic conditions in the project area. The temporary impact on erosion and disturbed sediments during construction would be negligible and would be addressed through BMPs and SWPPPs. There would be no expected impacts to hydrology after construction of these other projects is complete.

Although the improvements to the HSDRRS elsewhere in the project area would reduce flood risk from overtopping and failure of the perimeter flood risk reduction system, the impeded interior drainage system due to the no action alternative would increase flood risk for the project area. The no action alternative would detract from the flood reduction hydrological benefits of the 100-year HSDRRS system.

3.2.2.2.2 Proposed Action

Direct Impacts
Storm water would continue to be evacuated into Lake Pontchartrain via the 17th Street, Orleans Avenue, and London Avenue canals. Long-term impacts to hydrology would be the increased operational water level necessary to facilitate unimpeded interior drainage. The strengthened walls of each canal would further enhance the overall benefits of the proposed 100-year hurricane storm damage risk reduction system throughout the area.

It is anticipated that because the area aquifer is readily recharged by Lake Pontchartrain, no groundwater disturbance causing home foundation damage would be anticipated from this work. Under normal system operations, the canal is open to the lake and any additional sheetpile or deep soil mixed cutoff walls would have no long term effect on the regional groundwater. The underground aquifer is fed from Lake Pontchartrain, which causes the groundwater flow to be predominantly north-south; therefore, any sheetpile or deep soil mixed cutoff wall aligned in this same direction would offer no resistance to groundwater flow. During extreme weather events, when the ICS is closed and the water level in the canal raises due to storm runoff pumping there would not be any effect to the local community due to the presence of the cutoff, which reduces the seepage pressures in the area to safe levels.

Indirect Impacts
Indirect impacts to hydrology would not be expected as a result of the proposed action.

Cumulative Impacts
The incremental impact of the proposed action would increase the strength of the walls of each canal, further enhancing the overall flood risk reduction benefits of the proposed HSDRRS throughout the area.

3.2.3 Water Quality

3.2.3.1 Existing Conditions

Surface Water
The project area is within the Lake Pontchartrain Basin. Lake Pontchartrain Basin comprises over 10,000 square miles (mi^2) encompassing 16 parishes in southeast Louisiana and 4 counties in Mississippi, and is one of the largest estuarine ecosystems on the Gulf Coast (LPBF 2010). The basin is bounded on the north by the Mississippi state line, on the west and south by the east bank Mississippi River levee, on the east by the Pearl River Basin, and on the southeast by Breton and Chandeleur Sounds. This basin includes Lake Borgne, Breton Sound, Chandeleur Sound, and the Chandeleur Islands. Elevations in this basin range from -5 feet at New Orleans to

over 200 feet near the Mississippi border (LDEQ 2008). Lake Pontchartrain is approximately 640 mi^2 in area and averages 12 feet in depth.

The 17th Street, Orleans Avenue, and London Avenue Canals is in the Lake Pontchartrain Drainage Canals in Jefferson and Orleans Parishes subsegment. A subsegment is a named regulatory water body identified in the Louisiana Administrative Code and considered representative of the watershed through which it flows and has numerical criteria assigned to it. This is the level of the watershed at which water quality assessments are applied. Bayou St. John also drains to Lake Pontchartrain and is surrounded by the Lake Pontchartrain Drainage Canals in the Jefferson and Orleans Parishes subsegment (LDEQ 2008).

Current Monitoring

The *2006 Water Quality Integrated Report* has been reviewed and approved by the Louisiana Department of Environmental Quality (LDEQ) and the Environmental Protection Agency (EPA) and the draft *2008 Water Quality Integrated Report* has been approved by the LDEQ, but not by the EPA. The most current draft indicates different water quality supported uses and the revisions are noted below.

The Lake Pontchartrain Basin Foundation (LPBF) began EPA approved water quality monitoring in August 2000 in an effort to educate the public about water quality and to provide supporting data to retract swimming advisories along the shore of Lake Pontchartrain. The 2006 Water Quality Integrated Report indicates Lake Pontchartrain fully supports designated uses of west of LA 11; however along the south shore beaches, primary contact recreation is not supported and fecal coliform levels are believed to be attributed to sanitary sewer overflows (LDEQ 2006). The LDEQ defines primary contact recreation as any recreational activity, which involves or requires prolonged body contact with the water, such as swimming, water skiing, tubing, snorkeling, and skin diving (LDEQ 2008). The 2008 draft report has removed fecal coliform impairment from the lake because of supporting data collected by the LPBF (LPBF 2010).

The LDEQ, the Louisiana Department Health and Hospitals (LDHH), and the Louisiana Department of Wildlife and Fisheries (LDWF) work cooperatively in determining fish consumption and swimming advisories in Louisiana's waters. In response to the BP Deepwater Horizon oil spill, the Lake Pontchartrain Basin Foundation conducted weekly reconnaissance boat trips from Lake Pontchartrain at Slidell through the Rigolets, into Lake Borgne, into the Mississippi Sound, across the edge of the Chandeleur Sound, and back through Chef Menteur Pass searching for evidence of oil. The LPBF's most recent survey reported on July 28, 2010, "Partly due to calm conditions, large areas of light to medium oil sheen were observed in northern Lake Borgne, Mississippi Sound, Chandeleur Sound and Bay Boudreaux. No tar balls or liquid oil were found". It is unknown how much of the extensive sheens are new oil brought by the recent southeast wind or residual oil made visible on the calm surface (LPBF 2010). No advisories are currently posted for fish consumption or swimming in Lake Pontchartrain (LDHH 2010).

Bayou St. John is listed as fully supporting its designated uses of primary contact recreation, secondary contact recreation, fish and wildlife propagation, and outstanding natural resource. The LDEQ defines secondary contact recreation as any recreational activity which may involve incidental or accidental body contact with the water and during which the probability of ingesting appreciable quantities of water is minimal, such as fishing, wading, and recreational boating (LDEQ 2008).

The *2006 Water Quality Integrated Report* indicates the Lake Pontchartrain Drainage Canals, Jefferson and Orleans Parishes subsegment, which includes the 17th Street, London Avenue, and

Orleans Avenue canals currently do not support primary and secondary contact recreation designated uses and attributes the source of impairment to urbanized high density and sanitary sewer overflows. The subsegment does fully support fish and wildlife propagation. The draft *2008 Water Quality Integrated Report* indicates the subwatershed does not support primary contact recreation and fish and wildlife propagation, but does support secondary contact recreation. Sources of impairment for the drainage canals are attributed to high fecal coliform counts and low dissolved oxygen from sanitary sewer overflows and urbanized high density area. A Total Maximum Daily Load is due in 2011 for fecal coliform impairment for this segment.

3.2.3.2 Discussion of Impacts

3.2.3.2.1 No Action Alternative

Direct and Indirect Impacts
Without implementation of the proposed action, no direct and indirect impacts to water quality would be expected from wastewater and storm water runoff during storm events. The existing operational water level would be required to be maintained in the canals, which would not be expected to impact the quality of water draining to the canals and pumped to Lake Pontchartrain.

Cumulative Impacts
Other past, present, and future projects are not expected to have a significant impact on the large-scale water quality conditions in the project area. However, localized water quality degradation could occur during construction of these projects. Concurrent construction of HSDRRS projects could cause short-term impacts to water quality that could exceed the LDEQ's water quality standards. The cumulative construction of IERs #3, #4, #5, #6, #7 and #11 could impact water quality. A temporary increase in concentration of fine sediments within the water column due to upland erosion or sediment disturbance in waterways, would be additive to similar impacts caused by other levee improvement projects. This could lead to increased turbidity and possible reductions in dissolved oxygen (DO) levels in the vicinity and downstream of construction activities. These sediments could also act as a source of nutrients within the water column. These impacts would generally be localized to areas where construction would occur and would be expected to be temporary. Implementing BMPs and SWPPPs would decrease cumulative impacts from construction.

Continued industrial activities, urban wastewater discharges, and construction activities would lead to a continued decline in water quality. However, state and Federal programs are in place to regulate and improve water quality, which could decrease cumulative impacts over time.

3.2.3.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct and Indirect Impacts
No direct and indirect impacts are expected during remediation of the canal walls. Construction would not occur in a waterbody and BMPs would be implemented to prevent sediments from entering the canals.

Cumulative Impacts
Other past, present, and future projects are not expected to have a significant impact on the large-scale water quality conditions in the project area. However, localized water quality degradation could occur during construction of these projects. Concurrent construction of HSDRRS projects could cause short-term impacts to water quality that could exceed LDEQ's water quality standards. The cumulative construction of IER #3, IER #4, IER #5, IER #6, and IER #7 could

impact water quality. A temporary increase in concentration of fine sediments within the water column due to upland erosion or sediment disturbance in waterways, would be additive to similar impacts caused by other levee improvement projects. This would lead to increased turbidity and possible reductions in DO levels in the vicinity and downstream of construction activities. These sediments would also act as a source of nutrients within the water column. These impacts would generally be localized to areas where construction would occur and would be expected to be temporary. Implementing BMPs and SWPPPs would decrease cumulative impacts from construction.

Continued industrial activities, urban wastewater discharges, and construction activities would lead to a continued decline in water quality. However, state and Federal programs are in place to regulate and improve water quality, which could decrease cumulative impacts over time.

3.2.4 Wildlife

3.2.4.1 Existing Conditions

The Lake Pontchartrain Basin's marsh and open waters provide varied and highly productive habitat for game and fur-bearing animals, as well as important habitat for migratory waterfowl, shorebirds, and wading birds.

The open-water habitats, particularly Lake Pontchartrain, of the project area support a large number of waterfowl of the Central Flyway. Although some species such as mottled duck (*Anas fulvigula*) are year-round residents, most use the project area as wintering grounds. Dabbling ducks such as mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), blue-winged teal (*Anas discors*), northern pintail (*Anas acuta*), gadwall (*Anas strepera*), widgeon (*Anas americana*), and northern shoveler (*Anas clypeata)* use freshwater and intermediate marshes in fall and early winter, later moving on to saline marshes as food supplies dwindle. Mottled duck, wood duck (*Aix sponsa*), and hooded merganser (*Lophodytes cucullatus*) utilize the marshes, swamps, and bottomland forests of the project area as nesting habitat. Within the vicinity of the Orleans Avenue Canal, the Oak Tree Bird Sanctuary is well known as a viewing area for migratory birds and is often visited by birding enthusiasts.

Diving ducks use the open-water areas of the project area primarily as wintering grounds. More than 90 percent of the lesser scaup (*Aythya affinis*) that inhabit the Mississippi Flyway during the winter in Louisiana concentrate in the open waters of Lake Pontchartrain and Lake Borgne. Other common species include greater scaup (*Aythya marila*), canvasback (*Aythya valisineria*), and redhead (*Aythya americana*). Game birds such as king rail (*Rallus elegans*), clapper rail (*Rallus longirostris*), common snipe (*Gallinago gallinago*), coot (*Fulica americana*), purple gallinule (*Porphyrula martinica*), and common moorhen (*Gallinula chloropus*) all reside in the study area Other species present in the study area include tricolored heron (*Egretta tricolor*), great egret (*Casmerodius albus*), roseate spoonbill (*Ajaia ajaja*), and killdeer plover (*Charadrius vociferus*).

Fish species within the project area include finfish, shrimp, crabs, and benthic fauna. Movement between fresh and more saline waters is essential to the life history of many of these species. Major fish species of fresh to slightly brackish, along with the waters of Lake Pontchartrain include black crappie (*Pomoxis nigromaculatus*), white crappie (*Pomoxis annularis*), bluegill (*Lepomis macrochirus*), redear sunfish (*Lepomis microlophus*), largemouth bass (*Micropterus salmoides*), spotted sunfish (*Lepomis punctatus*), yellow bass (*Morone mississippiensis*), catfish (*Ictalurus punctatus*), red drum (*Sciaenops ocellatus*), black drum (*Pogonias cromis*), speckled trout (*Cynoscion nebulosus*), menhaden (*Brevoortia tyrannus*), southern flounder (*Paralichthys lethostigma*), sheepshead (*Archosargus probatocephalus*), sea catfish (*Arius felis*), sand seatrout

(*Cynoscion arenarius*), and Atlantic croaker (*Micropogonias undulatus*). These waters also include white shrimp (*Penaeus setiferus)*, brown shrimp (*Farfantepenaeus aztecus),* and blue crab (*Callinectes sapidus*). Benthic species are organisms that live at the bottom of the body of water in which they are found, including the Rangia clam (*Rangia cuneata*) and the American oyster (*Crassostrea virginica*).

The bald eagle (*Haliaeetus leucocephalus)* was removed from the Federal list of threatened and endangered species effective on 8 August 2007, because of recovery of the species [72 *Federal Register* (FR) 37345-37372 (9 July 2007)]. However, it continues to be protected and managed under the Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et. seq.) and the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) (USFWS 2007a). No documented bald eagle nests are within the project area.

The brown pelican was removed from the Federal list of threatened and endangered species effective 17 December 2009, due to the recovery of the species [50 CFR Part 17, 59443-59472 (17 November 2009)]. The brown pelican remains under the protection and management of the Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et. seq.). Currently, there are no suitable roosting or nesting sites in the project area.

Urban wildlife, such as squirrels, nutria, and other small rodents, can be found in the vicinity of the project area. Nutria are often found foraging in the outfall canals and are considered a nuisance species in the area. An abundance of these urban species can be found in City Park and other parks in the vicinity of the outfall canals.

3.2.4.2 Discussion of Impacts

3.2.4.2.1 No Action Alternative

Direct and Indirect Impacts to Wildlife
There would be no impacts under the no action alternative. Without implementation of the proposed action, no direct or indirect impacts to wildlife would occur.

Cumulative Impacts to Wildlife
Cumulative impacts would occur along the southern shoreline of Lake Pontchartrain, particularly those areas encompassed by IERs #3, #4, #5, #6, #7 and #11. Temporary impacts to fisheries and some avian species, in the form of displacement, could occur as a result of construction activities during other IER projects. Fish and wildlife species would be expected to return to these areas upon completion of these projects. The no action alternative would not contribute an incremental impact to wildlife.

3.2.4.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct and Indirect Impacts to Wildlife
Construction activities in the project area could temporarily impact nesting, fishing and flyways; however, these impacts would be temporary and localized and would not be anticipated to impact the habitat or activities of the area wildlife. Species located within the project footprint may have temporary and localized dispersal during construction, but should return after completion of the project.

Impacts to the bald eagle and brown pelican would not be anticipated with implementation of the proposed project features.

Cumulative Impacts to Wildlife
Cumulative impacts would occur along the southern shoreline of Lake Pontchartrain, particularly those areas encompassed by the proposed action, and by IERs #3, #4, #5, #6, #7 and #11. Temporary impacts to fisheries, wildlife and some avian species, in the form of displacement, could occur as a result of construction activities during other IER projects. Fish and wildlife species would be expected to return to these areas upon completion of these projects. The proposed action would add a temporary incremental impact to wildlife and avian species, but would not likely add an incremental impact to fisheries.

3.2.5 Threatened and Endangered Species

3.2.5.1 Existing Conditions

3.2.5.1.1 Gulf Sturgeon

The Gulf sturgeon is listed as a threatened species [56 FR 49653-49658 (30 September 1991)] with designated critical habitat [67 FR 39105-39199 (6 June 2002)]. Historically, Gulf sturgeon occurred in most major river systems from the Mississippi River east to the Suwannee River, Florida, and in marine waters of the Central and Eastern Gulf of Mexico south to Florida Bay (Wooley and Crateau 1985). In Louisiana, specimens have been identified offshore and along the Mermentau River Basin, Mississippi River Basin, Lake Pontchartrain Basin, Pearl River Basin, and Mississippi Sound. According to the USFWS (1995b), Gulf sturgeon have been collected in Lake Pontchartrain and incidentally caught by shrimp trawlers, netters, and recreational anglers.

The Gulf sturgeon bottom feeds in areas that have predominantly hard, sandy bottoms (USFWS 1991). The current population levels of the Gulf sturgeon are unknown throughout most of its range, but are thought to be reduced from historic levels (USFWS 1995b). The USFWS (1991) has identified factors that could have caused a decline in Gulf sturgeon populations. Historical overfishing of the species exacerbated by destruction, modification, or curtailment of its habitat and range has greatly affected Gulf sturgeon reproduction. In addition, dredging, de-snagging, and spoil deposition carried out in connection with channel improvement and maintenance represent threats to the Gulf sturgeon and their critical habitat. Incidental taking by commercial fisherman, and the sturgeon's slow growth rate and late maturation are other threats identified to the species (USFWS 1991). Other natural or man-made factors that affect the Gulf sturgeon's continued existence include poor water quality from heavy pesticide use and heavy metal and industrial contaminants (USFWS 1991).

Critical habitat within Lake Pontchartrain for the Gulf sturgeon is listed as those areas east of the Lake Pontchartrain Causeway, which includes the lake waters on the northern end of the project area. The Gulf sturgeon could enter the mouths of the canals up to the existing ICS; however, no confirmed sightings or documentation have established their presence in the canals nor is the habitat in these canals high quality foraging habitat. As such, their presence in these canals would be highly unlikely and incidental.

CEMVN concluded that the proposed work would have no effect on threatened or endangered species under the jurisdiction of NOAA in the project area; therefore no consultation with NOAA is required.

3.2.5.1.2 West Indian Manatee

Federally listed as an endangered species, West Indian manatees occasionally enter Lake Pontchartrain and associated coastal waters and streams during the summer months (i.e., June through September). Manatee occurrences appear to be increasing, and they have been reported

in the Amite, Blind, Tchefuncte, and Tickfaw Rivers and in canals within the adjacent coastal marshes of Louisiana (USFWS 2007b). They have also been occasionally observed elsewhere along the Louisiana Gulf coast. The manatee could enter the mouths of the canals up to the existing ICS; however, no confirmed sightings or documentation have confirmed their presence in the canals. 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, and occurrence of the manatee has not been recorded in project area. The manatee has declined in population because of cold weather, red tides, collisions with boats and barges, entrapment in flood control structures, poaching, habitat loss, and pollution (USFWS 2007b).

In response and in accordance with the provisions of the Endangered Species Act and the Migratory Bird Treaty Act of 1918 (40 Stat. 755, as amended; 16 USC 703 et seq.), USFWS responded via facsimile dated 13 Aug 10. The USFWS determined that the proposed action will have no effect on West Indian Manatee.

3.2.5.1.3 Kemp's Ridley Sea Turtle

The Kemp's Ridley sea turtle is federally listed as endangered. Although the turtle does not nest in Louisiana, deepwater channels, estuarine, and offshore areas may provide this species with important feeding, developmental, and hibernation sites. Development or alteration of these areas may be a threat to the availability of such habitats.

CEMVN concluded that the proposed work would have no effect on threatened or endangered species under the jurisdiction of NOAA in the project area; therefore no consultation with NOAA is required.

3.2.5.1.4 Green Sea Turtle

The green sea turtle is federally listed as threatened. The turtle occurs in inshore and near-shore waters of the Gulf of Mexico. Green sea turtles primarily use three types of habitat: oceanic beaches (nesting), convergence zones in the open ocean, and benthic feeding grounds in coastal areas. Adult green sea turtles feed primarily on sea grasses and algae, which are limited within the study area. Therefore, green sea turtles are a rare visitor to the area.

CEMVN concluded that the proposed work would have no effect on threatened or endangered species under the jurisdiction of NOAA in the project area; therefore no consultation with NOAA is required.

3.2.5.1.5 Loggerhead Sea Turtle

The loggerhead sea turtle is listed as threatened. Similar to the Kemp's Ridley seas turtle, the loggerhead sea turtle is not a full-time resident of the study area, but uses the estuaries as feeding and developmental habitat.

CEMVN concluded that the proposed work would have no effect on threatened or endangered species under the jurisdiction of NOAA in the project area; therefore no consultation with NOAA is required.

3.2.5.2 Discussion of Impacts

3.2.5.2.1 No Action Alternative

Direct and Indirect Impacts to Threatened and Endangered Species
There would be no impacts associated with the no action alternative. Without implementation of the proposed action, no direct or indirect impacts to Threatened and Endangered Species would occur.

Cumulative Impacts to Threatened and Endangered Species
Considered cumulatively, IERs #3, #4, #5, #6, # 7 and #11 could cause short-term temporary impacts, however the no action alternative would not contribute to any incremental impacts to threatened and endangered species. The increased turbidity could temporarily displace Gulf sturgeon during construction activities for other projects, but the species would be expected to return when construction ceases. All water quality impacts would be temporary. Implementing BMPs and SWPPPs would further minimize cumulative impacts from construction affecting threatened and endangered species.

3.2.5.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct and Indirect Impacts to Threatened and Endangered Species
Threatened and endangered species area not likely to occur in the project area; therefore, impacts should not occur as a result of the proposed action.

Cumulative Impacts to Threatened and Endangered Species
Construction associated with IERs #3, #4, #5, #6, #7 and #11 could cause short-term increased runoff and turbidity from disturbed soils due to construction activities in Lake Pontchartrain, which could temporarily impact Gulf sturgeon and their critical habitat. The increased turbidity could temporarily displace threatened and endangered species during construction activities, but the species would be expected to return when construction ceases. All water quality impacts would be temporary, short-term. Implementing BMPs and SWPPPs would further minimize cumulative impacts from construction affecting threatened and endangered species. The proposed action is not anticipated to add an incremental impact to this cumulative impact since water quality impacts are not anticipated under the proposed action.

3.2.6 Cultural Resources

3.2.6.1 Existing Conditions

Records for the greater metropolitan New Orleans area on file at the Louisiana Division of Archaeology and the CEMVN indicate the possibility for numerous archaeological sites and historic properties located within the IER #27 study area. Known prehistoric shell midden sites are primarily located on the relatively high natural levee areas adjacent to the Mississippi River, the Lake Pontchartrain shoreline, and along smaller waterways such as Bayou St. John and the higher ground along Metairie Ridge. Similarly, historic period archaeological sites and structures in the city including forts, plantations, farmsteads, and cemeteries; residential, commercial, and industrial districts; and river and lake port facilities were initially developed in these same areas. Later development expanded into drained back swamp and land-filled locations and along canal waterways and railroad terminals in the city. Historic period watercraft are recorded in Lake Pontchartrain as well as bayou and river channels in the region.

The currently proposed project area is almost wholly within the project area studied for IER #5. As part of IER #5, the CEMVN contracted R. Christopher Goodwin and Associates, Inc. to conduct a reconnaissance level cultural resources investigation of the entire IER #5 study area (Heller et al. 2008). This study identified high potential areas for cultural resources and potential further investigation. Because of the limited work areas necessary for the proposed actions of IER #27, there is no overlap of these proposed actions to high potential areas that may require further investigations for cultural resources.

In letters to the SHPO dated 26 July 2010 and to Indian Tribes dated 30 July 2010, the CEMVN provided project documentation, and an evaluation of cultural resources potential in the project area, and found that the proposed actions would have no impact on cultural resources. The Seminole Tribe of Florida agreed with this conclusion in correspondence dated August 20, 2010. The Alabama-Coushatta Tribe concurred with the CEMVN in a letter dated 26 August 2010 that the preferred alternative would have no impacts to cultural resources. The SHPO concurred with CEMVN's "no adverse effect" finding in a letter dated 2 September 2010. Section 106 consultation for the proposed project action is complete. However, if any unrecorded cultural resources are determined to exist within the proposed project 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).

3.2.6.2 Discussion of Impacts

3.2.6.2.1 No Action Alternative

Direct and Indirect Impacts to Cultural Resources
Under the no action alternative, direct or indirect impacts to cultural resources would not be expected. No activities would be performed under the no action alternative that would impact previously impacted areas; therefore, impacts to known cultural resources would not be expected.

Cumulative Impacts to Cultural Resources
Under the no action alternative, direct or indirect impacts to cultural resources would not be expected. No activities would be performed under the no action alternative that would impact previously impacted areas; therefore, impacts to known cultural resources would not be expected.

3.2.6.2.2 Proposed Action

17th Street Canal

Direct Impacts to Cultural Resources
The proposed action for the 17th Street Canal would have no direct impact on cultural resources. Research indicates that the northern portion of the project area is built land associated with the construction of the USCG Station and the Southern Yacht Club. Prior to land-filling during the construction of these facilities, the Lake Pontchartrain shoreline once extended east-west across the project area possibly north of the Hammond Highway. One previously recorded archaeological site (Site 16JE40) is reportedly located on this buried shoreline in or near the USCG Station facility. Limited Phase 1 field investigations in this area did not identify any intact shoreline deposits or remnants of Site 16JE40 (Heller et al. 2008). The entire 17th Street Canal project area has been subjected to severe ground disturbing activities associated with major land-filling episodes, harbor and levee construction and canal excavation. The likelihood

for the presence of intact and undisturbed terrestrial archaeological deposits is considered extremely minimal.

The remediation areas and work areas do not overlap potential significant historic remains. One NRHP listed property - the Metairie Cemetery, and one eligible National Register of Historic Places (NRHP) property – SWBNO PS #6, are located outside of the project area and will not be impacted by proposed construction.

Indirect Impacts to Cultural Resources
Implementation of the proposed action for the 17th Street Canal would provide an added level of flood protection to known and unknown cultural resources located outside of the project area by reducing the damage caused by flood events.

Cumulative Impacts to Cultural Resources
Implementation of the proposed action for the 17th Street Canal 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 HSDRRS would reduce flood risk and storm damage to archaeological sites, individual historic properties, engineering structures and historic districts.

Orleans Avenue Canal

Direct Impacts to Cultural Resources
Implementation of the proposed action for the Orleans Avenue Canal would have no direct impact on cultural resources. The northern portion of project area contains built land that was constructed in the late 1920s. The likelihood for the presence of archaeological sites is very minimal. Researchers determined that no existing or potential NRHP historic districts lie within the immediate area and no historic structures or features are present in the project area (Heller et al. 2008). SWBNO PS #7, which is eligible for listing on the NRHP, is located adjacent to the southern end of the project area at Taylor Avenue and will not be impacted by proposed construction. City Park facilities, located outside of the project area, contain many Works Progress Administration components and one property already listed on the NRHP: New Orleans City Park Carousel and Pavilion. These City Park facilities would not be impacted by proposed construction. No previously recorded archaeological sites or shipwrecks are located within 1000 feet of the project area.

Indirect and Cumulative Impacts to Cultural Resources
Indirect and cumulative impacts for the proposed action at the Orleans Avenue Canal would be similar to the impacts described for the 17th Street Canal proposed action.

London Avenue Canal

Direct Impacts to Cultural Resources
The proposed action for the London Avenue Canal would have no direct impact on cultural resources. The northern end of the project area is located entirely on built land constructed in the 1920s. The potential for intact and undisturbed archaeological sites is considered extremely minimal. There are no historic structures or features identified in the project area. Dillard University, nominated to the NRHP in 2003, and several individual historic properties that may be eligible for listing on the NRHP, including SWBNO PS #3 and the Mount Olive Cemetery, are located outside of the project footprint and will not be impacted by the proposed action. The London Avenue Canal proposed action does not extend into Lake Pontchartrain and submerged cultural resources will not be impacted.

Indirect and Cumulative Impacts to Cultural Resources
Indirect and cumulative impacts for the proposed action at the London Avenue Canal would be similar to the impacts described for the 17th Street Canal proposed action.

3.2.7 Recreational Resources

3.2.7.1 Existing Conditions

17th Street Canal
Recreational opportunities within the vicinity of the 17th Street Canal include boating, fishing, picnicking, walking/running, bicycling, bird watching, and open green space used for playfields. Designated parks and recreational areas are shown in figure 15. Green space along the canal is used for recreation such as jogging and walking. The Orleans Marina and Municipal Yacht Harbor are directly east of the mouth of the canal and provide a sheltered harbor for resident and transient vessels. Amenities at the marina include security, a pump-out facility, and laundry facilities.

West End Park and the Coconut Beach Volleyball Complex (CBVC) are on the east side of the canal mouth in Orleans Parish. The volleyball complex offers a unique recreational opportunity not otherwise available in the region, and recently hosted a regional qualifying event in July 2007 for the U.S. Open of Beach Volleyball. The CBVC leases its land from the City of New Orleans and pays taxes and revenue to the city, which is used to maintain West End Park. A representative of CBVC stated that 316 teams play per week, attracting around 2,600 people to its 13 outdoor-lighted courts. Construction is underway to increase the total number of courts to 22 and management is discussing plans to add an indoor facility in the area. Other parks adjacent to the 17th Street canal include Pilsbury Park, Retif Park, and Breakwater Park.

The Regional Planning Commission (RPC) has prepared a master plan of the West End area adjacent to and surrounding the marina and harbor facilities (RPC 2006). This plan includes mix use of the area for recreation, education, retail, residence, and commercial.

Jefferson Parish has two nearby playgrounds west of the 17th Street Canal—Lakeshore Playground and Wally Pontiff Jr. Park. Bucktown Recreation Area and Harbor, along with a USCG patrol station, are directly west of the mouth of the canal. The Bucktown area of the lakefront was heavily damaged from Hurricane Katrina. In late 2007, the remainder of a commercial fishing fleet returned to the Bucktown Harbor. In March of 2008, the Louisiana Recovery Authority (LRA) announced that $2.1 million in grants would be available to rebuild the historic marina. In addition, Jefferson Parish contracted with Burk-Kleinpeter, Inc. to prepare a master plan for the Bucktown Harbor Marina Complex, which includes a calm-water harbor for a small-craft marina.

Orleans Avenue Canal
Recreational opportunities in the vicinity of the Orleans Avenue Canal consist mainly of parks and green space (figure 15). Lakeshore Park runs parallel to the shoreline of Lake Pontchartrain, directly east and west of the mouth of the canal and Tourmaline Park is on the west side of the canal between Lakeshore Park and Robert E. Lee Boulevard. Other parks south of Lakeshore Park include Foliage Park, Breeze Park, Ozone Park, Zephyr Park, Floral Park, Orleans Park, and Delgado Playground. Most of the parks near the canal are in residential sections of the Lakeview neighborhood. The green space along the canal is used for recreational opportunities such as jogging and walking.

Figure 15 - Designated parks and recreational resources

Source: 2009 DOQQ

Legend

- Interstate
- Principal Road
- Outfall Canal
- Railroad
- Interim Closure Structure
- Pump Station
- Park
- Marina

A major landmark between the Orleans Avenue Canal and Bayou St. John is City Park. The 1,500-acre park was founded in 1854 and is one of the largest and oldest urban parks in the nation. It contains a golf course, the New Orleans Museum of Art, Besthoff Sculpture Garden, New Orleans Botanical Garden, Tad Gormley Stadium, Storyland, Equest Farms horse stables, an amusement park, tennis courts, and a historic carousel and pavilion. The park stretches from City Park Avenue on the south, Wisner Boulevard on the east, Robert E. Lee Boulevard on the north, and Orleans Avenue and the Orleans Avenue Canal on the west.

London Avenue Canal

Recreational opportunities in the vicinity of the London Avenue Canal consist mainly of parks and green space (figure 15). Lakeshore Park runs parallel to the shoreline of Lake Pontchartrain, directly east and west of the mouth of the canal. Other parks adjacent to the canal include Carlson Park, Pratt Park, London Park, Donnelly Playground, Filmore Playground, Gatto Park, and Mirabeau Park. Numerous playgrounds and parks are in the residential sections of the neighborhoods in the vicinity of the canal. The green space along the canal is also used for recreational opportunities such as jogging and walking.

Lake Pontchartrain

Several recreational opportunities exist near or around Lake Pontchartrain, including boating, fishing, picnicking, walking/running, bicycling, bird-watching, and open green space used for playfields. Beaches near Lake Pontchartrain include Old Beach, Lincoln Beach, and Pontchartrain Beach, all which are located east of the outfall canals.

3.2.7.2 Discussion of Impacts

3.2.7.2.1 No Action Alternative

Direct and Indirect Impacts to Recreational Resources

There would be no permanent impacts under the no action alternative. However, because stormwater runoff draining to the canals could restrict the pumping of the SWBNO and reduce the rate at which water is extracted from the system, water could drain from streets at a slower rate, which could increase frequency and intensity of flooding in the drainage area. Therefore the quality of and access to recreation resources in the project area could be temporarily impacted during such flood events under the no action alternative.

Cumulative Impacts to Recreational Resources

The no action alternative would be expected to have no incremental impacts to recreation resources. Road closures and limited access to recreational facilities could arise from construction activities related to other HDRRS projects in area; increased street flooding under the no action alternative could increase such limits to access. Projects under the Coastal Impact Assistance Program and Coastal Wetlands Planning Protection Restoration Act that stabilize erosion, build wetlands, and improving water quality by diverting freshwater could improve recreation fishing in the project area along Lake Pontchartrain. The no action alternative would not impede these benefits.

3.2.7.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct Impacts to Recreation Resources

Short-term impacts during construction could affect active and passive use of recreational resources in the vicinity of the canals and could cause the closure of some facilities from use

during construction activities. Use of green space along the canal levees could become temporarily unavailable during construction activities at specific locations. The staging area and construction areas along the east side of the Orleans Avenue Canal would directly impact recreational opportunities associated with City Park. Any disruptions of recreation resources would be temporary and affected only during construction activities.

Indirect Impacts to Recreation Resources
Indirect impacts to the recreational facilities would consist of impacts to traffic moving to and from the facilities, in the form of temporary road closures during construction. There could be temporary, indirect impacts to fishing opportunities, mainly at the mouths of the canals, as local fishing areas could become inaccessible during construction. Long-term, indirect impacts to recreational resources would not be expected.

Cumulative Impacts to Recreation Resources
Cumulative impacts for the proposed action would be similar to those impacts discussed in the no action alternative, but would be compounded by the work being done along the outfall canals.

3.2.8 Noise

3.2.8.1 Existing Conditions

Overview. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Noise is often generated by activities part of everyday life, such as construction or vehicular traffic.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz (Hz) are used to quantify sound frequency. The human ear responds differently to different frequencies. *A-weighing*, described in a-weighted decibels (dBA), approximates this frequency response to express accurately the perception of sound by humans. Sounds encountered in daily life and their approximate level in dBA is provided in table 3.

The dBA noise metric describes steady noise levels. Very few noises are, in fact, constant; therefore, a noise metric, Day-night Sound Level (DNL) has been developed. DNL is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to the nighttime levels (10 P.M. to 7 A.M.). DNL is a useful descriptor for noise because (1) it averages ongoing, yet intermittent noise, and (2) it measures total sound energy over a 24-hour period. In addition, Equivalent Sound Level (L_{eq}) is often used to describe the overall noise environment. L_{eq} is the average sound level in dB.

Table 3- Common Sounds and Their Levels

Outdoor	Sound level (dBA)	Indoor
Snowmobile	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998

Existing Noise. Existing sources of noise near the 17th Street Canal include shipping and boating activity, local road traffic, high-altitude aircraft overflights, and natural noises such as water, leaves rustling, and bird vocalizations. The noise environment is a mixture of quiet residential and light commercial. Boating activity at two large marinas and a USCG station is the main source of commercial noise near the site. There are several individual residences and multifamily dwellings within 1,000 feet of the 17th Street Canal. There are several schools within one-half mile of the 17th Street Canal including Marie B. Riviere Elementary School, Mt. Carmel Academy, and St. Louis King of France School. The nearest hospital (Ochsner Clinic) is more than a mile away.

Existing sources of noise near the Orleans and London Avenue Canals are local road traffic, local commercial operations, boat repair shops, construction activities, high-altitude aircraft overflights, and natural noises such as water, leaves rustling, and bird vocalizations. The areas near the mouths of all three canals are primarily residential. There are several individual residences and multifamily dwellings within 1,000 feet of the Orleans and London Avenue Canal. The St. Pius X Church and school, and the Lakeview Church and school are within one-half mile of the Orleans Avenue Canal. The Benjamin Franklin High School and Jean Gordon School are less than one-half mile from the London Avenue Canal. The nearest church (Chapel of Holy Comforter) and the nearest hospital (Ochsner Clinic) are farther away.

Existing noise levels (L_{eq} and DNL) were estimated for the canals and surrounding areas using the techniques specified in the *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound Part 3: Short-term measurements with an observer present*, and are provided in table 4 (ANSI 2003).

Table 4 - Estimated Existing Noise Levels

Location	Existing Noise Levels (dBA)		
	L_{eq} (daytime)	L_{eq} (nighttime)	DNL
17th Avenue Canal	58	52	58
Orleans Avenue Canal	53	47	55
London Avenue Canal	53	47	55

Source: ANSI 2003

Regulatory Review. The Noise Control Act of 1972 (P.L. 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. In 1974, the U.S. Environmental Protection Agency (USEPA) provided information suggesting that continuous and long-term noise levels in excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

Neither Louisiana, nor the LDEQ, has implemented noise regulations at the state level. However, both Orleans and Jefferson parishes have local noise regulations. The maximum permissible sound levels by land use category are outlined in table 5. Sounds generated from construction activities are exempt from the New Orleans ordinance between 7:00 A.M. and 6:00 P.M. (11:00 P.M. for areas other than residential) (Chap 66 Article IV New Orleans Municipal Code). In Jefferson Parish, industrial sound level limits apply to construction activity for all land use categories. In addition, the Jefferson Parish ordinance specifically prohibits the operating of any construction equipment within 300 feet of any residential or noise-sensitive area between 9:00 P.M. and 7:00 A.M. Monday through Saturday, and 9:00 P.M. and 8:00 A.M. on Sundays and holidays, except for emergency work (Section 20-102 Jefferson Parish Municipal Code).

Table 5 - Maximum Permissible Sound Levels by Receiving Land Use Category in New Orleans and Jefferson Parish

Receiving Land Use Category	Time	Sound Level Limit (dBA)		
		New Orleans		Jefferson Parish
		L_{10}	L_{max}	L_{max}
Resident	7:00 A.M. - 10:00 P.M.	60	70	60
	10:00 P.M. - 7:00 A.M.	55	60	55
Commercial	7:00 A.M. - 10:00 P.M.	65	75	65
	10:00 P.M. - 7:00 A.M.	60	65	60
Industrial	At all times	75	85	75

Sources: Chap 66 Article IV New Orleans Municipal Code; Section 20-102 Jefferson Parish Municipal Code
1 L_{10} = sound pressure level that is exceeded ten percent of the time

3.2.8.2 Discussion of Impacts

This noise impact evaluation considered sound sources that could affect nearby sensitive receptors including residents, schools, churches, and hospitals. All significant sources of noise, their contribution to the overall noise environment, and maximum sound level were estimated for comparison to local noise control standards.

3.2.8.2.1 No Action Alternative

Direct, Indirect and Cumulative Impacts to Noise

Under the no action alternative, noise receptors near the project corridor would not experience additional noise associated with construction activities such as pile driving and vehicles; however, along selected areas of the project area, they would continue to experience ambient noise disturbances exceeding 65 dBA from trucks and cars traveling in the area, and normal operational noise disturbances from the commercial areas within the project area. Maintenance of the HSDRRS to its authorized heights would continue to occur and effects on noise 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.. However, other ongoing work within the project area could have a cumulative effect of combined noise with HSDRRS projects in the area, but these impacts would be temporary and should cease upon completion of these projects.

3.2.8.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct and Indirect Impacts to Noise
Short-term increases in noise due to construction activities would be expected. Effects would be confined to those areas around the segments of the wall under construction.

The specific impact of construction activities on the nearby receptors would vary depending on the type, number, and loudness of equipment in use. Individual pieces of heavy equipment typically generate noise levels of 80 dBA to 90 dBA at a distance of 50 feet. With multiple items of equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of active construction sites. The zone of relatively high noise levels typically extends to distances of 400 feet to 800 feet from the site of major equipment operations. Locations more than 1,000 feet from construction sites seldom experience substantial levels (greater than 62 dBA) of noise. Table 6 presents typical noise levels (dBA at 50 feet) that USEPA has estimated for the main phases of outdoor construction. Figure 16 presents maximum noise levels vs. distance for construction-related activities.

Table 6 - Noise Levels Associated with Outdoor Construction

Construction Phase	L_{eq} (dBA) at 50 feet
Ground Clearing	84
Excavation, Grading	89
Foundations	78
Structural	85
Finishing	89

Source: USEPA 1971

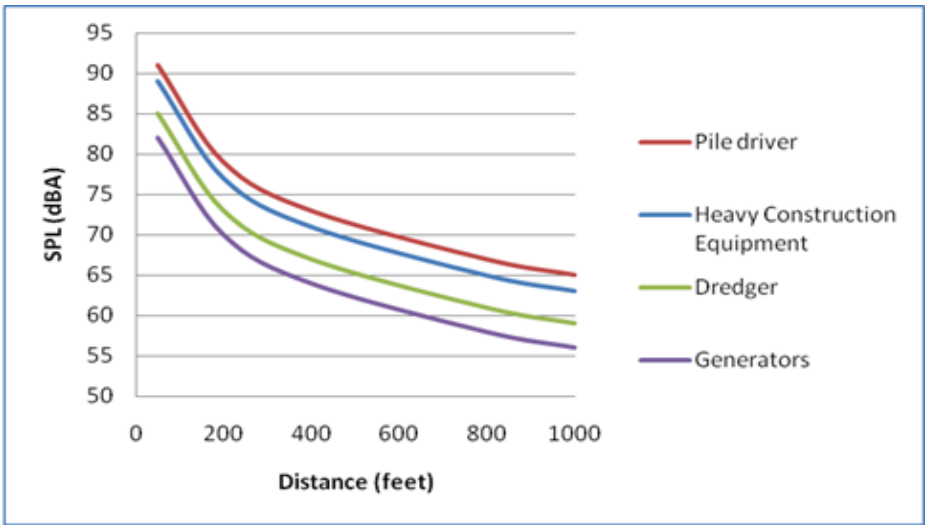


Figure 14 - Maximum Noise Levels vs. Distance for Construction Related Activities
Source: FHWA 2006

Because of the close proximity of residences, sounds generated from heavy equipment would likely exceed the levels in the New Orleans noise ordinances for after hour construction activities (70 dBA). Noise levels would be expected to exceed the levels in the Jefferson Parish noise ordinance (75 dBA daytime and 55 dBA at night). Special variances to the local noise ordinance or mitigation measures would be required. These activities are exempt from the New Orleans ordinance between 7:00 A.M. and 6:00 P.M. (11:00 P.M. for areas other than residential). The following BMPs would be employed to reduce the noise:

- Construction would predominately occur during normal weekday business hours in areas adjacent to noise-sensitive land uses such as residential areas.
- Construction equipment mufflers would be properly maintained and in good working order.

To comply with local noise ordinance, sound generating equipment would be partially enclosed with noise barriers at some locations. The following mitigation measures would be used to address noise impacts identified at the construction sites, as necessary:

- Use of silent press for sheetpile work
- Enclose construction power units
- Enclose pumps and engines where applicable
- Enclose generator sets
- Restrict the use of mobile equipment and trucks to daytime hours
- Use of noise barriers
- Place silencers on equipment
- Address individual landowner's impacts on a case-by-case basis

Construction noise would be expected to dominate the soundscape for all on-site personnel. Construction personnel, and particularly equipment operators, would don adequate personal hearing protection to limit exposure and ensure compliance with federal health and safety regulations.

There would be no permanent or ongoing sources of noise from the proposed action. Noise would end with the construction completion. Therefore, there would be no long-term effects to the noise environment.

Cumulative Impacts to Noise

Upon completion of the remediation work stated in the proposed action there would be no cumulative impacts on the existing noise environment. However, other ongoing work within the project area would have a cumulative effect of combined noise with other HSDRRS projects in the area, but these impacts would be temporary and expected to end upon completion of these projects.

3.2.9 Air Quality

3.2.9.1 Existing Conditions

EPA and LDEQ regulate air quality in Louisiana. The Clean Air Act (CAA) (42 U.S.C. 7401-7671q), as amended, gives USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR §50) that set acceptable concentration levels for six criteria pollutants: particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), carbon monoxide (CO), nitrous oxides (NO_x), ozone (O_3), and lead. Short-term NAAQS (1-, 8-, and 24-hour periods) have been established for pollutants contributing to acute health impacts, while long-term NAAQS (annual averages) have been established for pollutants contributing to chronic health impacts. Each state has the authority to adopt standards stricter than those established under the Federal program; however, Louisiana accepts the Federal standards.

Existing ambient air quality conditions for the proposed action area can be estimated from measurements conducted at a nearby air quality monitoring station (table 7). Recent air quality

measurements are below the NAAQS for all criteria pollutants and are a conservative representation of the air quality conditions near the sites (USEPA 2010a). At any given time, concentrations of criteria pollutants would be expected to be below those outlined in table 8.

Attainment Status. Federal regulations designate Air-Quality Control Regions (AQCRs) in violation of the NAAQS as nonattainment areas. Federal regulations designate AQCRs with levels below the NAAQS as attainment areas. Orleans and Jefferson Parishes (and therefore, the 17th Street, Orleans, and London Avenue canals) are within the Southern Louisiana-Southeast Texas Interstate Air Quality Control Region (AQCR 106) (40 CFR §81.53). The USEPA has designated Orleans and Jefferson Parishes as in attainment for all criteria pollutants. These areas are not subject to any conformity requirements of the CAA.

Greenhouse Gases and Global Warming. Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the surface of the earth, and therefore, contribute to the greenhouse effect and global warming. Most GHGs occur naturally in the atmosphere, but increases in their concentration result from human activities such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide (CO_2), methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Whether or not rainfall will increase or decrease remains difficult to project for specific regions. (USEPA, 2010b; IPCC, 2007)

The Council on Environmental Quality (CEQ) recently released draft guidance on when and how Federal agencies should consider GHG emissions and climate change in NEPA analyses. The draft guidance includes a presumptive effects threshold of 27,563 tons per year (25,000 metric tons per year) of CO_2 equivalent emissions from a federal action (CEQ, 2010).

Table 7- 2008 Local Ambient Air Quality Monitoring

Pollutant and averaging time	Primary NAAQS[a]	Secondary NAAQS[a]	Monitored data[b]	Location where maximum was recorded
CO				
8-hour maximum[c] (ppm)	9	(None)	1.9	Baton Rouge
1-hour maximum[c] (ppm)	35	(None)	2.9	Baton Rouge
NO_2				
Annual arithmetic mean (ppm)	0.053	0.053	0.013	Baton Rouge
O_3				
8-hour maximum[d] (ppm)	0.08	0.12	0.07	Kenner
$PM_{2.5}$				
Annual arithmetic mean[e] (µg/m3)	15	15	9.8	Kenner
24-hour maximum[f] (µg/m3)	65	65	29.7	Marrero
PM_{10}				
24-hour maximum[c] (µg/m3)	150	150	68	Port Allen
SO_2				
Annual arithmetic mean (ppm)	0.03	(None)	0.003	West Lake
24-hour maximum[c] (ppm)	0.14	(None)	0.018	Baton Rouge
3-hour maximum[c] (ppm)		0.5	0.065	Baton Rouge

Notes:
[a] - Source: 40 CFR 50.1-50.12.
[b] - Source: USEPA 2010a
[c] - Not to be exceeded more than once per year.
[d] - The 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations over each year must not exceed 0.08 ppm.
[e] - The 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from must not exceed 15.0 µg/m^3.
[f] - The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 65 µg/m^3.
ppm = parts per million
µg/m^3 = micrograms per cubic meter
NO_2 = Nitrogen dioxide

3.2.9.2 Discussion of Impacts

For the purpose of this analysis, air emissions impacts would be considered significant if project emissions exceed 100 tons per year (tpy) of any criteria pollutant, exceed the CEQ GHG presumptive effects threshold, or contribute to a violation of air regulations.

3.2.9.2.1 No Action Alternative

There would be no adverse direct, indirect, or cumulative impacts to air quality within the project area under the no action alternative. Ambient air quality conditions would remain unchanged when compared to existing conditions.

3.2.9.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct and Indirect Impacts to Air Quality

During construction of the proposed action, increases in emissions due to construction and remediation activities would have short-term effects on air quality. Primary emission sources would be from heavy construction equipment and concrete delivery trucks. Emissions would not exceed 100 tpy of any criteria pollutant, exceed the CEQ GHG presumptive effects threshold, or contribute to a violation of air regulations.

The general conformity rules require Federal agencies to determine whether their action(s) would increase emissions of criteria pollutants above preset threshold levels [40 CFR 93.153(b)]. These *de minimis* (of minimal importance) rates vary depending on the severity of the nonattainment and geographic location. Because the proposed action would be within areas designated by USEPA as in attainment for all criteria pollutants, the air conformity regulations do not apply. Although the general conformity regulations do not apply the *de minimis* threshold values were carried forward to determine the level of effects under NEPA.

Construction emissions were estimated for fugitive dust, heavy equipment and vehicles, delivery of supplies, and worker trips. There would be no ongoing operational sources of air emissions. The estimated emissions from the proposed action would be below the *de minimis* thresholds (table 8). Detailed emission calculations are provided in appendix C.

Table 8 - Annual Air Emissions Compared to Applicability Thresholds

	Emissions (tons/year)						*De minimis* Threshold	Would Emissions Equal/Exceed *De Minimis* Levels?
Activity	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**		
Construction	13.3	12.4	2.5	<0.1	11.9	1.6	100	No
Operations	<none>							

For analysis purposes, it was assumed that all the construction activities would be compressed into a single 12-month period. Therefore, regardless of the ultimate implementation schedule, annual emission would be less than those shown herein. Small changes in the ultimate design, and moderate changes in the quantity and types of equipment used would not have a substantial influence on the emission estimates and would not change the level of effects under NEPA.

BMPs/mitigations would be required for construction associated with the proposed action. The construction activities would be accomplished in full compliance with Louisiana Regulations for the Control and Abatement of Air Pollution, particularly Title 33 Part III. Chapters of relevance are as follows:

- Chapter 11, Control of Emissions of Smoke
- Chapter 13, Emission Standards for Particulate Matter
- Chapter 21, Control of Emissions of Organic Compounds

These requirements include the following:

- Reducing visible emissions and fugitive dust and emissions though watering
- Limiting or restricting open burning activities
- Appropriate use of portable fuel containers
- Meeting new engine standards for nonroad vehicles
- Using low VOC architectural, industrial, and maintenance coatings

This list is not all inclusive; contractors would be required to comply with all applicable air pollution control regulations.

Greenhouse Gases and Global Warming. Under the proposed action, all activities combined would generate approximately 1,728 tons (1,570 metric tons) of CO_2 which fall well below the CEQ threshold. Detailed emission calculations are provided in appendix C.

Cumulative Impacts to Air Quality
The State of Louisiana takes into account the effects of all past, present, and reasonably foreseeable emissions during the development of the State Implementation Plan. The state accounts for all significant stationary, area, and mobile emission sources in the development of this plan. This includes the ongoing HSDRRS work in the area, and the post-Katrina repairs and new construction. Estimated emissions generated by the proposed action would be *de minimis*. Therefore, the proposed action would not contribute significantly to adverse cumulative effects to air quality.

3.2.10 Traffic and Transportation

3.2.10.1 Existing Conditions

Transportation in and around the project area is achieved mainly via air systems, rail routes, public transits, navigation channels, and road networks. The following section describes these transportation resources and their importance to the surrounding communities.

Road Networks

Roads and bridges compose the majority of the transportation network serving the project area. Included with this network are several roadway classifications including interstates, principal roads, and local roads (figure 17).

Interstates

Interstate 10
The I-10 corridor serves as an expressway for commuter traffic as well as a regional interstate serving east-west traffic from Florida to California. The greatest commuting demand is into New Orleans from outlying areas. There is also a significant amount of commuting outbound from New Orleans to the petrochemical and oil refining industries up and down the Mississippi River, as well as the shipbuilding industry. I-10 crosses toward the southern end of the 17th Street Canal.

Interstate 610
I-610 is a six-lane roadway serving as a bypass from downtown New Orleans. I-610 crosses the southern portion of the 17th Street, Orleans Avenue, and London Avenue Canals.

Principal Roads

Hammond Highway – A four-lane highway providing access to areas on the east and west sides of the 17th Street Canal and is the northernmost highway crossing the canal.

Veterans Boulevard – A four-lane highway providing access to areas on the east and west sides of the 17th Street Canal.

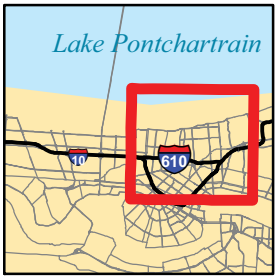
Metairie Road – A four-lane highway providing access to areas on the east and west sides of the 17th Street Canal.

Figure 17 - Transportation Network

Source: 2009 DOQQ

Legend

- Interstate
- Principal Road
- Local Road
- Railroad
- Outfall Canal
- Interim Closure Structure
- Pump Station
- Lakefront Airport
- Marina
- Park



Lakeshore Drive – A four-lane highway providing access to areas on the east and west sides of the London Avenue and Orleans Avenue Canals and is the northernmost highway crossing the canal running along the southern bank of Lake Pontchartrain.

Robert E Lee Boulevard – A four-lane highway providing access to areas on the east and west sides of the London Avenue and Orleans Avenue Canals.

Filmore Avenue – A four-lane highway providing access to areas on the east and west sides of the London Avenue and Orleans Avenue Canals.

Harrison Avenue – A four-lane highway providing access to areas on the east and west sides of the Orleans Avenue Canal.

Gentilly Boulevard – A four-lane highway providing access to areas on the east and west sides of the London Avenue Canal.

Mirabeau Avenue – A four-lane highway providing access to areas on the east and west sides of the London Avenue Canal.

Leon C. Simon Drive – A four-lane highway providing access to areas on the east and west sides of the London Avenue Canal.

Local Roads

17th Street Canal – There are several local access roads in the vicinity of the 17th Street Canal. Parallel to the east side of the canal are Breakwater Drive, West End Park Road, West Roadway Street, Bellaire Drive, Maryland Drive, and Bamboo Road. Parallel to the west side of the canal is Orpheum Avenue.

Orleans Avenue Canal – There are several local access roads in the vicinity of the Orleans Avenue Canal. Parallel to the east side of the canal is Marconi Drive. Parallel to the west side of the canal is Crystal Street, General Haig Street, and Orleans Avenue.

London Avenue Canal - There are several local access roads in the vicinity of the London Avenue Canal. Parallel to the east and west side of the canal is London Avenue. Parallel to the east side of the canal is London Drive and Warrington Drive. Parallel to the west side of the canal is Pratt Drive.

Transportation Plans and Congestion

Statewide transportation planning is required by Federal law under guidelines established by the Intermodal Surface Transportation Efficiency Act of 1991. The state's eligibility for Federal transportation funding is dependent on compliance with the statewide transportation planning requirement. Federal funding is critical to providing transportation facilities and services that cannot be funded solely with state and local money.

Numerous state roadway improvement projects along with localized signal improvements have been completed in recent years, and many more improvements are proposed. The improvements in the project area mostly include the principal roads and the interstates. The Submerged Roads program aimed at repaired roads flooded by Hurricane Katrina has caused congestion due to road work throughout the area, but there are currently no roads being repaired under this program in the project area.

The primary area of congestion in the project area is along I-10 and I-610, mainly during rush hour. The principal roads in the project area are subject to mainly localized congestion varying throughout the roadways.

Railroad Network

Railroads in the United States are separated into three broad categories—Class I, II, and III operators. Class I carriers have annual gross revenues of more than $250 million. Class II carriers have annual gross revenues of at least $20 million but no more than $250 million. Class III carriers have less than $20 million in gross annual revenues. Louisiana is one of only two sites in the United States where all six of North America's Class I railroads converge, providing great capacity for the area. New Orleans is a central hub for many of the area's railroads supporting all three classes of railroads, according to the Federal Railroad Administration. The Southern Railroad crosses the southern portion of the 17th Street, Orleans Avenue, and London Avenue Canals. Also, CSX Transportation Railroad and Norfolk Southern Railroad are in the vicinity of the project area.

Marinas

There are several small marinas adjacent to the three outfall canals. The majority of marina activity is in the vicinity of the 17th Street Canal. Orleans Marina, near the mouth of the 17th Street Canal, is a sheltered harbor and port available to resident and transient vessels. Orleans Marina supports several local marine service companies, along with being a municipal yacht harbor. South Shore Harbor Marina is on the south side of Lake Pontchartrain, just east of the IHNC, adjacent to Lakefront Airport. South Shore Harbor Marina is a sheltered harbor and yacht harbor. Two USCG stations are also near the project area. One is directly east of the 17th Street Canal and Orleans Marina, and the other is west of the mouth of the Orleans Avenue Canal.

Airports

The New Orleans Lakefront Airport is located along Lake Pontchartrain to the northeast of the three outfall canals. This airport serves private, corporate, military, and commercial aircraft. Much of the airport experienced damage during hurricane Katrina, but has been re-opened and is currently operating while improvements and repairs are made.

3.2.10.2 Discussion of Impacts

3.2.10.2.1 No Action Alternative

Direct and Indirect Impacts to Traffic and Transportation

There would be no permanent impacts under the no action alternative. However, localized street flooding due to restricted water evacuation under the no action alternative would temporarily impact traffic flow and increase traffic congestion.

Cumulative Impacts to Traffic and Transportation

Ongoing construction on the project area associated with HSDRRS projects would contribute to an increase in truck traffic and an increase in the wear-and-tear on the paved roads in the area. Road closures associated with HSDRRS projects would also impact traffic and congestion in the area. The no action alternative would not contribute to the cumulative effects on the transportation network.

3.2.10.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Local traffic generated by the proposed action would be the result of a significant number of construction activities. These activities would include the daily arrival and departure of construction labor personnel, the delivery of construction materials to the project site, the mobilization and demobilization of construction equipment to and from the site as needed, the disposal of waste materials or construction debris, the transfer of materials and equipment within the project site, and the manipulation of earthwork materials around the site and transport to off-site locations.

Principal roads directly impacted by the proposed action at the 17th Street Canal would include Hammond Highway, Pontchartrain Boulevard, West End Boulevard, and I-10/I-610. Roads directly impacted by the proposed action at the Orleans Avenue Canal would include Lakeshore Drive, Robert E. Lee Boulevard, Canal Street, Marconi Drive, and I-10/I-610. Roads directly impacted by the proposed action at the London Avenue Canal would include Lakeshore Drive, Paris Avenue, Elysian Fields Avenue, Leon C. Simon Drive, and I-10/I-610. Local roads fed by these principal roads could also be affected.

Bridges that would be impacted by the proposed action at the 17th Street Canal include the bridges on Hammond Highway and Veterans Boulevard. Bridges that would be impacted at the Orleans Avenue Canal include Robert E. Lee Boulevard, Filmore Avenue, and Harrison Avenue. Bridges that would be impacted at the London Avenue Canal include Leon C. Simon Drive, Robert E. Lee Boulevard, Filmore Avenue, and Mirabeau Avenue.

Traffic and transportation has been previously identified as a data gap in section 1.6. An interim transportation report was completed March 2010 and a more inclusive report would be incorporated in the CED. Therefore, discussion of impacts to this resource should be considered general in nature and applicable to all alternatives.

Direct Impacts to Traffic and Transportation

Direct impacts would include temporary road closures and congestion in those areas where project construction is occurring. The principal and local roads discussed in sections 3.2.11.1 would be most likely impacted. Roads would be temporarily closed during transportation of construction materials. The local bridges over the outfall canals would be closed on a temporary basis to lower segmented barges, equipment, and materials into the canal. One or both lanes would be temporarily closed. These temporary closures would result in increased congestion of those roads in the vicinity not directly impacted by construction activities. The impacts would be considered temporary, lasting only as long as the period necessary to complete the construction activity. Once construction has been completed, the local road network would be expected to return to its normal condition.

Indirect Impacts to Traffic and Transportation

Indirect impacts could involve damage to those roads used during transportation of construction materials by heavy truck equipment. Additional heavy truck traffic during construction activities would contribute to further degradation of roads beyond existing conditions.

Cumulative Impacts to Traffic and Transportation

Cumulative impacts for the proposed action would be similar to those impacts discussed in the no action alternative, but would be compounded by the work being done along the outfall canals.

3.2.11 Aesthetics

3.2.11.1 Existing Conditions

17th Street Canal

Located on the Orleans Parish boundary with Jefferson Parish, the 17th Street Canal project area is less residential and park-like in setting than the Orleans Avenue and London Avenue Canals. 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. The western (Jefferson Parish) side of the canal is closely tied to the historic Bucktown community, which has existed in the area for over a hundred years.

The visual setting of the 17th Street project area is diverse. South of Hammond Highway, the project area includes Orleans Avenue and London Avenue Canals. Adjoining land uses include restaurants, several marinas, boat houses, a USCG Station, public recreation areas, and multilevel residential structures. North of Hammond Highway, the New Orleans side of the 17th Street Canal project area is primarily residential and the Jefferson Parish side is a mixture of residential and service oriented commercial development. Flood protection measures including the ICS and floodwalls made of concrete or metal sheet-piling are evident throughout the project area.

Orleans Avenue Canal

The Orleans Avenue Canal project area is located within the public green space that extends from the Lake Pontchartrain shoreline to Pump Station #7. 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. The mix of public green spaces, extensions of existing drainage canals to resemble natural streams, new residential neighborhoods, public streets, and other facilities were all designed and constructed over the last 80 years.

This green corridor is centered along the meandering footprint of the Orleans Avenue Canal and provides a visual and physical connection from the public park areas along the lakeshore to the main east-west roadway setback from the shore. Grass-covered levees topped with concrete, or metal sheet-pile floodwalls line both banks of the canal and the ICS is prominently located in the meander of the canal.

The public green space along the Orleans Avenue Canal corridor is expansive and holds great value as a visual and physical connection to the lakeshore recreation areas. On the east side of the canal, the underlying ownership is City Park and Marconi Drive has a parkway visual setting as it heads northward from the middle of the city, passes along the western edge of City Park, crosses Robert E. Lee Boulevard and continues on to connect with Lakeshore Drive. 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 western side of the Orleans Avenue Canal from Robert E. Lee Boulevard to the lakefront includes the Lakeshore neighborhood bordering the corridor of undeveloped green space that extends to the public road 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.

London Avenue Canal

The London Avenue Canal project area is located within the public green space that extends from the Lake Pontchartrain shoreline to Pump Station #3. This green corridor is centered along the meandering footprint of the London Avenue Canal and provides a visual and physical

connection from the public park areas along the lakeshore to the main east-west roadway setback from the shore. Grass-covered earthen levees topped with concrete or metal sheet-pile floodwalls line both banks of the canal and the ICS is prominently located just south of the canal's meander.

Like Orleans Avenue Canal, the entire landscape is man-made, all part of the massive early 20th century reclamation project that created new land (from pumped Lake Pontchartrain dredge material) northward from the historic lakeshore near the current location of Robert E. Lee Boulevard. The mix of public green spaces, extensions of existing drainage canals to resemble natural streams, new residential neighborhoods, public streets and other facilities were all designed and constructed over the last 80 years.

By the time Hurricane Katrina struck in August 2005, the former lake bottom was a mature landscape with grass-covered hurricane protection levees lining both banks of the canal and a varied mix of mature trees (mostly live oaks, cypress, and pines) and shrubs scattered throughout the wide expanses of public spaces between the levees and private spaces. On the east side of the canal is the main campus of the University of New Orleans. Most of the adjoining land uses are utilitarian (parking areas and maintenance and storage facilities) with some three story and of low aesthetic quality. The northern part of the canal, however, is the location of student housing, some in disrepair. Other areas of the campus contain multilevel buildings including some seven to eight story buildings.

On the west side of the canal is a corridor of undeveloped green space that extends from the lake to Pratt Drive, a public road that 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 homes fronting Pratt Drive and neighboring homes enjoy the park-like setting provided by the London Avenue corridor. These public green spaces are regularly maintained by the Orleans Levee District.

3.2.11.2 Discussion of Impacts

3.2.11.2.1 No Action Alternative

Direct and Indirect Impacts to Aesthetic Resources

There would be no impacts under the no action alternative. Without implementation of the proposed action, no direct or indirect impacts to Aesthetics would occur other than potentially slower storm water removal.

Cumulative Impacts to Aesthetic Resources

The canal floodwalls exhibit contrasting architectural elements in most areas where emergency repairs were done after Hurricane Katrina. One example is the Orleans Ave floodwall from the lakefront to Robert E. Lee Boulevard and then from Robert E. Boulevard to the pumping station located just past I-610. The Robert E. Lee Boulevard to the pumping station floodwalls were designed with architectural concrete features, especially prevalent on the canal's western side where concrete urns, placed on top of the floodwall, are connected by extruded concrete wreaths on the floodwalls face. The lakefront to Robert E. Lee Boulevard floodwalls exhibit rusted sheet-piling protruding from a concrete base. The residents living adjacent to the outfall canals have voiced concerns surrounding the floodwall's aesthetics because of its contrast with the residential areas and the green space along the outfall canal.

Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct and Indirect Impacts to Aesthetic Resources
The visual resources of the project corridor would be temporarily impacted by construction activities related to remediating the floodwalls to raise the maximum operational level and by transport activities needed to move equipment and materials to and from the site. Green space in the project area being used as staging areas for construction will be temporarily impacted, but expected to return to normal after construction is completed. The proposed action would improve the operational water level in the canals. 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 to Aesthetic Resources
Cumulative impacts for the proposed action will be similar to those impacts discussed in the no action alternative, but would be compounded due to work on the outfall canals. Upon completion of the remediation work stated in the proposed action, there would be no cumulative impact on the existing aesthetic resources.

3.2.12 Land Use

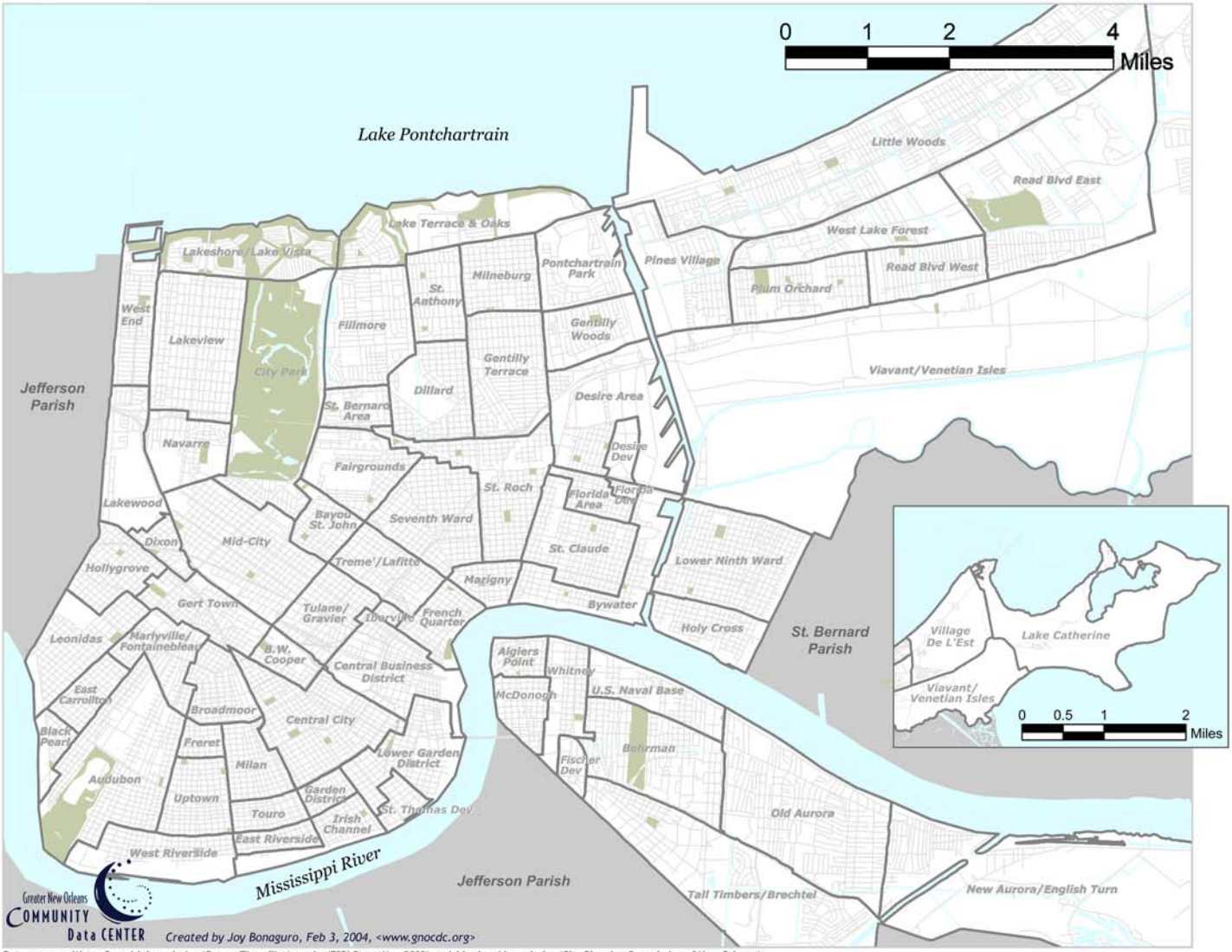
3.2.12.1 Existing Conditions

The land use in the vicinity of the 17th Street, Orleans Avenue, and London Avenue Canals is mainly urban, developed, and characterized as residential homes intermixed with commercial businesses and community services. Residential neighborhoods in the project area include Lakeview, Gentilly, Bywater, Mid-City, French Quarter/Central Business District, Central City/Garden District, and Uptown/Carrollton (GNOCDC 2007) (figure 18). Land use within the ROW of each outfall canal is used primarily as greenspace and for recreational purposes by nearby residents. Nearly 94 percent of the project area is classified as developed, with the remaining 6 percent divided among upland forest, upland scrub/shrub, agriculture/pasture, and water (USACE 2007b).

A major landmark in the project area is City Park located between the Orleans Avenue Canal and Bayou St. John. The 1,500-acre park was founded in 1854 and is one of the largest and oldest urban parks in the nation. It includes a golf course, the New Orleans Museum of Art, Besthoff Sculpture Garden, New Orleans Botanical Garden, Tad Gormley Stadium, Storyland, Equest Farms horse stables, an amusement park, tennis courts, and a historic carousel and pavilion. The park stretches from City Park Avenue on the south, Wisner Boulevard on the east, Robert E. Lee on the north, and Orleans Avenue and the Orleans Canal on the west. Other parks in the project area include the London Park and Orleans Park near the outfalls of their respective canals and West End Park at the lakefront on the east side of the 17th Street Canal. The Fairgrounds Race Track is west of the London Avenue Canal, south of I-610. Pontchartrain Beach is on the lakefront, approximately 4,000 feet to the east of the London Avenue Canal.

Major universities in the project area include UNO, Southern University of New Orleans, and Dillard University. UNO is on the east side of the London Avenue Canal at the lakefront. Southern University of New Orleans is farther to the east on Leon C. Simon Boulevard. Dillard University is adjacent to the London Avenue Canal at Gentilly Boulevard. Delgado Community College is adjacent to City Park, on the southwest side, near City Park Avenue and Orleans Avenue. Numerous cemeteries are found within the project area. Metairie, Lake lawn, and Greenwood cemeteries are near I-10 and Metairie Road. Several smaller cemeteries, including two listed on the NRHP and one within a historic district listed on the NRHP, exist within the project vicinity.

Figure 18 - New Orleans Neighborhood Districts



Data sources: Water & parish boundaries (Census Tiger files), parks (ESRI StreetMap 2003), neighborhood boundaries (City Planning Commission of New Orleans)

Legend

Neighborhood boundaries

Parks

3.2.12.2 Discussion of Impacts

3.2.12.2.1 No Action

Direct Impacts and Indirect Impacts
Without implementation of the proposed action, no direct or indirect impacts to land use would occur. If the proposed action is not implemented, the existing lower operational water level would be maintained, no work would be conducted along the canals, and no additional ROW for staging areas would be acquired for the proposed project area.

Cumulative Impacts
Other past, present, and future projects are not expected to have a significant impact on land use in the project area. Impacts to land use under the no action would be cumulative with other land use impacts from HSDRRS projects and rebuilding efforts within the region. Previously developed land uses may be converted, but would provide a long-term beneficial impact because these properties are used to provide a HSDRRS that protects the local area and entire region.

3.2.12.2.2 Proposed Action

Direct Impacts
Land use would be temporarily impacted by the staging areas for the proposed action and would temporarily impact land use. The proposed staging area for 17th Street Avenue canal is along the northwest portion outside the canal on vacant land without structures. For Orleans Avenue Canal, the staging area is in an open area in City Park adjacent to the canal. For the London Avenue Canal, proposed staging areas are scattered in available ROW along the canal and adjacent to neighborhoods on both sides of the canal. These areas would temporarily be altered to light industrial during construction, but would be returned to their existing land use after construction is complete. Majority of the land adjacent to and in the vicinity of the canals is classified as developed and would not be expected to change with implementation of the proposed alternative. Long-term, direct or indirect impacts would not be expected because these areas would return to their pre-construction condition after construction has been completed.

Cumulative Impacts
Cumulative permanent impacts to land use are not expected because this alternative falls within the current footprint of the canal and would not result in any permanent land use changes.

3.3 Socioeconomic Resources

3.3.1 Existing Conditions

This section describes the social and economic environment that could be affected by the proposed action and alternative actions. The social and economic environment of the project area is characterized by its demographic composition, the structure and size of its economy, and the types and levels of public service available to its citizens. Accordingly, this study evaluates potential effects of USACE permitting actions on the region's population growth, employment and income levels, business activities, housing stock, public services, and community and regional growth post-Katrina.

The project area is in the Greater New Orleans area in Jefferson and Orleans Parishes, Louisiana. Orleans Parish and the city of New Orleans operate as a merged city-parish government; consequently, socioeconomic data for the parish and city are identical. A joint collaboration between the Brookings Institution Metropolitan Policy Program and the Greater New Orleans Community Data Center (GNOCDC) monitors the social and economic recovery of the Gulf

Coast region through the use of 40 indicators, known as the *New Orleans Index*.[1] Socioeconomic data from the New Orleans Index is broken up primarily by data for the city of New Orleans (Orleans Parish) and the New Orleans metro statistical area (MSA). The New Orleans MSA includes Jefferson Parish, Orleans Parish, Plaquemines Parish, St. Bernard, St. Charles Parish, St. John Parish, and St. Tammany Parish. In using this data here, where possible, we have further categorized it for the Region of Influence (ROI) using Jefferson Parish, ZIP Code, and neighborhood boundaries.

3.3.1.1 Business, Industry, Employment and Income

Both the New Orleans MSA and the city of New Orleans have continued to recover lost employers and labor force in the 5 years following Hurricane Katrina.

Jefferson Parish and New Orleans MSA

Median household income in Jefferson Parish was $41,773 (in 2005 inflation-adjusted dollars) in 2005. Average per capita income for 2005 was $22,454. Approximately 12 percent of families and 15 percent of all residents were below the poverty level. The labor force for Jefferson Parish was 230,173, with 21,318 (9.3 percent) unemployed.

Management, professional, and sales and office professions accounted for approximately 62 percent of all jobs in the parish. Service occupations accounted for approximately 15 percent of jobs, and construction and production-related activities accounted for approximately 12 percent and 10 percent of jobs, respectively.

Jefferson Parish has nearly recovered its number of total employers, retaining 97 percent of pre-Katrina numbers. In the second quarter of 2005, there were 11,416 employers, versus 11,077 employers in the first quarter of 2008 (most recently available data). Figure 19 shows the change in total employers from 2005 Quarter 2 to 2008 Quarter 1. Table 9 further extrapolates this data.

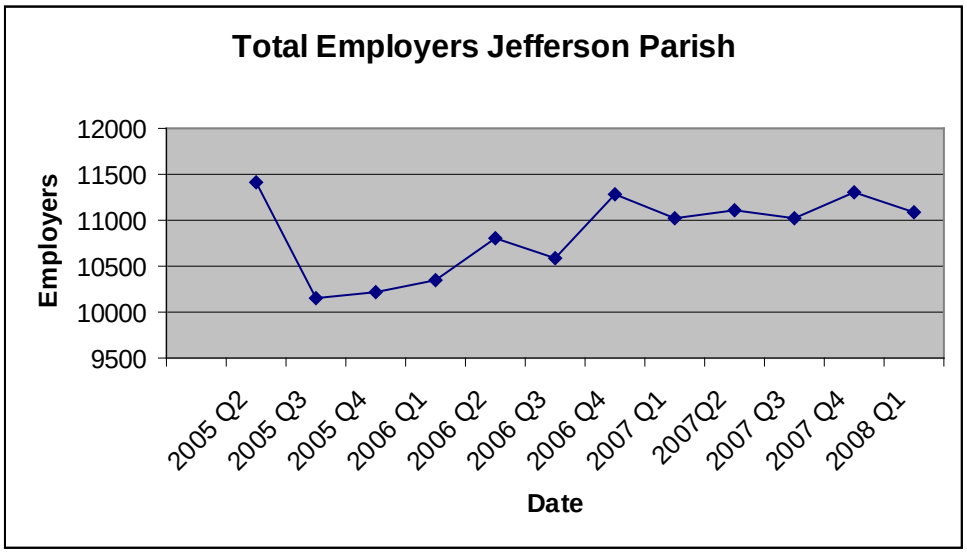


Figure 17 - Cumulative net change in total employers, Jefferson Parish
Source: GNOCDC 2007

[1] Unless otherwise noted, all data cited in this section, including tables and figures, were taken from the New Orleans Index.

Table 9 - Net change in total employers, Jefferson Parish

Quarter	Total employers	Cumulative net change	Explanation of cumulative net change activity		
			Closed/ moved out	New/ moved in	No report 2005 Q2, but reported later
2005 Q2	11,416				
2005 Q3	10,149	-1,267	-1,774	239	268
2005 Q4	10,213	-1,203	-2,330	649	478
2006 Q1	10,342	-1,074	-2,590	1,211	305
2006 Q2	10,803	-613	-2,471	1,502	356
2006 Q3	10,582	-834	-2,782	1,644	304
2006 Q4	11,282	-134	-2,659	2,016	509
2007 Q1	11,016	-400	-3,025	2,293	332
2007Q2	11,098	-318	-3,135	2,458	359
2007 Q3	11,029	-387	-3,379	2,649	343
2007 Q4	11,301	-115	-3,398	2,832	451
2008 Q1	11,077	-339	-3,683	3,031	313

Source: LSU, Louisiana Recovery Authority, Louisiana Economic Development, Louisiana Department of Labor

Further economic indicators have not been broken up by Parish but rather divided into New Orleans and the New Orleans Metro Statistical Area (MSA). While it is not possible to fully detail the characteristics of the Jefferson Parish economy, considering economic data of the New Orleans MSA provides an indication of how the region, including Jefferson Parish, is recovering post-Katrina.

The New Orleans MSA labor force has now reached 84 percent of pre-Katrina levels. Figure 20 details the change in labor force from June 2005 to June 2009.

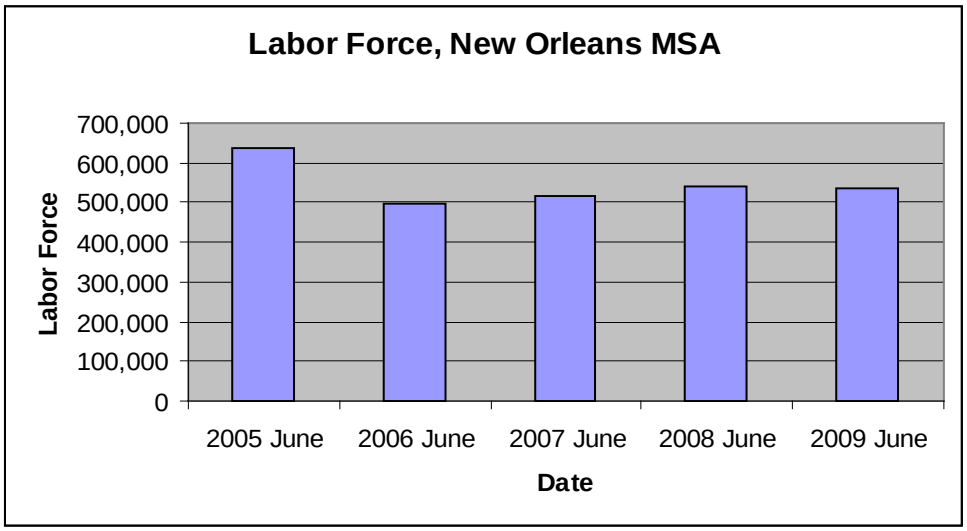


Figure 18 - Labor force, New Orleans MSA
Source: Louisiana Department of Labor, Bureau of Labor Statistics

While the unemployment rate in the New Orleans MSA has risen from pre-Katrina numbers, the New Orleans MSA economy is weathering the current recession relatively well when compared with national levels. Pre-Katrina, the unemployment rate was 5.3 percent, which fell to 2.4 percent in August of 2006. However, that number has now climbed to 7.3 percent as of June 2009, but which was lower than the national rate of 9.5 percent for the same time period. The 2.4 unemployment rate may have been unusually low in 2006 due to the unusual demand for employment needed to rebuild the city and employment relocations.

The service sector is of vital importance to the MSA, and service-providing jobs made up 87 percent of all jobs in the region pre-Katrina. The majority of the jobs lost following Hurricane Katrina were in this sector; between July 2005 and June 2007, 101,600 service jobs were lost in the MSA. That figure has recovered slightly, with a difference of 91,700 service jobs lost from pre-Katrina levels as of June 2009. Figure 21 provides a broader breakdown of non-farm employees, by both source and type of employment.

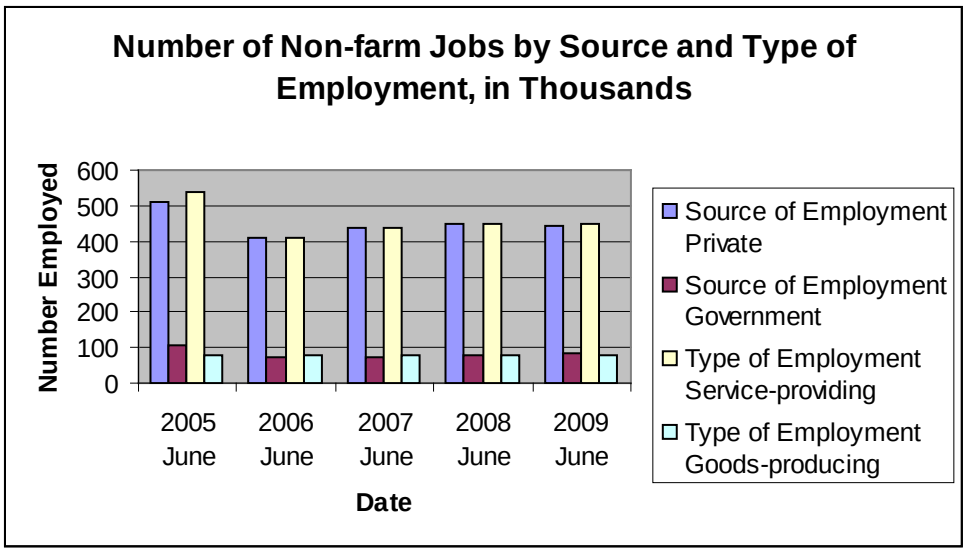


Figure 19 - Number of non-farm employed by source and type of employment, New Orleans MSA
Source: U.S. Bureau of Labor Statistics

Orleans Parish

Median household income in Orleans Parish was $30,711 (in 2005 inflation-adjusted dollars) in 2005. Average per capita income for 2005 was $21,998. Approximately 22 percent of families and 25 percent of all residents were below the poverty level. The labor force for Orleans Parish was 214,525, with 28,312 (13.2 percent) unemployed.

Management, professional, and sales and office professions accounted for approximately 63 percent of all jobs in the parish. Service occupations accounted for approximately 24 percent of jobs, and construction and production-related activities each accounted for approximately 6 percent and 8 percent of jobs, respectively.

Following Katrina, the city of New Orleans lost 32 percent of its workforce between July 2005 and August 2006. Labor force numbers have risen, and New Orleans regained 78 percent of pre-Katrina levels as of August 2007.[2] Figure 22 illustrates this rise.

[2] Note that the Bureau of Labor Statistics stopped publishing labor force data for Orleans Parish in 2005 due to problems with sample size. While labor force data was published for Orleans Parish in the New Orleans Index for 2006 and 2007, these numbers were not updated for 2008 or 2009.

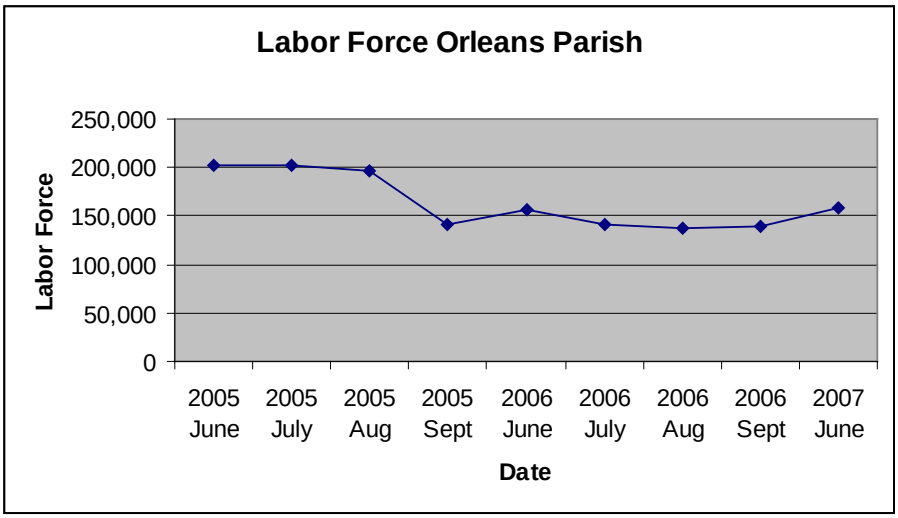


Figure 20 - Labor force size, Orleans Parish
Source: Louisiana Department of Labor, Bureau of Labor Statistics and GNOCDC 2007

There has been a cumulative net change in total employers in Orleans Parish, with a 20 percent loss from pre-Katrina numbers. In the second quarter of 2005 there were 9,592 employers, versus 7,698 employers in the first quarter of 2008. Figure 23 shows the change in total employers from 2005 Quarter 2 to 2008 Quarter 1. Table 10 further extrapolates this data.

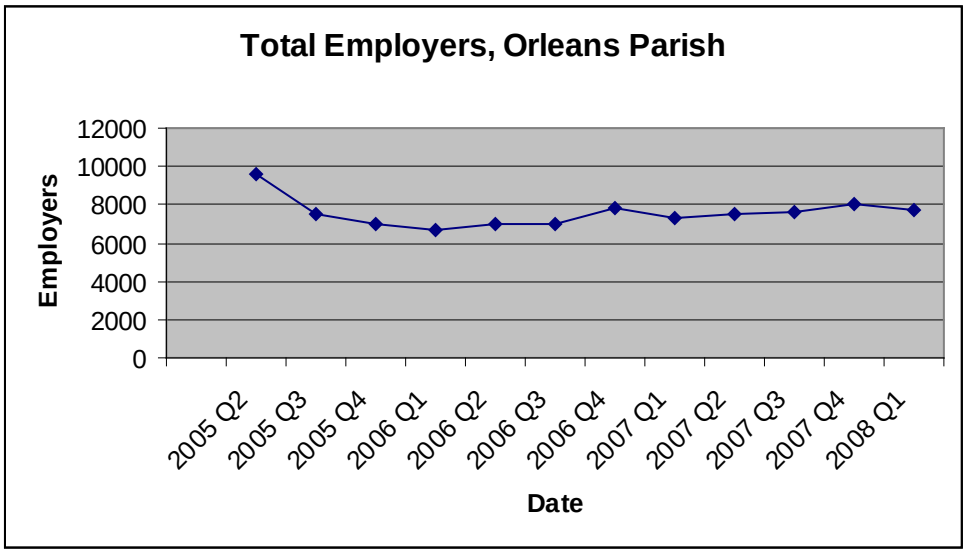


Figure 21 - Cumulative net change in total employers, Orleans Parish

Table 10 - Net change in total employers, Orleans Parish

Quarter	Total employers	Cumulative net change	Explanation of cumulative net change activity		
			Closed/ moved out	New/ moved in	No report 2005 Q2, but reported later
2005 Q2	9,592				
2005 Q3	7,545	-2,047	-2,439	183	209
2005 Q4	7,011	-2,581	-3,602	416	605
2006 Q1	6,641	-2,951	-3,827	663	213
2006 Q2	7,039	-2,553	-3,683	897	233
2006 Q3	6,991	-2,601	-3,845	1,031	213
2006 Q4	7,781	-1,811	-3,698	1,331	556
2007 Q1	7,336	-2,256	-3,954	1,464	234
2007 Q2	7,482	-2,110	-3,985	1,636	239
2007 Q3	7,604	-1,988	-4,075	1,851	236
2007 Q4	8,052	-1,540	-4,092	2,061	491
2008 Q1	7,698	-1,894	-4,332	2,228	210

Source: LSU, Louisiana Recovery Authority, LA Economic Development, Louisiana Department of Labor (Brookings Institution 2009)

These economic indicators, while incomplete, show that Orleans Parish is recovering at a slower rate than the New Orleans MSA.

3.3.1.2 Population and Housing

Population estimates from the U.S. Census provide an indication of population levels post-Katrina, and will also be supplemented by data from the New Orleans Index. These statistics and indicators suggest that the populations in Jefferson and Orleans parishes continue to increase post-Katrina, to near recovery levels (Brookings Institution 2007).

Jefferson Parish

The population of Jefferson Parish in 2005 was 448,578. Approximately 66 percent of Jefferson Parish residents identified themselves as white; approximately 27 percent identified themselves as Black or African-American; approximately 3 percent identified themselves as Asian. Approximately 8 percent of Jefferson Parish residents identified themselves as Hispanic or Latino (of any race). A total of 192,373 housing units were present in the parish, and average family size was 3.30 individuals. The median age of residents was 37.9 years. Detailed population demographics for the post-Katrina population of Jefferson Parish are not readily available; however, the U.S. Census Bureau has estimated the 2008 population of Jefferson Parish at 436,181 persons (Table 11).

Table 11 - Total Population Estimates, Jefferson Parish

Total Population Estimates	Jefferson Parish
Census 2000	455,466
July 2005	450,848
July 2006	422,222
July 2007	440,339
July 2008	436,181

Source: U.S. Census Bureau 2009

The Louisiana Health and Population Survey, overseen by The Louisiana Recovery Authority in the summer of 2006,[3] provide further estimates of Jefferson Parish post-Katrina demographics. The household survey population estimate of Jefferson Parish was 434,666, and responses were received between June and October 2006. Approximately 61 percent of respondents identified themselves as white; approximately 30 percent as black or African American; approximately 3.5 percent as Asian; approximately 0.1 percent as American Indian; approximately 9.7 percent as Latino; and approximately 1 percent as Native Hawaiian/Other Pacific Islander (LPHI et al. 2006a).

The Brookings Institution Metropolitan Policy Program and the Greater New Orleans Community Data Center have gathered statistics from various sources in an effort to determine the number of occupied housing units in Jefferson Parish. According to the U.S. Postal Service's Delivery Statistics product, the proportion of households actively receiving mail in Jefferson Parish is 98 percent of pre-Katrina levels as of June 2009 (figure 24) (GNOCDC 2007). Road Home applications provide a gauge of the intent of former residents to remain in Jefferson Parish post-Katrina. As of May 2009, 99 percent of the 23,972 Jefferson Parish Road Home applicants had declared their intent to keep their home. Jefferson Parish also has a reportedly low percentage of unoccupied residential addresses,[4] with just six percent unoccupied as of March 2009.

The number of single family home sales in East Jefferson is also an important characteristic of the area's recovery and demographic shifts. Figure 25 shows a stark decrease in this number in September 2005, immediately following Katrina. Since September 2005, the number of home sales reached a monthly high of 298 in March 2006; a monthly low of 60 in January 2009; with the latest figure available showing that 133 houses were sold in East Jefferson in May 2009.

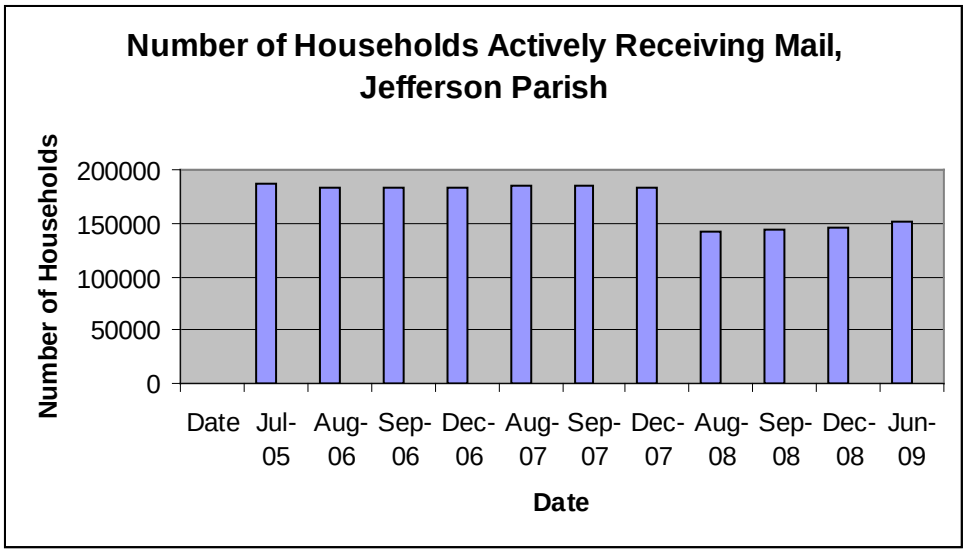


Figure 22 - Number of households actively receiving mail, Jefferson Parish
Source: Sammamish Data Systems compiled from the U.S. Postal Service's Delivery Statistics product

[3] Results are estimated to have a 10.4 percent margin of error (+/–)
[4] Unoccupied residential addresses are considered those that have not had mail collected for 90 days or longer, buildings under construction and not yet occupied, and heavily damaged homes that have not been re-occupied.

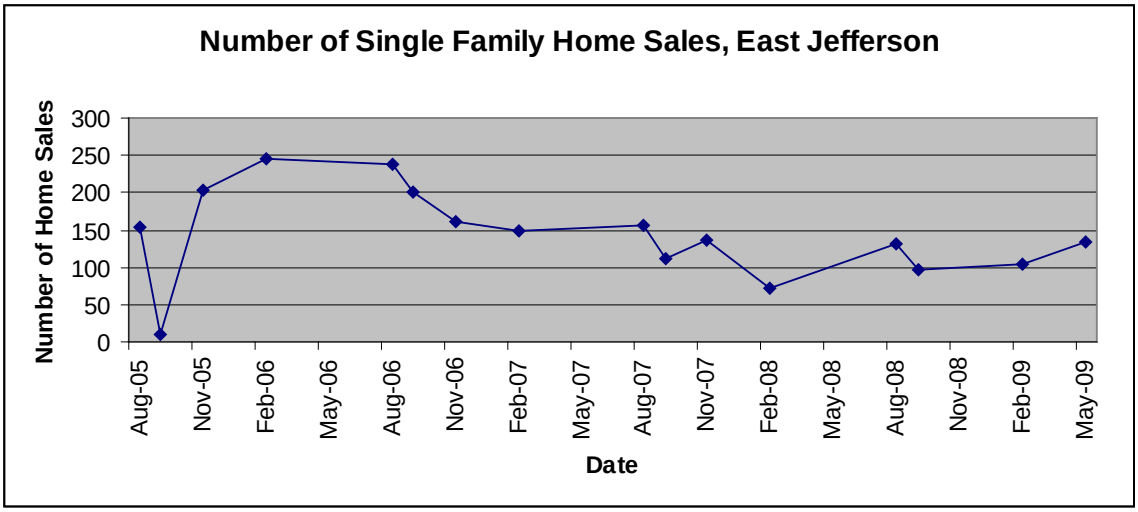


Figure 23 - Number of single family home sales, East Jefferson
Source: New Orleans Metropolitan Association of Realtors

The number of active listings of single family homes in East Jefferson rose from 708 in the first quarter of 2005 to 1,102 in the fourth quarter of that same year. The number of active listings then averaged 1,370 homes in 2006, rose to an average of 1,809 homes in 2007, and then dipped to an average of 1,669 homes in 2008.

Public school enrollment and demographics also shed light on population trends post-Katrina. Jefferson Parish public school enrollment is down from 51,666 students in the fall of 2004 to 43,979 students in the spring of 2009; a loss of 7,687 students (table 12). Louisiana Department of Education statistics from February 2009 show a slight increase in Hispanic students, with a slightly decreased share of white and black students (Brookings Institution 2007).

Table 12 - Composition of public school students in Jefferson Parish

Date	Total	Black	Hispanic	White	Asian	American Indian
Oct-04	51,666	52%	9%	34%	4%	1%
Oct-05	29,109	44%	9%	41%	5%	1%
Jan-06	41,750	50%	10%	35%	5%	1%
Oct-06	43,617	49%	11%	34%	5%	1%
Feb-07	43,683	50%	11%	33%	5%	1%
Oct-07	44,058	49%	12%	33%	5%	1%
Feb-08	43,602	49%	12%	33%	5%	1%
Oct-08	44,018	49%	13%	32%	5%	1%
Feb-09	43,979	49%	13%	32%	5%	1%

Source: Louisiana Department of Education

Orleans Parish

The population of Orleans Parish in 2005 was 437,186. Approximately 28 percent of Orleans Parish residents identified themselves as white; approximately 68 percent identified themselves as Black or African-American; and approximately 3 percent identified themselves as Asian. Approximately 3 percent of Orleans Parish residents identified themselves as Hispanic or Latino (of any race). A total of 213,137 housing units were present in the parish, and average family size was 2.68 persons. The median age of residents was 35.2 years. Detailed population demographics for the post-Katrina population of Orleans Parish are not readily available;

however, the U.S. Census Bureau has estimated the 2008 population of Orleans Parish as 311,853 (table 13).

Table 13 - Total Population Estimates, Orleans Parish

Total Population Estimates	Orleans Parish
Census 2000	484,674
July 2005	455,046
July 2006	210,768
July 2007	288,113
July 2008	311,853

Source: U.S. Census Bureau 2009

The Louisiana Health and Population Survey received surveys from the Orleans Parish between June and October 2006.[5] The estimated household survey population was 191,139. Approximately 42 percent of respondents categorized themselves as white; 47 percent as Black or African-American; 3.5 percent as Asian; 0.4 percent as Native American; and 1 percent as Native Hawaiian/Other Pacific Islander. Five percent of respondents did not select a race. This survey indicates that a potential population shift of an increased white population and decreased black or African-American population might have occurred post-Katrina (LPHI et al. 2006b).

U.S. Postal Service data show that households actively receiving mail in Orleans Parish have reached 76 percent of pre-Katrina levels as of June 2009, which is a 5 percentage point improvement from a year ago, and a 10 percentage point improvement from two years ago (for further breakdown of postal data, see figure 26). The largest share of the Road Home applicants live in Orleans Parish and of those, 90 percent have expressed their intent to stay in their current home. However, 31 percent of residences (a total of 65,888 houses) in Orleans Parish were considered unoccupied as of March 2009.

Authorizations of housing units, residential building permits, and USACE demolitions in Orleans Parish represent other statistics indicative of reconstruction activities post-Katrina. The monthly average of new residential housing units authorized in Orleans Parish was 420 from September 2008 to May 2009, which was down from 676 in September 2007 through August 2008, and from 912 in the prior year. The monthly average of new residential housing units authorized for construction also fell, to 197 since September 2008, which was down from 218 for the same period in 2007. The number of demolitions performed by the USACE in Orleans Parish by May 2009 was 9,394.

[5] Results are estimated to have a 9.6 percent margin of error (+/–)

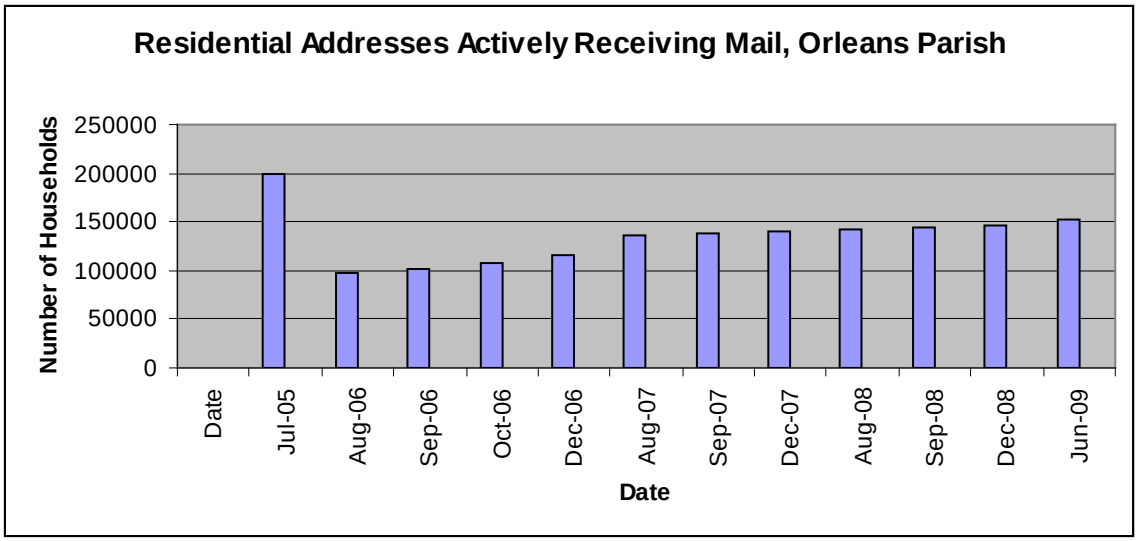


Figure 24 - Number of households actively receiving Mail, Orleans Parish
Source: GNO Community Data Center analysis of USPS Delivery Statistics Product

Population indicators for individual ZIP Code boundaries are a way to further break down population data relevant to the project area. Figure 27 maps ZIP Code boundaries for New Orleans and the surrounding parishes. ZIP Codes in the ROI include Jefferson Parish (70005) and Orleans Parish ZIP Codes (70124; 70122; 70118; 70119; 70125; 70115; 70113; 70130; 70112; and 70116). Figure 28 illustrates the number of households actively receiving mail in these ZIP Codes.

As Figure 29 illustrates, the largest drops in the number of households receiving mail in the ZIP Code areas from July 2005 to August 2006 were 70119 or Mid-City (from 19,594 to 8,704); 70122 or Gentilly (from 18,233 to 4,462); and 70124 or Lakeview (from 11,278 to 2,288). The number of households receiving mail in each of these areas has continued to increase post-Katrina and stand at 17,716; 12,313; and 7,760, respectively as of June 2010.

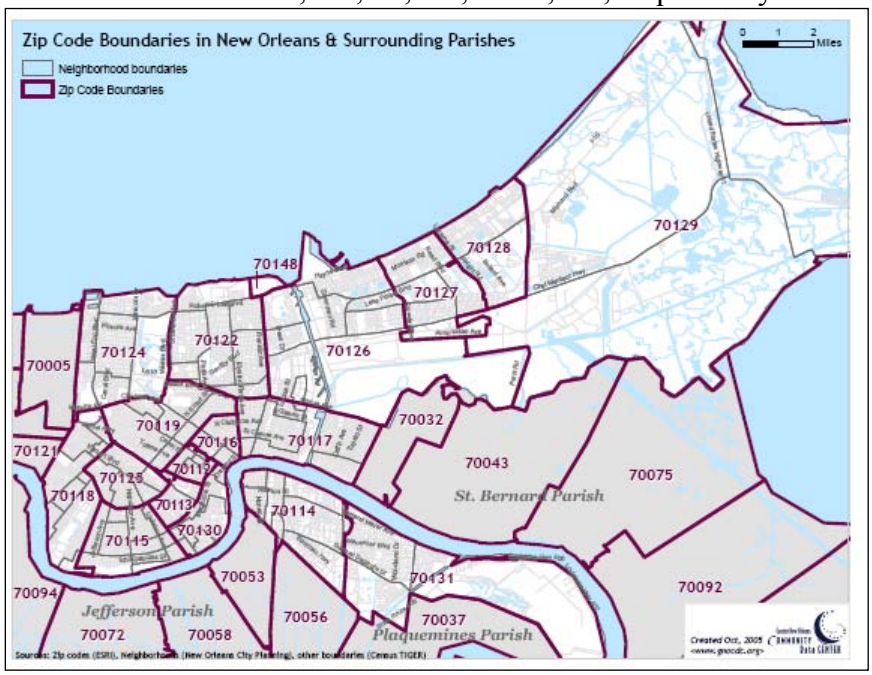


Figure 25 - ZIP Code boundaries in New Orleans and surrounding parishes
Source: GNOCDC 2009

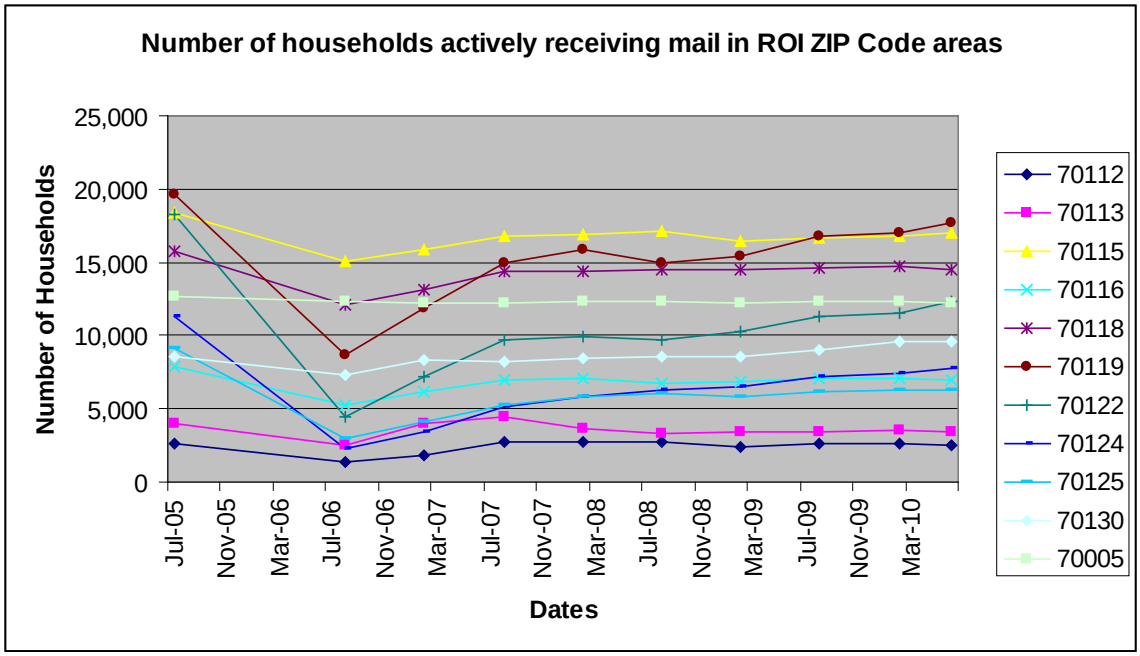


Figure 26 - Number of households actively receiving mail in ROI ZIP Code areas
Source: GNOCDC 2007

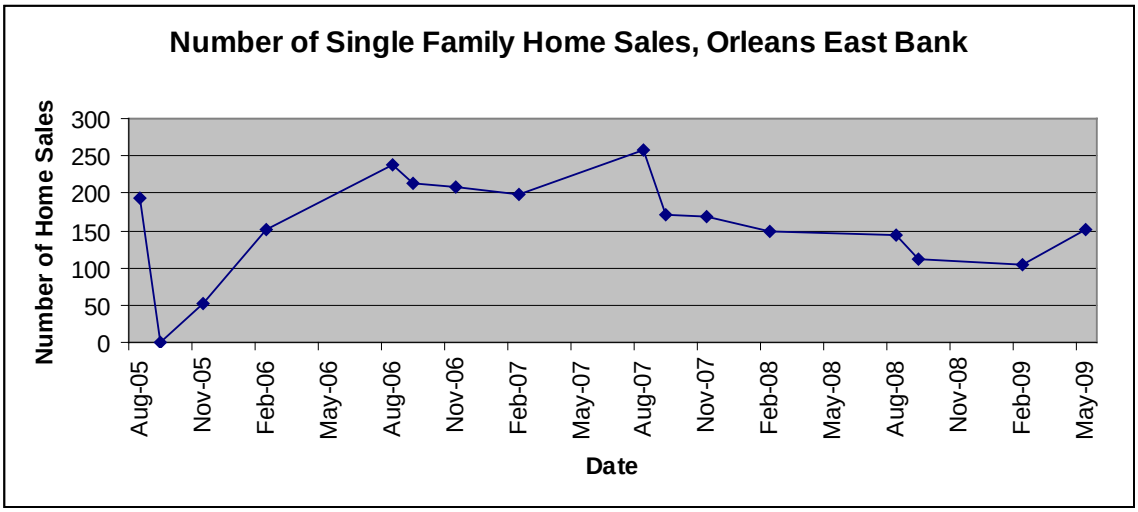


Figure 27 - Number of single family home sales, Orleans East Bank
Source: New Orleans Metropolitan Association of Realtors

The number of single family home sales for the Orleans East Bank showed a dramatic decrease following Hurricane Katrina, but sales have subsequently risen to 152 in May of 2009; a number slightly lower than the193 sales in August of 2005.

The number of active listings of single family homes in Orleans East Bank has decreased since the post-Katrina quarterly high of 3,692 listings, reached in the third quarter of 2006, to 2,232 listings in the first quarter of 2009. The average annual post-Katrina listings were 3,210 in 2006; 2,565 in 2007; and 2,304 in 2008.

Student population in the public schools in Orleans Parish has reached only 54 percent of pre-Katrina levels, with a total number of students down from 66,372, pre-Katrina, to 35,976 in February 2009. The demographics of the student body served by public schools have changed slightly. The percentage of African-American students has dropped from 93 percent to 90 percent, and the percentage of white students has risen to 5 percent from 4 percent. The Hispanic student population also rose a percentage point, from 1 percent to 2 percent (Table 14).

Table 14 - Composition of public school students in Orleans Parish

Date	Total	Black	Hispanic	White	Asian	American Indian
Oct-04	66,111	93%	1%	4%	2%	0%
Oct-05	*	*	*	*	*	*
Jan-06	6,242	90%	2%	5%	2%	0%
Oct-06	25,651	89%	2%	6%	3%	0%
Feb-07	26,165	89%	2%	6%	3%	0%
Oct-07	32,149	90%	2%	5%	2%	0%
Feb-08	32,887	90%	2%	5%	2%	0%
Oct-08	35,955	90%	2%	5%	2%	0%
Feb-09	35,976	90%	2%	5%	2%	0%

*Data for Fall 2005 uncertain because of Katrina
Source: Louisiana Department of Education

The number of students attending institutions of higher learning in Orleans Parish also shows signs of growth. The latest numbers from spring of 2009 indicate that the student body population of Tulane University is at 84 percent of pre-Katrina levels; Loyola is 81 percent; University of New Orleans is 66 percent; Xavier is 79 percent; Southern University of New Orleans is 78 percent; Delgado Community College is 87 percent; Our Lady of Holy Cross College is 88 percent; and Dillard's student body population is 41 percent of pre-Katrina levels (GNOCDC 2007).

3.3.1.3 Property Values, Tax Revenues, Public Facilities, and Services

Jefferson Parish

The average sale price for a single family home in East Jefferson[6] jumped in the month preceding Katrina and again in December 2007 and June 2008. Average sale prices are now decreasing, with the latest average sale price of $231,061 in May 2009. Figure 30 tracks the average sale price of single family homes in East Jefferson Parish.

[6] Statistics from the New Orleans Metropolitan Association of Realtors divide Jefferson Parish data into East and West Jefferson. The ROI encompasses East Jefferson; thus, West Jefferson data is not included.

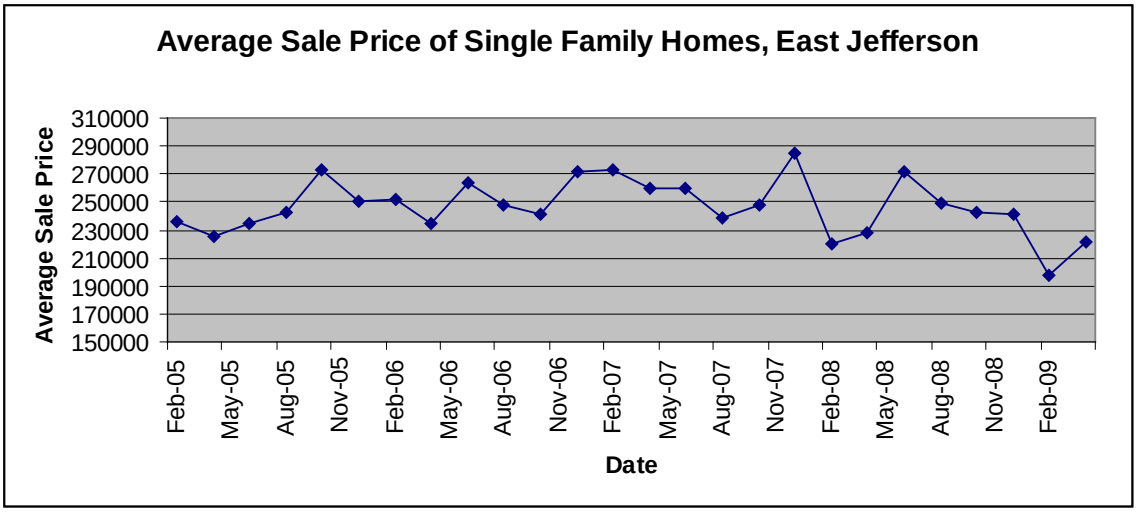


Figure 28 - Average sale price of single family homes in East Jefferson
Source: New Orleans Metropolitan Association of Realtors

Data detailing fair market rents is available for the MSA from the U.S. Department of Housing and Urban Development, broken up by unit bedrooms. Fair market rent rose 39 percent from 2005 to 2006, most likely due to the decreased size of the available housing market. Rent stabilized at the higher numbers in 2007 (Figure 31).

Local sales, license, and property taxes provide the major source of funding for Jefferson Parish. Jefferson Parish sales tax averaged $25 million in 2004 and 2005. For 2006, monthly collections averaged $36 million. The Jefferson Parish finance director stated that the amount collected in 2006 was an unusual year for retail because of the fact that many Orleans Parish stores were closed during that time period, and area residents were replacing goods lost during Hurricane Katrina (Guillet 2007). The average monthly collections have since dropped from 2006 levels; however, remain higher than levels collected in 2005. Monthly collections averaged $33 million in 2007, $32 million in 2008, and $30 million in 2009 (2009 data averaged from January to May).

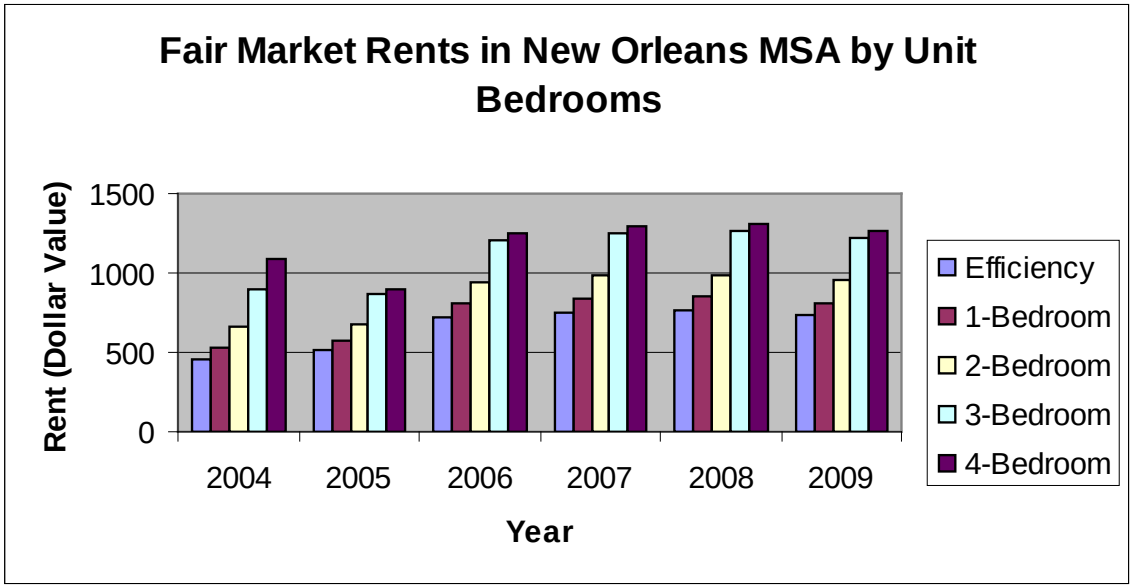


Figure 29 - Fair market rents in New Orleans MSA

Source: U.S. Department of Housing and Urban Development

The public facilities and services available in Jefferson Parish have nearly rebounded to pre-Katrina levels, and in some cases, have exceeded that benchmark. Jefferson Parish has not only succeeded in reopening all public schools after losing five (out of 84) in the semester following Katrina, but has also opened an additional five schools. Not all private schools have reopened however, and as of spring 2009, three private schools (out of a total of 60) remained closed. Fifteen out of sixteen public libraries are open.

Orleans Parish

The average sale price of single family homes in Orleans East Bank[7] has increased from $190,152 pre-Katrina to $232,632 in April of 2009, and reached a high price of $637,000 in October of 2005. Figure 32 charts the average sale price of single family homes in Orleans East Bank.

The city of New Orleans fiscal base has strengthened since Katrina, with revenues from sales taxes reaching approximately 89 percent of pre-Katrina levels. The city relies on revenue from a variety of sources, including general sales, hotel and motel, and motor vehicle taxes. General sales contribute the bulk of the revenue. However for the first time since 2006, New Orleans sales tax revenue declined in 2009, reflective of the impacts of the national recession. Changes in revenue between May 2008 and 2009 highlight this dip: general sales dropped by 22 percent, motor vehicle tax collections dropped by 28 percent, and hotel/motel tax revenue dropped by 24 percent (Table 15).

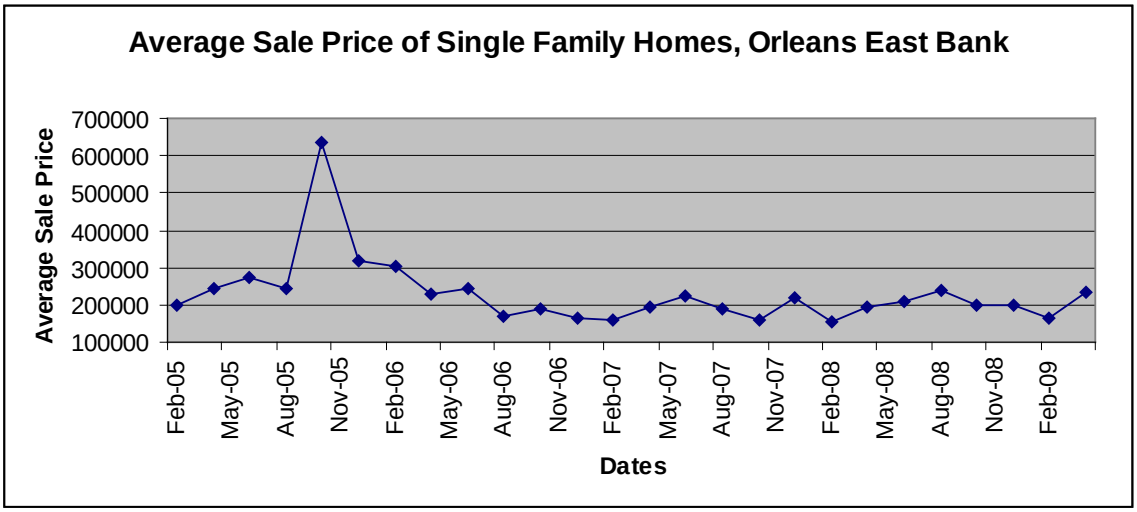


Figure 30 - Average sale price of single family homes in Orleans East Bank
Source: New Orleans Metropolitan Association of Realtors

[7] Statistics from the New Orleans Metropolitan Association of Realtors divide Orleans Parish data into Orleans East and West Banks. The ROI encompasses Orleans East.

Table 15 - City of New Orleans sales tax collections by source (select months)

Date	General sales	Hotel and motel	Motor vehicle	Total
Jan-04	$10,896,564	676,505	830,691	12,403,761
May-04	10,958,735	1,085,918	981,072	13,025,725
Sept-04	9,762,159	413,557	9970,579	11,146,295
Jan-05	12,095,836	642,046	824,388	13,562,270
May-05	11,600,617	1,311,107	958,336	13,870,060
Sept-05	120,007	143,481	860,071	1,123,559
Jan-06	6,484,617	642,434	1,393,439	8,520,490
May-06	8,521,345	638,060	986,197	10,145,601
Sept-06	7,840,364	391,791	974,215	9,206,371
Jan-07	10,610,741	550,456	744,806	11,906,003
May-07	9,746,353	948,057	772,671	11,467,082
Sept-07	9,138,572	375,279	954,383	10,468,234
Jan-08	10,438,911	700,127	683,120	11,822,158
May-08	10,467,662	1,004,116	851,552	12,323,330
Sept-08	8,987,225	480,130	680,246	10,147,602
Jan-09	10,075,888	499,063	603,837	11,178,787
May-09	10,228,551	760,731	613,803	11,603,085

Source: City of New Orleans Finance Department

The public facilities and services available in Orleans Parish have not recovered to pre-Katrina levels. Spring 2009 numbers show that only 69 percent of the public schools will be open for the school year, or 89 out of a pre-Katrina level of 129. Relative to the project area are the planning districts of Lakeview, Gentilly, and Mid-City. Lakeview District has 4 schools that remain closed and 1 public school that is open. Gentilly District has 6 schools that are closed; 3 public schools open; and 3 charter schools open. Mid-city has 15 schools still closed; 9 public schools open; and 7 charter schools open.

As of June 2009, only one library remained closed post-Katrina, for a total of 12 open libraries. There is a shortage of child care services in Orleans Parish, as just 141 out of 276 childcare facilities were opened in June 2009 (51 percent of original capacity). The status of public transportation in New Orleans is one of the most afflicted areas of public service. The number of open routes is 50 percent of pre-Katrina levels, from 62 open routes in July 2005 to 31 routes in May 2009. The number of operational buses is down from a pre-Katrina number of 368 to 109 in May 2009, which represents only 30 percent of pre-Katrina standards.

3.3.1.4 Community and Regional Growth

There are several plans that have been developed to guide recovery efforts at both the State and municipal level. Two independent, yet interrelated State plans for coast-wide restoration and protection planning efforts were developed in conjunction with the Louisiana Coastal Protection and Restoration project (LACPR). The State of Louisiana directed the Coastal Protection and Restoration Authority (CPRA) to develop a Comprehensive Master Plan with the following guiding principles: 1) integration of protection and restoration, 2) public and stakeholder involvement, 3) adaptive management and other processes, 4) recognition of constraints, and 5) land use (CPRA, 2007). The CPRA held a series of stakeholder meetings and public outreach between August and October 2006. The Final Plan was presented in April 2007, entitled "Integrated Ecosystem Restoration and Hurricane Protection: Louisiana's Comprehensive Master Plan for a Sustainable Coast." The State of Louisiana also established the Louisiana Recovery Authority (LRA) to formulate alternative redevelopment scenarios to develop a sustainable, long term vision for South Louisiana. This plan, "Louisiana Speaks Regional Plan: Vision and Strategies for Recovery and Growth in South Louisiana," was completed in May 2007 (LRA, 2007).

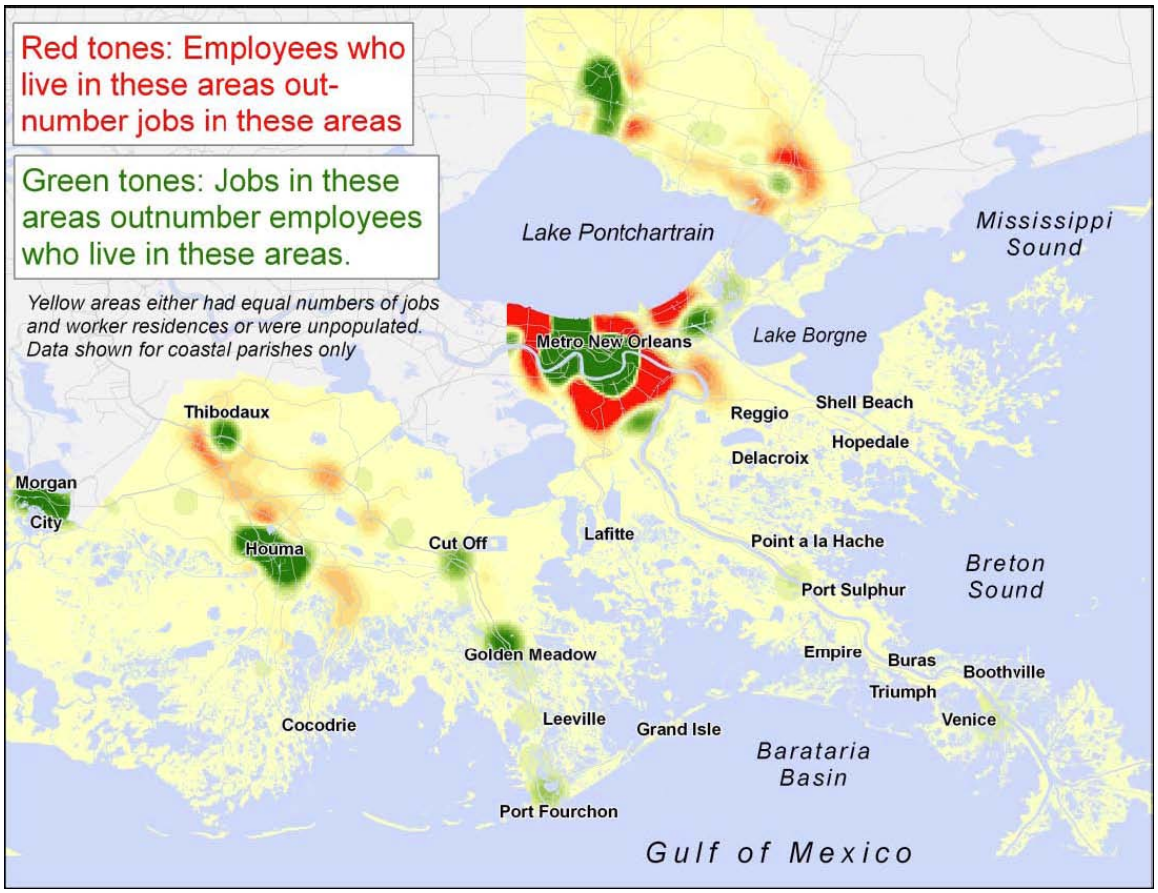


Figure 31 - Coastal areas as job generators, 2008 (Plyer and Campanella, 2010)

At the municipal level, the Unified New Orleans Plan (UNOP), also referred to as the *Citywide Strategic Recovery and Rebuilding Plan,* was released in January 2007 and is a cumulative plan which integrates the individual recovery plans for the forty-nine officially-recognized neighborhoods that had experienced severe flooding with the Bring New Orleans Back (BNOP) Plan (NOCSF 2007). The UNOP also incorporated the "Lambert plans," a series of recovery plans for "wet" neighborhoods only, which was developed by the City Council (NOLAplans 2006). In December 2006, the Mayor created the Office of Recovery Management to spearhead the City's recovery effort. The Office of Recovery Management incorporated elements of UNOP and in March 2007 announced 17 "Target Recovery Zones"[8] which will be built around public assets in key business corridors in an effort to generate further private investment from developers. Approved by the Louisiana Recovery Authority, this granted the city access to $411 million in rebuilding funds from the LRA.

The city also will be able to take advantage of a $300 million state revolving loan fund, a $260 million bond issue approved by voters before Hurricane Katrina, $514 million in GO (Gulf Opportunity) Zone Bonds for local projects, $54 million from the Federal Highway

[8] The 17 Target Recovery Zones outlined on the City of New Orleans website, online at: http://www.cityofno.com/

Administration and $77 million in federal fund matching for roadway projects. Three of the recovery areas are located in the project area. Redevelopment areas or corridors have been mapped for Harrison Avenue, from Canal Boulevard to City Park, and Gentilly Boulevard at Elysian Fields. Robert E. Lee at Paris Avenue is slated for renewal, specifically Lake Terrace Center improvements.

In addition, the New Orleans City Planning Commission (NOCPC) prepared a citywide Master Plan, *Plan for the 21st Century: New Orleans 2030*, which draft was released in January 2010 (NOCPC 2010). The Master Plan involved an extensive public consultative process and underwent a series of public hearings and approvals. As currently envisioned, the Master Plan outlines 10 transit hub neighborhood centers across the city, with 5 of those centers located in the project area. The plan outlines a park within walking distance of every resident, increased public transportation alternatives, better roads and sidewalks, congruity between neighborhoods and new development, as well as a framework for community decision-making (NOCPC 2010).

The commission unanimously approved the Master Plan in January and sent it to the City Council for approval (Eggler 2010a). However, upon review, the City Council sent the Master Plan back to the commission for revisions in June 2010, where the process currently stands (Eggler 2010b). Two amendments to the New Orleans City Charter, approved by voters in November 2008, dictate how implementation of the Master Plan will take place. The first amendment provides the City Council 45 days to approve the plan once it receives the commission's amended version. If the City Council refuses to act within that time, the version of the plan adopted by the commission in January will take effect (Eggler, 2010b). The second amendment to the City Charter requires all zoning and land use requirements to conform to the Master Plan and also ties the City's Capital Improvement Program and annual capital budget to the plan (NOCPC 2010). This amendment essentially provides the Master Plan with the force of law.

The State and municipal plans outlined above represent the first long term community planning initiative ever undertaken by Louisiana and the first comprehensive land use plan developed for a Louisiana city. As detailed in sections 3.3.1.1 – 3.3.1.3, both the city and the region have experienced continued population growth, reaching 76 percent and 89 percent of pre-Katrina levels respectively. The share of employers in the region reached 97 percent (MSA) and 80 percent (New Orleans) of 2005 levels; while the labor force has reached 84 percent of pre-Katrina levels (MSA). There remain gaps in economic base and public services between Jefferson Parish and Orleans Parish however. While the State and municipal plans provide strategic frameworks for recovery, there are many such gaps in the short term. These gaps include property valuation, insurance availability, and the impacts of Deep Water Horizon Disaster, making further extrapolation of these indicators as to direction and size of project area and regional growth unreliable.

3.3.1.5 Health and Safety

Jefferson Parish

There are 15 open state-licensed hospitals in Jefferson Parish, up from 14 hospitals Pre-Katrina. The major hospitals serving East Jefferson Parish include Ochsner Kenner, East Jefferson Medical Center, and Tulane Lakeside. There are 12 primary clinics serving Jefferson Parish.

The four police districts, or stations, serving Jefferson Parish are also fully operational.

Orleans Parish

Orleans Parish has retained only 52 percent of state-licensed hospitals, from 23 in 2004 to 12 open in June 2009. The major hospitals open in Orleans Parish East include Children's Hospital,

Touro, Ochsner Baptist, Tulane University, and Medical Center of Louisiana (MCL) in New Orleans-previously known as Charity Hospital in New Orleans. Charity Hospital, the largest charity hospital in the region, remains closed. There are 15 primary care clinics serving Orleans East Bank.

Seven police stations are open in Orleans East Bank. The Lakeview District, Bywater District, and Mid-City District all have a single police station operating out of a FEMA trailer, with Mid-City also hosting police headquarters in a FEMA trailer. The Garden District and French Quarter have police stations still in need of repair. There is one fully operational station in the French Quarter.

3.3.2 Discussion of Impacts

The social and economic considerations discussed in this section are those immediately within the proposed project site and rights-of-way. Quantified estimates of impacts to employment, income, and local tax base immediately within the IER rights-of-way and areas immediately adjacent to the potential project sites are not available for the alternatives analysis.

3.3.2.1 No Action Alternative

Direct Impacts

Under the no action alternative, remediation of canal walls within the outfall canals located along 17th Street, Orleans Avenue, and London Avenue would not be implemented. Without implementation of the proposed action, the current levees would not meet current seepage, deflection and stability criteria, for current or future operational capacities in these canals. Under this alternative, the project area and surrounding neighborhoods would be at increased risk for storm-related flooding and the associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents. Short term and long term direct major adverse socioeconomic impacts would incur from the costs as associated with evacuation, clean-up, debris removal, building and infrastructure repair, vehicular damage, and re-occupation of homes and businesses.

The recovery of the labor force, specifically in Orleans Parish, has been linked to 1) the availability and affordability of housing and 2) the confidence of the population in the reconstruction process, which influences their desire to live in the project area (Brookings, 2007; LSU, 2007). These conditions are contingent upon the level of flood and hurricane protection. Short term and long term direct major adverse impacts might occur if the available housing units in the ROI were further reduced by storm events and associated flooding. Although there is no current data regarding the confidence of the population, it is anticipated that the level of risk associated with the no action alternative would be perceived as greater than that of the proposed action alternative.

Indirect Impacts

The project area sustained a significant amount of damage from Hurricane Katrina and, as described in section 3.3.1, still faces a shortage in labor force, housing, and public services, as compared with pre-Katrina levels. The local economy has been impacted by having to invest in local infrastructure repairs and relocations as opposed to development and expansion. With implementation of the no action alternative, flood risk would be greater relative to the proposed action, which would adversely influence the rate of redevelopment within the local area. The permanent pump stations and existing pump stations located on each canal would be maintained so as not to exceed the existing operational water level.

Cumulative Impacts
Present and future construction and construction related activities have resulted in temporary short-term increases in traffic congestion, disruption of traffic patterns and elevated noise levels in the project area. The incremental addition of the no action alternative presents fewer short term impacts from construction activities than the Proposed Action. The no action alternative poses an increased risk to the socioeconomic resilience of the New Orleans MSA.

3.3.2.2 Proposed Action
Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct Impacts
Implementing the proposed action would result in temporary direct impacts to some properties necessary for staging and construction access. The vacant lots would be utilized to store equipment and materials necessary for construction, but would be returned to their preconstruction conditions once construction commenced. Construction activities associated with this alternative would provide temporary jobs and would increase the level of spending, labor and capital expenditures in the ROI temporarily.

Increased flood protection would occur under this alternative, as the risk of street flooding posed to housing units and businesses in the project area is reduced in comparison to the no action alternative. Increasing the stability of the canal would improve its carrying capacity and afford the SWBNO to maintain current pumping operations. This alternative decreases the storm-related flooding and the associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents described under the no action alternative.

Indirect Impacts
A significant amount of construction would be required, which would have a short term minor adverse impact due to temporary road closures and increased traffic in the project area. Road closures and increased traffic described in 3.2.10 Traffic and Transportation could impact project area commerce and traffic patterns. Local traffic within the neighborhoods would be impacted by increased traffic related to the construction activities. As roads are closed and congestion occurs the potential, traffic within the neighborhoods would increase as well as the potential for an increase in traffic accidents. Residents would be temporarily impacted by the construction activities in the neighborhood associated with increased noise levels, operations of construction equipment, air emissions and construction personnel in and around their residences. Operating hours would be expected to occur from sunrise to sunset, 7 days per week which would temporarily disrupt the community quality of life.

Cumulative Impacts
The cumulative effect of the proposed action combined with all the other projects in the study area on human, economic, and community resources would be both beneficial due to the decreased risks of flood damage from storm surge were reduced as the operational water level is increased and adverse resulting from the increased traffic congestion, noise and air pollution. The New Orleans MSA would experience elevated noise levels, increased traffic, and other effects from the large number of HSDRRS construction projects, but the overall economy could benefit from a temporary economic stimulus resulting from the construction.

3.4 Environmental Justice

Environmental Justice (EJ) is institutionally significant because of Executive Order 12898 of 1994 (E.O. 12898) and the Department of Defense's Strategy on Environmental Justice of 1995, which direct Federal agencies to identify and address any disproportionately high adverse human health or environmental effects of Federal actions to minority and/or low-income populations.

Minority populations are those persons who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, and Pacific Islander. A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations as of 2000 are those whose income is $22,050.00 for a family of four and are identified using the Census Bureau's statistical poverty threshold. The Census Bureau defines a "poverty area" as a Census tract with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level. This is updated annually at http://aspe.hhs.gov/poverty/09poverty.shtml.

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

A potential disproportionate impact may occur when the percent minority (50 percent) and/or percent low-income (20 percent) population in an EJ study area are greater than those in the reference community. For purposes of this analysis, all Census Block Groups within a one mile radius of the project footprint are defined as the EJ study area. The HSDRRS project, of which this IER study area is a subset, is considered the reference community of comparison, whose population is therefore considered the EJ reference population for comparison purposes. Parish figures were used for unincorporated areas located within one mile of the proposed project footprint.

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

- Census 2000 data is the most accurate source of data available due to the sample size of the Census decennial surveys. With one of every six households surveyed, the margin of error is negligible.

- The Census reports data at a much smaller geographic level than other survey sources, providing a more defined and versatile option for data reporting.

- Census information sheds light upon the demographic and economic framework of the area pre-Hurricane Katrina. By accounting for the absent population, the analysis does not exclude potentially low income and minority families that wish to return home.

Due to the considerable impact of Hurricane Katrina upon the New Orleans metropolitan area, and the likely shift in demographics and income, the 2000 Census data are supplemented with more current data, including 2007 and 2008 estimates provided by ESRI. The 2007 and 2008 estimates are utilized for reference purposes only to show changing trends in population since 2000.

3.4.1 Existing Conditions

For purposes of this analysis, Parish figures were used for unincorporated areas in addition to towns located within 1-mile of the project footprint are defined as the EJ study area. Each parish or county is considered the reference community for disproportionate impact analysis. The 2000 census data is utilized as the primary deciding variable per data accuracy and reliability as described above. The 2008 estimates are utilized for reference purposes only. Since the project areas under this IER are located in multiple parishes and/or counties the EJ study areas are described separately as follows.

The 17th Street Canal, Orleans Avenue Canal, and London Avenue Canal directly affect the neighborhoods within the Planning Districts 1 through 7, which include Gentilly, Lakeview, Mid City, Uptown/Carrollton, Bywater, French Quarter/Central Business District, and Central City/Garden District. These planning districts were defined by the City of New Orleans in 1999 as a part of the 1999 Land Use Plan, and their geographic boundaries can be viewed through the GNOCDC's website (www.gnocdc.org).

According to the 2000 Census (SF1 P4 and SF3 P87 files), the majority of these neighborhoods can be defined as low income and/or minority communities. The minority population for Planning Districts 1 through 7, which includes all persons who define themselves as Black/African American, Asian, Native American/Alaska Native, Pacific Islander/Native Hawaiian, Other, Two or More Races, and persons of Hispanic descent, was 66.3 percent, and the poverty rate was 28.7 percent, far greater than the state's poverty rate of 19.6 percent or the New Orleans metro area's poverty rate of 18.4 percent.

The 2008 estimates produced by ESRI Inc. suggest that the Orleans East Bank's population has a higher income and a smaller minority population than what is reported in the 2000 Census. It is unlikely this change will be permanent, as many of the displaced residents that intend to return are lower income and minority households. So long as state recovery efforts are successful in their mission of bringing back displaced families who wish to return, the current demographic and income profile of Orleans East Bank will shift closer to its pre-Katrina profile. Even with the demographic and income changes of the area due to Hurricane Katrina, the ESRI estimates indicate that Orleans East Bank remains a minority and lower income community.

3.4.2 Discussion of Impacts

3.4.2.1 No-Action Alternative

Direct Impacts

Under the no action alternative, current conditions would remain, with no remediation efforts along the canals, which could restrict how quickly water could be evacuated from surrounding streets. Minority and/or low-income communities and businesses have been identified in the study area and may be impacted by the no action alternative, however the impacts would not be disproportionate, as all population groups and communities in the project area could be impacted. As a result of the overall consideration, it has been determined that no disproportionately high or adverse human health or environmental effects on minority or low-income populations would occur.

Indirect Impacts

Under the no action alternative, not providing additional construction for flood risk reduction measures may cause undetermined indirect impacts to residents and businesses; however no disproportionately high or adverse human health or environmental indirect impacts on minority or low-income populations would occur as any indirect impacts would affect all population groups within the community.

Cumulative Impacts
Cumulative impacts on minority and/or low-income communities within the study area would be the additive impacts from no action and other Federal, state, local and private restoration and protection efforts for this and other IER projects per 2000 U.S. Census information and requirements of E.O. 12898.

3.4.2.2 Proposed Action

Direct, indirect, and cumulative impacts would be similar for each outfall canal as discussed below.

Direct Impacts
Short-term increases in impacts due to construction activities would be expected, with impacts to the community considered minimal. Temporary road closures and additional impacts would return to its normal condition upon project completion. The proposed action would not be expected to have disproportionate impacts on minority or low-income populations.

Indirect Impacts
Indirect impacts would be similar to those in direct impacts. Temporary construction related activities would return to normal after the construction.

Cumulative Impacts
Cumulative impacts for the proposed action will be similar to those impacts discussed in the no action alternative.

3.5 Hazardous, Toxic, and Radioactive Waste

Under Engineer Regulation (ER) 1165-2-132 the reasonable identification and evaluation of Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within a proposed area of construction is required. ER 1165-2-132 identifies the CEMVN HTRW policy to avoid the use of project funds for HTRW removal and remediation activities. Costs for necessary special handling or remediation of wastes (e.g., Resource Conservation and Recovery Act [RCRA] regulated), pollutants and other contaminants, which are not regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), will be treated as project costs if the requirement is the result of a validly promulgated Federal, state or local regulation.

3.5.1 November 2006 Phase I ESA Reports

In March 2006, sediments within the three outfall canals were sampled and analyzed. The results of the this effort were reported by Gulf Engineers & Consultants (Certified Industrial Hygienist investigation, Orleans Avenue, London Avenue and 17th Street Outfall Canals. Orleans Parish, Louisiana, 21 March 2006). A copy of the report is maintained on file at the CEMVN. Sites of Concern (SOCs) and Constituents of Concern (COCs) were identified in the report. SOCs near the 17th Street Canal contained COCs of ignitable waste, silver, petroleum products, cadmium, dichlorobenzene, benzene, tetrachloro-ethylene, lead, and trichloroethylene. COCs identified at the SOCs near the Orleans Avenue Canal include petroleum products, benzene, and ignitable waste. COCs identified at the SOCs near the London Avenue Canal include petroleum products, trinitrobenzene, lead, methyl benzenamine, bromoform, dimethyl-benzene, benzyl chloride, benzisothiazol, cadmium, arsenic, dinitrotoluene, mercury, chromium, sodium cyanide, selenious acid, reactive waste, hydrazine, mercury, arsenic oxide, corrosive waste, ignitable waste, cresol, napthalenamine, phenol, and petroleum products.

An American Society for Testing and Materials (ASTM) E 1527-05 Phase I Environmental Site Assessment (ESA) was completed for each of the three outfall canals in November 2006 (GEC 2006b, 2006c, 2006d). A copy of the Phase I ESAs is maintained on file at the CEMVN. The Phase I ESA evaluated SOCs within one-eighth mile of the centerline of the 17th Street, Orleans Avenue, and London Avenue Canals and identified the findings of the previous CIH Investigation as the Recognized Environmental Concerns (RECs) for the canals. If a REC cannot be avoided, because of the necessity of construction requirements, the CEMVN may further investigate the REC; to confirm presence or absence of contaminants, actions to avoid possible contaminants, and if local, state or Federal coordination is required. Because the CEMVN plans to avoid RECs, the probability of encountering HTRW in the project area is low.

Copies of the CIH Report and the Phase I Reports are available at www.nolaenvironmental.gov.

3.5.2 Phase I ESA Update Reports

The three outfall canals were inspected to assess current conditions and to determine if any changes have occurred since the November 2006 Phase I ESAs. The following Phase I ESA updates were prepared following inspection of the canals on 3 January 2008. The updates included visual inspection and review of environmental data. Relevant and significant findings and recommendations are summarized below.

3.5.2.1 Phase I ESA Update Report – 17th Street Canal

Changes since the 2006 ESA include the completion of construction of a canal closure structure at the outlet of the canal into Lake Pontchartrain. Six aboveground storage tanks (ASTs), approximately 10,000 gallons each, are at the canal closure structure. In addition, an approximately 1,000-gallon AST was observed at the canal closure structure. Three different areas containing formerly leaking underground storage tanks (LUST) are along the project corridor, multiple PCB-containing transformers were also observed. March 2006 sampling documentation provided by the USACE indicated that sediments in the canal outlet contained lead, polycyclic aromatic hydrocarbons, and petroleum contamination.

3.5.2.2 Phase I ESA Update Report – Orleans Avenue Canal

Changes to the site since 2006 include the completion of construction of a canal closure structure. The area surrounding the site to the west is mostly residential land with intermittent public and commercial lands. Investigation findings included two approximately 3,000-gallon unused ASTs that are scheduled for removal and two additional ASTs approximately 10,000-gallons in capacity near a canal closure structure. A heavily used oil-absorbent barrier was also observed traversing the canal. Multiple PCB-containing transformers were also observed. March 2006 sampling documentation provided by the USACE indicated that sediments in the canal contained lead and petroleum contamination.

3.5.2.3 Phase I ESA Update Report – London Avenue Canal

Changes since the 2006 ESA include the completion of construction of a canal closure structure south of the outlet of the canal into Lake Pontchartrain. Four ASTs, approximately 10,000-gallons each, are at the canal closure structure and two oil-absorbent barriers were observed traversing the canal. Other observations included two approximately 3,000-gallon ASTs, which appeared to be in disrepair or possibly unused and one approximately 1,000-gallon AST containing diesel. March 2006 sampling documentation provided by the USACE indicated that sediments in the canal outlet contained lead and petroleum contamination.

3.5.3 March 2009 Limited Phase II ESA Reports

An American Society for Testing and Materials (ASTM) E 1903-97 Phase II ESA was completed for each of the three permanent pump station locations on the outfall canals in March

2009 (SPA-MMG 2009). A copy of the Phase II ESAs is maintained on file at the CEMVN. This Limited Phase II Assessment included sediment sampling of the proposed permanent pump station locations for each of the three outfall canals.

COCs within the canal sediments were compared with the state of Louisiana RECAP Standards for evaluation of the risk to human health and the environment. While the RECAP Screening Standards are not directly applicable to the sediment matrix, the standards provide a good indication of the level of contamination and associated risk of chemical concentrations in the sediments. COC concentrations of low risk were determined to exist at each in the sediment in each of the canals. SOCs near the 17th Street Canal contained COCs of trichloroethylene TPH-D, TPH-O, benz(a)anthracene, benzo(a)pyrene, benzo(k)fluoranthene, phenanthrene, pyrene, carbon disulfide, arsenic, barium, chromium, and lead. COCs identified at the SOCs near the Orleans Avenue Canal include petroleum products, benzo(k)fluoranthene, arsenic, barium, chromium, and lead. COCs identified at the SOCs near the London Avenue Canal include TPH-D, TPH-O, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, n-nitrosodi-n-propylamine,4,4'-DDT, arsenic, barium, chromium, and lead.

Copies of the Phase II ESAs are at www.nolaenvironmental.gov.

3.5.4 Addendum to the Phase I ESA Reports

The three outfall canals were inspected to assess current conditions and to determine if any changes have occurred since the November 2006 Phase I ESAs. The following Phase I ESA Addendums were prepared following inspection of the canals on 14 April 2009. The inspections included visual inspection and review of environmental data. Relevant and significant findings and recommendations are summarized below.

Phase I ESA Report Addendum – 17th Street Canal

Changes since the 2006 ESA include the completion of construction of a canal closure structure at the outlet of the canal into Lake Pontchartrain. Four ASTs, of 20,000 gallons each, are located at the temporary pump station. The March 2009 sediment sampling report provided by SPA-MMG indicated that sediments in the canal outlet, in the area the where permanent pump station will be constructed, contain low concentrations of lead, polycyclic aromatic hydrocarbons, and petroleum. No contaminants were detected above the limiting RECAP screening standard(s).

3.5.4.1 Phase I ESA Report Addendum – Orleans Avenue Canal

Changes to the site since 2006 include the completion of construction of a canal closure structure. The area surrounding the site to the west is mostly residential land with intermittent public and commercial lands. Investigation findings included two ASTs, of 20,000-gallons in capacity, located at the pump station. The March 2009 sampling report provided by the SPA-MMG indicated that sediments, where permanent pump station will be constructed, contain low levels of benzo(k)fluoranthene, arsenic, barium, chromium, and lead, that are all below the limiting RECAP screening standard(s).

3.5.4.2 Phase I ESA Report Addendum – London Avenue Canal

Changes since the 2006 ESA include the completion of construction of a canal closure structure south of the outlet of the canal into Lake Pontchartrain. Two ASTs, of 20,000-gallons each, and two ASTs, of 14,000-gallons each, are located at the pump station. The March 2009 sediment sampling report provided by the SPA-MMG indicated that sediments in the canal outlet, where permanent pump station will be constructed, contain low levels of petroleum, arsenic, barium, chromium, and lead contamination. No contaminants were detected above the limiting RECAP screening standard(s).

An ASTM E 1527-05 Phase I Environmental Site Assessment (ESA) was completed for each outfall canal. A copy of the Phase I ESA referenced below will be maintained on file at the CEMVN office in New Orleans, and are incorporated herein by reference. Copies of the report are available by requesting them from the CEMVN, or accessing them at www.nolaenvironemtal.gov.

The Phase I ESA documented the Recognized Environmental Conditions (REC) for the proposed project areas. If a REC cannot be avoided, due to the necessity of construction requirements, the CEMVN may further investigate the REC to confirm presence or absence of contaminants, actions to avoid possible contaminants. Federal, state, or local coordination may be required. Because the CEMVN plans to avoid RECs the probability of encountering HTRW in the project area is low.

4. CUMULATIVE IMPACTS

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. A cumulative impact is defined as the "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR §1508.7)." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

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. Additionally, the draft CED will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review. Overall cumulative impacts and future operations and maintenance requirements will also be included. The discussion provided below describes an overview of other actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed.

This section describes the cumulative impact analysis methodology; details the projects that compose the past, present, and future actions considered in the analysis; and provides a summary of the cumulative impacts that were discussed in sections 3.2, 3.3, 3.4, and 3.5.

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 items (Klein and Kingsley 1994) are guidelines used for the cumulative impact analyses in this document:

- Proximity of the projects to each other either geographically or temporally
- Probability of actions affecting the same environmental resource, especially systems that are susceptible to development pressures
- Likelihood that the project will lead to a wide range of effects or lead to a number of associated projects
- Whether the effects of other projects are similar to those of the project under review
- Likelihood that the project will occur
- Temporal aspects, such as the project being imminent

4.2 Descriptions of Projects Considered

The Metropolitan New Orleans HSDRRS is divided into three authorized project areas: LPV; WBV; and New Orleans to Venice (NOV). The set of projects for improved protection on the three outfall canals that is the subject of this analysis are located within the LPV project; therefore, projects within the WBV and the NOV areas have not been included in the cumulative analyses because they are not within the geography of the study area and are not expected to cause an impact, cumulative or otherwise, on the majority of the significant resources addressed in this IER. Note, however, that the WBV and NOV projects would be expected to have a cumulative impact on regional resources such as transportation networks, medical and other regional facilities, and the economy of the area. These cumulative impacts will be more thoroughly discussed in the CED.

The CEMVN has proposed numerous projects to improve the LPV HSDRRS to the 100-year level of hurricane protection. The majority of the 100-year levels of hurricane protection projects are currently in the planning and design stages, and impacts from these component projects will be addressed in separate IERs. These projects all occur within the greater New Orleans area, within the Lake Pontchartrain Basin, and within the designated coastal zone for Louisiana, so these projects were considered collectively (as appropriate) when evaluating cumulative impacts.

Additionally, the CEMVN is planning large-scale mitigation IERs to plan mitigation for impacts caused by these hurricane protection projects and numerous IERs evaluating the impacts of borrow acquisition projects to support the LPV and WBV HSDRRS projects.

A summary of the project features that fall within the project vicinity is provided below.

- **IER #3 – LPV, Jefferson East Bank (2008).** Investigated the potential impacts associated with rebuilding of 9.5 miles of earthen levees, upgrading the foreshore protection, replacing two floodgates, and constructing fronting protection for four pump stations in Jefferson Parish.

- **IER #4 – LPV, Orleans East Bank, New Orleans Lakefront Levee, West of IHNC to East bank of 17th Street Canal, Orleans Parish, Louisiana (2009).** Investigated improvement of the levees and floodwalls extending from the 17th Street Canal to the IHNC. It also investigates the improvement, replacement or removal of the Bayou St. John Sector Gate.

- **IER #5, Permanent Protection System for the 17th Street, Orleans Avenue, and London Avenue Canals (2009).** Investigated the potential impacts associated with the construction and maintenance of a permanent protection system for the 17th Street, Orleans Avenue, and London Avenue Canals.
- **IER # 6, Lake Pontchartrain and Vicinity, New Orleans East Citrus Lakefront Levee, Orleans Parish, Louisiana (2009).** The document evaluates the potential effects associated with proposed improvements to three reaches of the East Orleans Hurricane Risk Reduction Levee that were originally constructed as part of the LPV project.
- **IER # 7, Lake Pontchartrain and Vicinity, New Orleans Lakefront to Michoud Canal, Orleans Parish, Louisiana (2009).** The document evaluates the potential effects associated with proposed improvements to three reaches of the East Orleans Hurricane Risk Reduction Levee that were originally constructed as part of the LPV project.
- **IER #11, Improved Protection on the Inner Harbor Navigation Canal, Tier 1, Orleans and St. Bernard Parishes, Louisiana (2008).** The document was prepared to evaluate

potential impacts associated with building navigable and structural barriers to prevent storm surge from entering the Inner Harbor Navigation Canal from Lake Pontchartrain and/or the Gulf Intracoastal Waterway-Mississippi River Gulf Outlet-Lake Borgne complex. This document also cites specific prior reports for MRGO projects and Coastal Wetlands Planning Protection Restoration projects.

- **IER #11, Tier 2, Pontchartrain for Improved Protection on the Inner Harbor Navigation Canal (IHNC), Orleans Parish, Louisiana.** This IER was prepared as a second tier evaluation for the portion of the flood risk reduction project that occurs near Lake Pontchartrain and is referred to as "Tier 2 Pontchartrain." This document provides an evaluation of the potential impacts associated with the proposed construction of a storm surge risk reduction structure on the IHNC where it meets Lake Pontchartrain.
- **EA #474, Orleans Parish Pump Stations Stormproofing Activities (2009).** This EA was prepared to evaluate stormproofing activities for 22 Orleans Parish pump stations, the Carrollton Frequency Changer Building, the Old River Intake Station, the New River Intake Station, and the Carrollton Water Plant and Power Complex. It was concluded that the proposed action would have no significant impact on the human environment.
- **EA #475, Jefferson Parish Pump Station Stormproofing Activities (2009).** This EA was prepared to evaluate stormproofing activities for 21 of the existing drainage pump stations in Jefferson Parish, Louisiana. It was concluded that the proposed action would have no significant impact on the human environment.

4.3 Summary of Cumulative Impacts

This analysis establishes the magnitude and significance of cumulative impacts by comparing the existing environment with the expected impacts of the alternative considered in the proposed action when combined with the impacts of other proximate actions. The primary impact of the HSDRRS projects discussed in section 4.2 is that low-lying areas on the protected side of the HSDRRS would experience reduced storm surge flooding impacts. Those projects in combination with the IER #27 proposed action would significantly reduce storm surge-induced flooding from Lake Pontchartrain and protect the neighborhoods and commercial businesses in the vicinity of the three outfall canals. These HSDRRS projects would provide a 100-year level of risk reduction that has previously not existed in the area. The maximum operational water level increase of the three remediated outfall canals would also provide a risk reduction.

Short-term localized impacts to water quality in Lake Pontchartrain could occur during construction of this remediation and the HSDRRS projects. A temporary increase in the concentration of fine sediments within the water column due to upland erosion or sediment disturbance could lead to increased turbidity and possible reductions in DO levels in the vicinity of the projects. These impacts in turn could affect Gulf sturgeon habitat and EFH. Implementing construction BMPs and SWPPPs would help reduce these potential impacts. These impacts would be expected to cease after constructing this remediation and the HSDRRS features.

Temporary impacts to the local traffic and transportation network in the project area would be expected during construction of the HSDRRS projects. Impacts would include increased traffic due to construction vehicles and temporary detours and road closures. The impacts would be expected to be temporary and the traffic and transportation network would return to normal operation after constructing this remediation and the HSDRRS features. It should be noted that temporary impacts to the transportation network from other federal and non-federal projects, such as the submerged roads program, could continue after completion of IER #27.

Temporary impacts to noise and air quality would be expected during construction of this remediation and the HSDRRS projects. Because of the close proximity of residences and businesses, noise and air quality levels would be expected to exceed local ordinances but would be expected to return to normal levels upon completion of this remediation and the HSDRRS projects. It should be noted that noise levels from other federal and non-federal projects could continue to temporarily impact noise and air quality after completion of IER #27.

Table 16 provides a summary of the cumulative wetland and bottomland hardwood impacts to be mitigated for the HSDRRS projects completed (draft or final) to date. In addition to the impacts shown in table 16, 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. Impacts associated with IER #27would not contribute additional cumulative impacts to wetlands and bottomland hardwoods to those IERs listed in table 16.

Table 16 - HSDRRS Impacts and Compensatory Mitigation to be Completed

IER	Parish		Non-wet BLH	Non-wet BLH	BLH (acres)	BLH AAHUs	Swamp (Acres)	Swamp AAHUs	Marsh (Acres)	Marsh AAHUs	Water Bottoms (Acres)
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
1 LPV, La Branch Wetlands Levee	St. Charles	Protected Side	-	-	-	-	137.50	73.97	-	-	-
		Flood Side	-	-	11.33	8.09	143.57	110.97	-	-	
1 Supplemental LPV, La Branch Wetlands Levee	St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
2 LPV, West Return Floodwall	St. Charles, Jefferson	Protected Side	-	-	-	-	-	-	-	-	75.00
		Flood Side	-	-	-	-	-	-	17.00	9.00	
2.a Supplemental LPV, Jefferson East Bank	Jefferson, St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	2.00	1.55	16.50	11.45	
3 LPV, Jefferson Lakefront Levee	Jefferson	Protected Side	-	-	-	-	-	-	-	-	26.40
		Flood Side	-	-	-	-	-	-	-	-	
3.a Supplemental LPV, Jefferson East Bank	Jefferson	Protected Side	-	-	-	-	-	-	-	-	277
		Flood Side	-	-	-	-	-	-	-	-	
4 LPV, Orleans Lakefront Levee	Orleans	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
5 LPV, Lakefront Pump Stations	Jefferson, Orleans	Protected Side	-	-	-	-	-	-	-	-	3.29
		Flood Side	-	-	-	-	-	-	-	-	
6 LPV, Citrus Lands Levee	Orleans	Protected Side	-	-	-	-	-	-	-	-	6.90
		Flood Side	-	-	-	-	-	-	4.00	-	
7 LPV, Lakefront	Orleans	Protected Side	-	-	151.70	79.30	-	-	100.40	36.80	106.00

IER	Parish		Non-wet BLH	Non-wet BLH	BLH (acres)	BLH AAHUs	Swamp (Acres)	Swamp AAHUs	Marsh (Acres)	Marsh AAHUs	Water Bottoms (Acres)
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
Levee		Flood Side	-	-	30.00	11.90	-	-	70.00	37.20	
7 Supplemental LPV, Lakefront Levee	Orleans	Protected Side	-	-	17.00	9.90	-	-	18.60	6.10	12.49
		Flood Side	-	-	2.80	0.30	-	-	56.00	29.80	
8 LPV, Bayou Dupre Control Structure	St. Bernard	Protected Side	-	-	-	-	-	-	-	-	0.30
		Flood Side	-	-	-	-	-	-	-	-	
9 LPV, Caernarvon Floodwall	Orleans, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	10.00	4.65	1.16	0.66	-	-	1.90	1.20	
10 LPV, Chalmette	St. Bernard	Protected Side	-	-	38.32	16.44	-	-	106.55	57.31	95.00
		Flood Side	-	-	35.31	15.22	-	-	323.04	209.94	
11 Tier 2 Borgne IHNC	Orleans, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	15.00	2.59	-	-	122.00	24.33	
11 Tier 2 Borgne Supplemental IHNC	Orleans, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
11 Tier 2 Pontchartrain IHNC	Orleans	Protected Side	-	-	-	-	-	-	-	-	7.00
		Flood Side	-	-	-	-	-	-	-	-	
12 GIWW, Harvey, Algiers	Jefferson, Orleans, Plaquemines	Protected Side	-	-	251.70	177.3	-	-	-	-	-
		Flood Side	-	-	2.30	1.90	74.90	38.50	-	-	
13 Hero Canal and Eastern Tie-In	Plaquemines	Protected Side	-	-	13.00	7.80	-	-	-	-	-
		Flood Side	-	-	19.00	10.59	39.00	28.27	-	-	
14 WBV, Westwego to Harvey Levee	Jefferson	Protected Side	-	-	45.00	30.00	-	-	-	-	-
		Flood Side	-	-	45.50	37.17	29.75	17.02	-	-	
14 Supplemental WBV, Westwego to Harvey Levee	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	42.00	24.00	-	-	

IER	Parish		Non-wet BLH	Non-wet BLH	BLH (acres)	BLH AAHUs	Swamp (Acres)	Swamp AAHUs	Marsh (Acres)	Marsh AAHUs	Water Bottoms (Acres)
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
15 WBV, Lake Cataouatche Levee	Jefferson	Protected Side	-	-	23.50	6.00	-	-	-	-	-
		Flood Side	-	-	3.60	1.35	-	-	-	-	
16 WBV, Western Tie-in	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	78.60	36.20	-	-	137.80	66.30	
16 Supplemental WBV, Western Tie-in	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	79.10	34.18	-	-	-	-	
17 Company Canal Floodwall	Jefferson	Protected Side	-	-	5.50	2.69	-	-	-	-	-
		Flood Side	-	-	-	-	19.00	17.09	-	-	
18 GFBM	Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles	Protected Side	276.90	89.29	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
19 CFBM	Hancock County, MS; Iberville, Jefferson, Orleans, Plaquemines, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
22 GFBM	Jefferson, Plaquemines	Protected Side	86.93	28.90	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
23 CFBM	Hancock County, MS; Plaquemines, St. Bernard, St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
25 GFBM	Jefferson, Orleans, Plaquemines	Protected Side	854.70	243.10	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
26 CFBM	Jefferson, Plaquemines, St. John the Baptist; Hancock County, MS	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
28 GFBM	Jefferson, Plaquemines, St. Bernard	Protected Side	19.10	11.60	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
29 CFBM	Orleans, St. Tammany, St. John the Baptist	Protected Side	107.30	48.60	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	

IER	Parish		Non-wet BLH	Non-wet BLH	BLH (acres)	BLH AAHUs	Swamp (Acres)	Swamp AAHUs	Marsh (Acres)	Marsh AAHUs	Water Bottoms (Acres)
			acres	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*	*AAHUs*	*acres*
30 CFBM	St. Bernard and St. James; Hancock, MS	Protected Side	225.00	189.40	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
32 CFBM	Ascension, Orleans, Plaquemines, St. Charles	Protected Side	195.00	96.20	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
Totals		Protected Side	1764.93	707.09	545.72	329.43	137.5	73.97	225.55	100.21	609.38
		Flood Side	10	4.65	323.7	160.15	350.22	237.4	748.24	389.22	
		Both	1774.93	711.74	869.42	489.58	487.72	311.37	973.79	489.43	609.38

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

GFBM: Government Furnished Borrow Material // CFBM: Contractor Furnished Borrow Material

The IER #27 proposed action and HSDRRS projects would have beneficial impacts to the region by reducing flood storm damage risk to residences, businesses, and infrastructure. This reduced risk would result in greater confidence in the storm protection system, which would aid in the recovery and rebuilding of the region. As confidence increases, more residents and businesses would be expected to return to the region, which would stimulate the local and regional economy by providing jobs, income, and increased economic growth.

5. SELECTION RATIONALE

The proposed action, a combination of deep soil mixing, net embankment increase/concrete slab, sheet pile cut-off walls, and stability berms, is the alternative most responsive to the project's purpose and need. It is an effective engineering solution that would minimize uncertainty and risk to acceptable levels in a reasonable period of time. The proposed action is compatible and would work in concert with other projects that have been completed, are in progress, or will be implemented to improve the damage reduction provided by the HSDRRS. The no action alternative would result in the least impacts to noise, dust, vibration, road closures, or visual impacts. However, the no action alternative does not meet the project's purpose and need of providing the 100-year level of hurricane risk reduction to the project area because it would restrict full operation of the SWBNO and HSDRRS pumping stations. As a result of not meeting the HSDRRS 100-year level of risk reduction, the no action alternative would have greater human impacts. Benefits to hydrology and socioeconomics experienced in the proposed action would not be present in the no action alternative. Therefore, it did not compare favorably with the proposed action, which is necessary to ensure that the canal walls can support the requirements of the Sewerage and Water Board of New Orleans (SWBNO) in removing rainwater from the city.

6. COORDINATION AND CONSULTATION

6.1 Public Involvement

The draft IER was distributed for a 30-day public review and comment period on September 2, 2010. Comments were received during the public review and comment period from Federal resource agencies, state resource agencies, a public utility and citizens (appendix B). A public meeting was held on September 16, 2010. The CEMVN District Commander reviewed public and agency comments, and interagency correspondence. The District Commander's decision on the proposed action is documented in the 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 D). This interagency environmental team was integrated with the CEMVN PDT to assist in the planning of this project and to complete a mitigation determination of the potential direct and indirect impacts of the proposed action. Monthly meetings with resource agencies were also held concerning this and other IER projects. The following agencies, as well as other interested parties, received copies of the 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

The CEMVN received a draft programmatic Coordination Act Report from the USFWS on 26 November 2007 (appendix E). The USFWS' programmatic recommendations applicable to this project would 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:

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

Programmatic CEMVN Response 1: No wetlands or non-wet bottomland hardwoods would be impacted by the proposed action.

Programmatic 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.

Programmatic CEMVN Response 2: The proposed action does not enclose any additional wetlands than is currently enclosed by the existing LPV Hurricane Protection System.

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

Programmatic CEMVN Response 3: Concur. No bald eagle nests have been recorded in or near the project area.

Programmatic 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.

Programmatic CEMVN Response 4: No forest clearing will occur with implementation of the proposed action.

Programmatic 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.

Programmatic 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.

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

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

Programmatic Recommendation 7: The CEMVN should avoid impacts to public lands, if feasible. If not feasible, the CEMVN should establish and continue coordination with agencies managing public lands that may be impacted by a project feature until construction of that feature is complete and prior to any subsequent maintenance. Points of contacts for the agencies overseeing public lands potentially impacted by project features are: Kenneth Litzenberger, Project Leader for the USFWS' Southeast National Wildlife Refuges, and Jack Bohannan (985) 822-2000, Refuge Manager for the Bayou Sauvage National Wildlife Refuge (NWR), Office of State Parks contact Mr. John Lavin at 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.

Programmatic CEMVN Response 7: No refuge or National Park property will be impacted by the proposed action.

Programmatic 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.

Programmatic CEMVN Response 8: Concur

Programmatic 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 E (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.

Programmatic CEMVN Response 9: Concur

Programmatic 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 USACE reinitiate coordination to ensure that the proposed project would not adversely affect any Federally-listed threatened or endangered species or their habitat.

Programmatic CEMVN Response 10: Concur

Programmatic 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.

Programmatic CEMVN Response 11: Estuarine dependent fisheries do not use the canals as migration routes.

Programmatic 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.

Programmatic CEMVN Response 12: Not applicable.

Programmatic 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, LDWF, and LDNR.

Programmatic CEMVN Response 13: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 14: Not applicable.

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

Programmatic CEMVN Response 15: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 16: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 17: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 18: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 19: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 20: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 21: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 22: Not applicable.

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

Programmatic CEMVN Response 23: Not applicable.

Programmatic 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.

Programmatic CEMVN Response 24: Construction of the project features are not cost shared between the Government and the non-Federal sponsor. However, costs for operation, maintenance, repair, replacement, and rehabilitation will be the responsibility of the non-Federal sponsor.

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

Programmatic CEMVN Response 25: Concur.

Programmatic Recommendation 26: A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the CEMVN, USFWS, NMFS, USEPA, LDNR, and LDWF.

That report should also describe future management activities, and identify any proposed changes to the existing management plan.

Programmatic CEMVN Response 26: Concur.

The U.S. Fish and Wildlife Service (USFWS) reviewed the proposed action to see if it would affect any threatened and endangered (T&E) species under its jurisdiction, or their critical habitat. The USFWS concurred with the CEMVN in a letter dated 13 August 2010 that the proposed action would not have adverse impacts on T&E species under its jurisdiction (appendix E).

Consultation with the NOAA National Marine Fisheries Service (NMFS) was not necessary for the proposed action due to it having no effect to any T&E species under their jurisdiction, or their critical habitat.

The Louisiana Department of Natural Resources (LDNR) reviewed the proposed action for consistency with the Louisiana Coastal Resource Program (LCRP). The proposed action was found to be consistent with the LCRP, as per a letter dated 21 July 2010 (appendix E).

Section 106 of the National Historic Preservation Act, as amended, requires consultation with the Louisiana State Historic Preservation Officer (LASHPO) and Native American tribes. LASHPO reviewed the proposed action and determined that it would not adversely affect any cultural resources (appendix E). Eleven Federally recognized tribes that have an interest in the region were given the opportunity to review the proposed action (appendix E). The Alabama-Coushatta Tribe concurred with the CEMVN in a letter dated 26 August 2010 that the preferred alternative would have no impacts to cultural resources (appendix E).

Recommendations of the USFWS, in accordance with the Fish and Wildlife Coordination Act, as per letter dated 19 August 2010 can be found in appendix E. The USFWS project-specific recommendations, in accordance with the Fish and Wildlife Coordination Act (appendix E), for IER #27 include:

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

CEMVN Response 1: Concur.

Recommendation 2: Any proposed change in the proposed project features, locations, or plans or to features associated with IER 5 or IER 27 shall be coordinated in advance with the Service, NMFS, LDWF, and LDNR.

CEMVN Response 2: Concur.

Recommendation 3: If the proposed project has not been construction within 1 year or if changes are made to the proposed project, the USACE should reinitiate the 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.

7. MITIGATION

Mitigation for unavoidable impacts to the human and natural environment described in this and other IERs will be addressed in separate mitigation IERs. The CEMVN has partnered with Federal and state resource agencies to form an interagency mitigation team that is working to assess and verify these impacts, and to look for potential mitigation sites in the appropriate hydrologic basin. This effort is occurring concurrently with the IER planning process in an effort to complete mitigation work and construct mitigation projects expeditiously. As with the planning process of all other IERs, the public will have the opportunity to give input about the proposed work. These mitigation IERs will, as described in section 1 of this IER, be available for a 30-day public review and comment period.

No impacts described in this IER as result of the proposed action have been identified that would require compensatory mitigation.

8. 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 will 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 T&E species, or completion of Endangered Species Act Section 7 consultation (appendix E); LDNR concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LCRP (appendix E); coordination with the LASHPO (appendix E); receipt and acceptance or resolution of all Fish and Wildlife Coordination Act recommendations (appendix E); and receipt and acceptance or resolution of all LDEQ comments on the water quality and air quality impact analysis documented in the IER.

9. CONCLUSIONS

9.1 Final Decision

The proposed action includes remediation of floodwalls along the three outfall canals (17th Street, Orleans Avenue and London Avenue) in Jefferson and Orleans Parish, Louisiana to strengthen the walls of the canals. Strengthening the walls of the canals is necessary to ensure that the canal walls can support the requirements of the SWBNO in removing rain water from the city. The strengthened walls shall provide necessary aqueducts to support the requirements of the Sewerage and Water Board of New Orleans (SWBNO) in removing rain water from the city unimpeded.

The CEMVN has assessed the environmental impacts of the proposed action and has determined that the proposed action would have impacts to significant resources (table 17).

Table 17 - Impacts from the Proposed Action

Significant Resource	Impacts from the Proposed Action
Waters of the United States	No impacts.
Wildlife	Short-term impacts possible during construction.
Threatened and Endangered Species	Short-term impacts possible during construction.
Cultural Resources	No impacts.
Recreational Resources	Short-term and localized impacts during construction.

Noise	Short-term and localized impacts during construction.
Air Quality	Short-term and localized impacts during construction.
Water Quality	No impacts.
Hydrology	Short-term impacts during construction, but beneficial long-term impact to the project area.
Aesthetics	Short-term and localized impacts during construction.
Traffic and Transportation	Short-term and localized impacts during construction.
Land Use	Short-term and localized impacts during construction.
Socioeconomic Resources	Short-term impacts during construction, but beneficial long-term impacts to the region.
Environmental Justice	No disproportionate impacts.
HTRW	No impacts.

9.2 Prepared By

The point of contact for preparing this IER is Laura Lee Wilkinson, CEMVN, Hurricane Protection Office. The address of the preparer is U.S. Army Corps of Engineers, New Orleans District; Planning, Programs, and Project Management Division, CEMVN-PM; P.O. Box 60267; New Orleans, Louisiana 70160-0267. Table 18 lists the preparers of the various sections and topics in this IER.

Table 18 - List of Preparers

Title/Topic	Team Member
Environmental Coordinator	Laura Lee Wilkinson, USACE
Technical Coordinator	Lee Walker, Evans-Graves Engineers
Review	Tim George, USACE Jennifer Darville, USACE Sandra Stiles, USACE Robert Northey, USACE
IER Project Manager	Dean Goodin, Tetra Tech
IER Deputy Project Manager	Benjamin Richard, Tetra Tech
Recreation	Andrew Perez, USACE
Cultural Resources	Mike Swanda, USACE
Threatened/Endangered Species	Laura Lee Wilkinson, USACE
Aesthetics	Kelly McCaffry, USACE
Environmental Justice	Jerica Richardson, USACE
Physical, Biological, and Socioeconomic Resources and Impacts	Crystal Braun, USACE Dean Goodin, Tetra Tech Marcus Colligan, Tetra Tech Hope Herron, Tetra Tech Benjamin Richard, Tetra Tech Nicole Janak, Tetra Tech Tim Lavallee, LPES Inc.

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APPENDIX A: LIST OF ACRONYMS AND DEFINITIONS OF COMMON TERMS

AAHU	Average Annual Habitat Unit
AQCR	Air-Quality Control Region
AQCR 106	Southern Louisiana-Southeast Texas Interstate AQCR
BGEPA	Bald and Golden Eagle Protection Act
BLH	Bottomland hardwood
BMP	Best Management Practice
BNOP	Bring New Orleans Back
BOD_5	5-day biochemical oxygen demand
CAA	Clean Air Act
CBVC	Coconut Beach Volleyball Complex
CED	Comprehensive Environmental Document
CEMVN	Mississippi Valley Division, New Orleans District
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
CO	Carbon Monoxide
CO_2	carbon dioxide
CPRA	Coastal Protection and Restoration Authority
CWA	Clean Water Act
dB	Decibels
dBA	A-weighted Decibels
DNL	Day-Night Sound Level
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ER	Engineering Regulation
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMC	Fishery Management Council
FONSI	Finding of No Significant Impact
GHG	greenhouse gases
GMFMC	Gulf of Mexico Fishery Management Council
GNOCDC	Greater New Orleans Community Data Center

GO	Gulf Opportunity Zone
HPS	Hurricane Protection System
HSDRRS	Hurricane and Storm Damage Risk Reduction System
HTRW	Hazardous, Toxic, and Radioactive Waste
Hz	Hertz
I-610	Interstate 610
ICS	Interim closure structure
IER	Individual Environmental Report
IHNC	Inner Harbor Navigation Canal
IPCC	Intergovernmental Panel on Climate Change
IPET	Interagency Performance Evaluation Task Force
L_{10}	sound level exceeded 10 percent of the time
LACPR	Louisiana Coastal Protection and Restoration project
LCRP	Louisiana Coastal Resource Program
LDEQ	Louisiana Department of Environmental Quality
LDHH	Louisiana Department Health and Hospitals
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
L_{eq}	Equivalent Sound Level
L_{max}	maximum sound level
LPBF	Lake Pontchartrain Basin Foundation
LPV	Lake Pontchartrain and Vicinity
LRA	Louisiana Recovery Authority
LSU	Louisiana State University
mi^2	Square mile
MSA	New Orleans Metro Statistical Area
NAAQS	National Ambient Air Quality Standard
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NOV	New Orleans to Venice
NO_x	Nitrous Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
NWRC	National Wetlands Research Center
PDT	Project Delivery Team
PL	Public Law

PM_{10} and $PM_{2.5}$	Particulate Matter
PPA	Project Partnership Agreement
PS	Pump Stations
REC	Recognized Environmental Condition
ROI	Region of Influence
ROW	Right-of-way
RPC	Regional Planning Commission
SELA	Southeast Louisiana Project
SO_2	Sulfur dioxide
SPH	Standard Project Hurricane
SWBNO	Sewerage and Water Board of New Orleans
SWPPP	Storm water Pollution Prevention Plan
tpy	Tons per year
$\mu g/m^3$	micrograms per cubic meter
UNO	University of New Orleans
UNOP	Unified New Orleans Plan
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WBV	West Bank and Vicinity
WRDA	Water Resources Development Act

APPENDIX B: PUBLIC COMMENT

Paul J. Hubbell, Jr.

9/9/10

West Jefferson Levee District
Mr. Jim Wilkinson
C/O Mr. Jerry Spohrer

RE: USACE transmittral
West Closure Complex

FYI:

Attached are copies of fax.

Respectfully,

Paul J. Hubbell, Jr.
pauljhubjr@gmail.com
504-831-2716

Cover Sheet

Paul J. Hubbell, Jr.

9/9/10
USACE
Attention: Patricia LeRoux
Re: Pumping Stations
(All under construction or planned/building projects)

Ms. LeRoux,

I called yesterday (9/8/10) concerning the West Closure Complex. Referring to an article in the TP on Sunday quoting Mr. Kevin Wagner, I explained that some alternative solutions might exist. The person I spoke with was going to contact Mr. Wagner and call me back. Possibly, that wasn't able to be accomplished. However, I am faxing the information and sketches that I think should be considered.
One option is already included in my patent pending application # 61/199,428 (Publication No. US 2010=0143037 A-1 and which the USACE already has via Colonel Edward Fleming (8/20/10). That refers to IER 27.
The other options relate to the West Closure Complex at present, but not limited in application and can apply to similar projects elsewhere..
I appreciate the opportunity to comment.

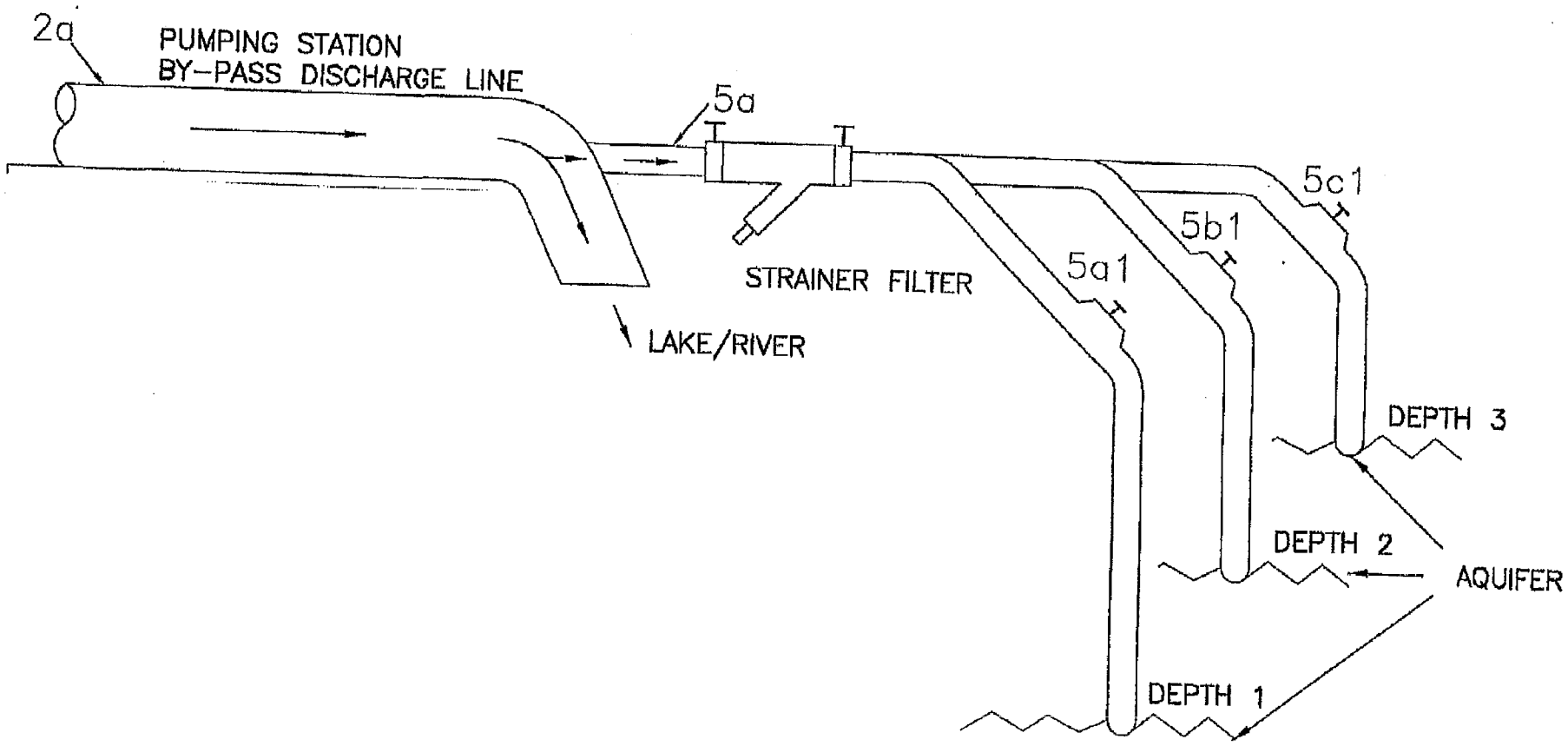
Respectfully,

Paul J. Hubbell, Jr.
pauljhubjr@gmail.com
504-831-2716
CC: Mr. Jim Wilkenson
SELA/West Jefferson Levee District

FOR IER 27

PATENT PENDING
№ 61/188,428
PUB. № US2010-0143037A-1

OPTIONAL



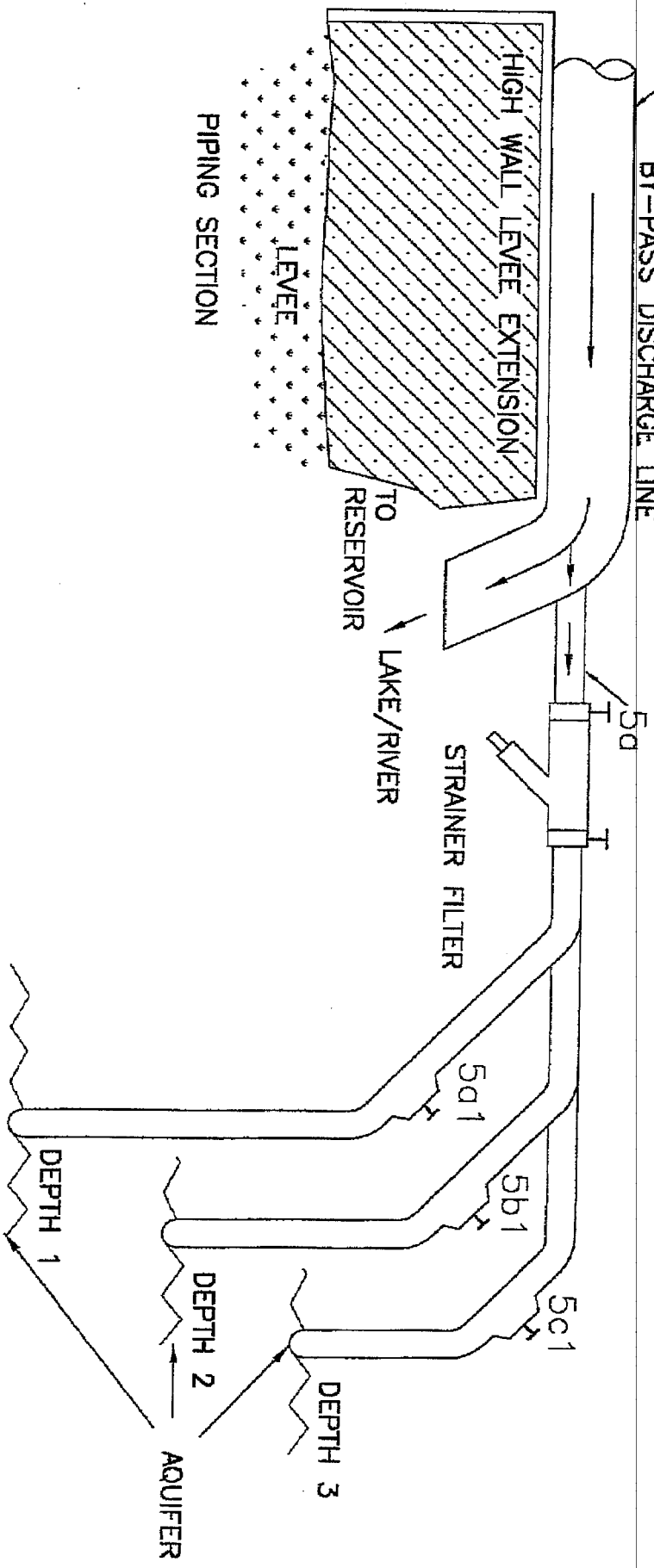

OPTIONAL
2a
PUMPING STATION
BY-PASS DISCHARGE LINE
HIGH WALL LEVEE EXTENSION
LEVEE
PIPING SECTION
TO
RESERVOIR
LAKE/RIVER
5a
STRAINER FILTER
5a1
5b1
5c1
DEPTH 1
DEPTH 2
DEPTH 3
AQUIFER

FIG. 2

Dear Mr. Hubbell,

I hope this email finds you well. As you know, we reached out several times to the Corps of Engineers on your behalf, and today the Corps responded to our inquiry with some relevant information I'd like to share with you. Lieutenant Colonel Jernigan, the deputy engineer for the New Orleans District, did receive your packages and will forward your packet to the design build contractor selected to construct the Permanent Pumps project upon award of the contract, which is scheduled in April 2011. Someone from the New Orleans district should also be contacting you within the next two weeks to notify you of the status of your proposal.

I hope this information is helpful. Please let me know if I can be of any further assistance.

Have a nice weekend,

Olivia

Olivia Philipp

Legislative Correspondent

United States Senator Mary Landrieu (D-LA)

328 Hart Senate Office Building

Washington, DC 20510

Phone: (202) 224-5824

Fax: (202) 224-9735

To sign up for Senator Landrieu's e-newsletter, please click here.

From: Paul Hubbell Jr. [mailto:pauljhubjr@gmail.com]
Sent: Tuesday, August 17, 2010 5:29 PM
To: Philipp, Olivia (Landrieu)
Cc: pauljhubjr@gmail.com
Subject: List of Patents Pending for USACE

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

REPLY TO
ATTENTION OF

Executive Office

September 7, 2010

Mr. Paul J. Hubbell, Jr.
127 Athania Parkway
Metairie, Louisiana 70001

Dear Mr. Hubbell:

On behalf of the US Army Corps of Engineers (Corps), New Orleans District, thank you for your strong interest in the construction of the Corps' permanent pump stations at the 17th Street, Orleans and London Avenue canals.

The New Orleans District is in receipt of your backflow, surge concept, Utility Patent Pending Publication No. US 2010-0143037 A-1 Application No. 61/199, 428 filed as Provisional on November 18, 2008, Titled: Water/Fluids Surge/Backflow Protection System and Management.

The Corps will be utilizing the design-build acquisition process for the design and construction of the permanent protection system for the outfall canals. Our Contracting Division will begin to advertise for this specific project in the April 2011 timeframe. Once a contractor has been selected, the New Orleans District will ensure that your concept as identified above will be provided to the contractor for evaluation.

Sincerely,

Edward R. Fleming
Colonel, US Army
District Commander

Copy Furnished:

Honorable Mary L. Landrieu
United States Senate
724 Hart Senate Office Building
Washington, DC 20510-1804

"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21ST CENTURY"

Sewerage & Water Board OF NEW ORLEANS

MITCHELL J. LANDRIEU, President
TOMMIE A. VASSEL, President Pro-Tem

625 ST. JOSEPH STREET
NEW ORLEANS, LA 70165 • 504-529-2837 OR 52W-ATER
www.swbnola.org

September 14, 2010

Ms. Patricia S. Leroux
Department of the Army
New Orleans District, Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

Attn: Ms. Leroux:

RE: **Draft Individual Environmental Report Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canal (IER #27)**

Please include the attached letter dated July 13, 2010 to Mr. Dan Bradley, U.S. Army Corps of Engineer as our official comment to the captioned report.

Very truly yours,

Joseph R. Becker
GENERAL SUPERINTENDENT

JRB/zfg

Attachment

Members of the Board: ALAN ARNOLD • JACQUELYN B. CLARKSON • ARNIE FIELKOW • KAREN HENLEY-RAYMOND • JON D. JOHNSON • MITCHELL J. LANDRIEU
GLEN PILIE • FLORENCE W. SCHORNSTEIN • TOMMIE A VASSEL • GERALD WILLIAMS, PHD • LOYCE P. WRIGHT • BEVERLY WRIGHT,PHD
"An Equal Opportunity Employer"

S. & W.B.
GEN. SUPT.

"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21ST CENTURY"

2010 JUL 13 A 11:34

Sewerage & Water Board OF NEW ORLEANS

MITCHELL J. LANDRIEU, President
TOMMIE A. VASSEL, President Pro-Tem

625 ST. JOSEPH STREET
NEW ORLEANS, LA 70165 • 504-529-2837 OR 52W-ATER
www.swbnola.org

July 13, 2010

Mr. Dan Bradley
Department of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160-0267

Subject: Remediation to Raise the Safe Water Elevation for:
A Section of the London Avenue Canal PCCP-03A
A Section of the London Avenue Canal PCCP-03B
A Section of the Orleans Canal PCCP-04A

Dear Mr. Bradley:

In reviewing the three sets of Plans and Specifications submitted, Board utilities are not involved except where the 50′ steel water main crosses the London Avenue Canal at Filmore Avenue. At this location your contractor will be driving a sheet pile cut off wall under the 50″ main and no Board involvement is anticipated. By installing these three sections of cut off walls, the Corps of Engineers feels that the safe water elevations in these two canals can be raised. However, the Board still has issues with the ability of DPS 3 and DPS 7 to withstand these higher elevations. These two stations need to be stormproofed before pumping to the new higher safewater elevations can be utilized. In addition, even though the Corps of Engineers is "stabilizing" portions of the levees on these outfall canals and informing the Board of this upcoming construction work, this shall not be interpreted as a willingness on the part of the Board to accept future maintenance of these facilities.

Finally, in none of the plans and specifications is there a mention of what the new safe water elevations will be once these improvements are installed. This information needs to be provided to the Board.

Yours truly,

Joseph R. Becker

Joseph R. Becker, PE
GENERAL SUPERINTENDENT

JRB/JRH/dsc
cc: Bob Moeinian, John Huerkamp, Madeline Goddard, Ron Spooner, Gerard Victor

Members of the Board: ALAN ARNOLD • JACQUELYN B. CLARKSON • ARNIE FIELKOW • KAREN HENLEY-RAYMOND • MITCHELL J. LANDRIEU • GLEN PILIE
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"RE-BUILDING THE CITY'S WATER SYSTEMS FOR THE 21ST CENTURY"

Sewerage & Water Board OF NEW ORLEANS

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Sewerage and Water Board of New Orleans
September 16, 2010 Public Meeting - Comments
EIR 27- Outfall Canal Remediation

Introduction

The Sewerage and Water Board of New Orleans has been charged with the task of draining the City of New Orleans since 1896. We have successfully executed that task for over 110 years with the single exception being the aftermath of the failure of the federal levee system. Even then, the Board was able to drain this City in 11 days when the Corps had estimated that it would take months. Simply put we know drainage. We are drainage. And we will continue to be drainage well after the Corps of Engineers completes this project and leaves.

SWE limits future DPS expansion

The history of drainage in New Orleans is a history of pumping station installation and expansion. Addressing the floodwalls to an elevation of 8.0 will represent a limiting factor for future expansion of drainage pump stations that discharge into these three canals.

Option 1 relies on new permanent pumps stations to operate in series with the existing DPS 6, DPS 7, DPS 3 and DPS 4 to deliver storm drainage to Lake Pontchartrain. Requiring two pump stations to discharge this water doubles the risk of a compromise to our drainage capacity, doubles the cost of operation of the drainage system and doubles the cost of any required future expansion. Additionally, this double pumping will require constant monitoring of floodwalls that have failed and are scheduled to receive remediation that will allow safe pumping to an elevation of 8.0

Frontal Protection

Before Hurricane Katrina, the Sewerage and Water Board and Corps of Engineers were working in tandem to address the frontal protection issues at DPS 3, 4, 6 and 7. Frontal protection for DPS 4 and 6 were completed; however, DPS 3, and DPS 7 were not addressed. Pre Katrina, the Sewerage and Water Board had agreed to purchase three 330 CFS pumping units for DPS 7 and the Corp of Engineers had agreed to install these pumps upon delivery before any frontal protection work was to begin. The bid documents for frontal protection project for DPS 3 was completed prior to Katrina, which would have greatly strengthened

Members of the Board: ALAN ARNOLD • JACQUELYN B. CLARKSON • ARNIE FIELKOW • KAREN HENLEY-RAYMOND • JON D. JOHNSON • MITCHELL J. LANDRIEU
GLEN PILIE • FLORENCE W. SCHORNSTEIN • TOMMIE A VASSEL • GERALD WILLIAMS, PHD • LOYCE P. WRIGHT • BEVERLY WRIGHT,PHD
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this facility. However, it is our current understanding that the Corps of Engineers no longer intends to do any of the work at DPS 7 and DPS 3. In the absence of continuing this necessary frontal protection work, any plan to bring the federal levee system to a Safe Water Elevation of 8.0 MSL should include provisions to bring drainage pumping stations 3 and 7 into compliance with this criterion as well.

Concern over de federalizing the levees

The federal perimeter protection levees have functioned as storm protection for both tropical events and the more frequent daily rainstorm events since they were first built by the Corps of Engineers. Limiting the repair of these facilities to an elevation of 8.0 and then implying that the federal government will not have a responsibility for maintaining the work is alarming.

As long as the canals are open to Lake Pontchartrain the perimeter protection should remain part of the federal levee system. They are a federal asset that must be maintained until removed. The citizens of the New Orleans metro area deserve a commitment from the federal government that these federal perimeter protection levees will remain a part of the federal system.

As part of this work, it should be clearly stated as to whom will have maintenance responsibilities for this project upon completion of the work and a funding source identified to properly perform the required maintenance.

Conclusion

In closing, I can not help but mention, that if the Corps of Engineers were to move in the direction that is preferred by the Sewerage and Water Board, by Jefferson Parish, by Southeast Louisiana Flood Protection Authority East and the Coastal Protection and Restoration Authority this work would not be needed. Option 2 and 2A call for the elimination of these failed floodwalls. Throughout the 115-year history of the Sewerage and Water Board, we have excavated to install canals below grade in order to eliminate the possibility of catastrophic failure. We would again urge the Corps to move in the direction that all of the local sponsors, and even the Corps of Engineers itself, have identified as the most fiscally prudent and safest for our residents.

On behalf of the citizens of New Orleans, the Sewerage and Water Board thanks the CORP for its commitment to remediate the London Avenue, Orleans Avenue and 17th Street outfall canal walls. However, we firmly believe that the CORPS cannot place a period on the subject of the outfall canal walls following the completion of the work to raise the safe water elevation to 8 feet. We believe it is imperative that the CORPS and the community continue to engage in an evolutionary and holistic process to reduce risk.

Marcia A. St. Martin
Executive Director

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: I want my three minutes -
I live on the 17th Street canal & am a member of the 17th Street canal coalition. I'd like to speak about my experience with the the corps and why I don't trust them

Name Amy Sins **Affiliation** Resident / 17th Street Canal Coalition
Street 6738 Bellaire **Phone** 504 483 7957
City, St Zip NOLA 70124 **Fax**
E-mail

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments:

Name MARCIA A. ST. MARTIN **Affiliation** Sewerage & Water Board of N.O
Street 625 ST. JOSEPH Street **Phone** 504-585-2210
City, St Zip NEW ORLEANS, LA 70165 **Fax** 504-585-2448
E-mail M.StMartin@SWBNO.org

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments:
- Where is the staging area for Orleans Canal?
- Have contracts been awarded?

Name Fauchenx **Affiliation** CH2M

Street 2 Wren **Phone** 703-926-4539

City, St Zip Nola 70124 **Fax**

E-mail deanne.fauchenx@CH2M.Com

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-14-10

IER#27 Outfall Canal Remediation
Comment

Comments: 1. What is the status of compliance with The design criteria for The permanent pumping station incorporated into The partnering Agreement with The State?

2. Who will be responsible for the consequences of sytem failures?
A) permanent pumping station?
B) Canal walls?

3. Why is deep sheet piling NOT being used for The entire reaches of The 17th ST Canal?

Name Lee Richardson
Affiliation Metairie Club Gardens ASSN / PTR
Street 107 Stella ST
Phone 504-782-9399
City, St Zip Metairie, LA 70005
Fax
E-mail lrichardson@cox.net

9-16-10

IER#27 Outfall Canal Remediation
Comment

(1)

Comments: PROPERTY VALUES? I'M SURE IT'S BEEN BROUGHT UP BEFORE, BUT THIS IS MY FIRST MEETING TO ATTEND. IS THERE ANY CONSOLATION TO WHAT WHAT I FEEL IS A DECLINE IN PROPERTY VALUES?

(2) WITH ALL THE VERY HEAVY EQUIP. ON OUR RESIDENTIAL STREETS DUE TO CONST., IS THERE A PLAN IN PLACE TO ADDRESS THE ROADS WHEN THEY START CRUMBLING?

Name NORMA POOLE **Affiliation** NONE / HOME OWNER!
Street 1729 ORIOLE **Phone**
City, St Zip NO LA 70122 **Fax**
E-mail nipoole@hotmail.com

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: What SPECIFIC DIFFERENCIES are there between the WEST SIDE OF The LONDON Canal AND THE EAST SIDE whereby There is Little to NO IMprovement being done on the west SIDE.

— The corps Removed FENCES and TOOK Control OF OWNERS property ON the London Canal NOW NO ONE closes the gates that Dont Fit Allowing FOLKS TO Drive ON the Levee - How IS this going TO be remediated

Name RAY Guidry **Affiliation**

Street 3700 virgil Blvd **Phone** 832-260-3733

City, St Zip New Orleans, LA **Fax**

E-mail ~~RAY Guidr~~ RayGuid@GMAIL.com

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: HOW DOES THIS PROJECT CONTRIBUTE TO ENSURING THAT THE TOTAL PROTECTION IS MORE THAN "A SYSTEM IN NAME ONLY"?

Name K.C KING **Affiliation** RESIDENT

Street 5919 PRATT DR **Phone** 504-232-6110

City, St Zip NOLA 70122 **Fax**

E-mail KdcKING@GMAIL.COM

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: CAPACITY NOW & FUTURE OF CANALS?

Name BILL STINSON **Affiliation** Resident
Street VINCENNES PL **Phone**
City, St Zip 70125 **Fax**
E-mail

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-10-10

IER#27 Outfall Canal Remediation
Comment

Comments: Please change the stated Reason for Elimination in Article 2.4.2 To reflect the fact that USACE found the Hoey's Basin pumping station proposal (option 2a) to be the best technical solution. The statement that "the alternative would not address the purpose and need of safely passing water through the canals in a timely manner" is patently inaccurate, not would that project take more than 3-4 yrs.

Name Lee Richardson
Affiliation Metairie Club Gardens Assn / PTR
Street 107 Stella St
Phone 504-782-9399
City, St Zip Metairie, LA 70005
Fax
E-mail lfrichardson@cox.net

www.mvn.usace.army.mil

www.nolaenvironmental.gov

✓ 9-16-10

Comment

Comments: I would like to inform the corps that they have NO Authority to enter my property to implement IER27.

Name Roy ARRIGO **Affiliation** 17th st Canal Coalition

Street 6724 Bellaire DR **Phone**

City, St Zip New Orleans, LA 70124 **Fax**

E-mail TRANerep@hotmail.com

www.mvn.usace.army.mil www.nolaenvironmental.gov

✓ 9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: I would like to express my concerns regarding the Corps' conduct along the 17th Street Canal. I would like my 3 minutes.

Name Dante' V. Maraldo **Affiliation** 17th Street Canal Coalition
Street 6702 Bellaire Drive **Phone** (504) 309-5937
City, St Zip New Orleans, LA 70124 **Fax**
E-mail

✓ 9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: who would pay ~~see~~ sinkage?

Name EDWARD M. FEINMAN JR. **Affiliation**
Street 5640 BELLAIRE DRIVE **Phone** (504) 488-2435
City, St Zip NEW ORLEANS, LA 70124 **Fax**
E-mail

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: How many survey's were already done?
Who determines which survey is accurate?
Q #1 the Corp of Engineers were incompetent when they built the levee -
How do we know that the "new executive" decision makers are more competent than the orig crew?

Name LINDA RUSSO **Affiliation**
Street 6168 BELLAIRE **Phone** # 231-1212
City, St Zip NOLA 70124 **Fax**
E-mail LindaRusso@AOL.Com

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: THE ROBERT E LEE BRIDGE OVER THE LONDON CANAL WAS TO BE REBUILT BEFORE KATRINA. IT IS NOW AT ITS HIGHEST POINT 3 FEET BELOW THE LEVEL OF THE FLOOD WALL. WILL IT BE REPLACED

Name _____ **Affiliation** _____
Street _____ **Phone** _____
City, St Zip _____ **Fax** _____
E-mail _____

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: (IMPORTANT)

(1) DRAINING WATER from SOUTH TO NORTH TO 17th St CANAL
1/2 of City DRAIN WATER SHOULD go TO RIVER 1/2 TO LAKE PONTCHARTRAIN

(2) A BARRIAR WALL IN LAKE BORNE OR CATHERIN ON
LAKE PONTCHARTRAIN TO STOP STORM SURGE FROM THE GULF.

I THANK YOU

Name LENA PANTANELLI **Affiliation**
Street 212-38th St **Phone** 504 482 1222
City, St Zip N.O, LA 70124 **Fax**
E-mail

www.mvn.usace.army.mil www.nolaenvironmental.gov

4-10-10

Comment

Comments: On the map (left panel) Reaches 1-4 are shown as not meeting the 100 yr criteria. What are the plans to bring Rch 1-4 up to 100 yr criteria? What is the timeline for those plans? Is there funding yet for the work?

What is the timeline for the "Foreshore Protection" shown on the map? Funding status?

Name Marie Alice Rousselle

Street 2804 Danny Park

City, St Zip Metairie 70002

E-mail

Affiliation

Phone

Fax

www.mvn.usace.army.mil

www.nolaenvironmental.gov

✓ 9-10-10

IER#27 Outfall Canal Remediation
Comment

Comments: When are you going to fix Press St.?

don't need to go up

Name Harold Wiser **Affiliation**

Street **Phone**

City, St Zip **Fax**

E-mail

www.mvn.usace.army.mil www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: When was the last time the 17th Street Canal interim pumps were tested? Please describe the duration of the test? How many of the pumps failed to operate properly? What was the net cfs effective capability during the test?

Name LISA LUDWIG **Affiliation** Pump To The River
Street 570 WOODVINE AVE **Phone** 5044951597
City, St Zip Metairie LA 70005 **Fax**
E-mail ebludwig@aol.com

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: Orleans Canal - Levee Remediation stops at current surge pump - new surge / flood pump is further north - June 2010 map shows levee top too low - when will this levee portion be remediated?

Is the Orleans canal pump station location final? Or, can the location still be changed?

Name Kim Harvey **Affiliation** self
Street 109 Lark St **Phone** 504 301 1220
City, St Zip NO LA 70124 **Fax**
E-mail klharvey2@cox.net

9-16-10

Comments: LOCATION of PENNAMET PUMP STATION @ ORLEANS ST. CANAL.

LAKEVIEW CIVIC IMPROVEMENT ASS

Name Freddy Yodeza
Affiliation LCIA
Street 175 32ND
City, St Zip N.O LA 70124
Phone 504.486.3618
E-mail
Fax

www.mvn.usace.army.mil

www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: I live next to the 17th Street Canal, at Esplanade & Orpheum. How long will there be construction in my neighborhood? (i.e. my backyard)
My husband sometimes works nights & sleeps days, how many hours a day will there be construction, & how loud?
~~What type of remediation equipment should I expect to see?~~

Name Natanya Black-Porto **Affiliation**
Street 100 Geneva St **Phone** [redacted]
City, St Zip Metairie LA 70005 **Fax**
E-mail natanya.black@gmail.com

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: Will there be any changes to previous footprint of levee?

Name Jim Sparacello
Affiliation
Street 6066 Bellaire Dr
Phone 486-3014
City, St Zip N.O., LA 70124
Fax 486-3014
E-mail jimcello81@yahoo.com

www.mvn.usace.army.mil

www.nolaenvironmental.gov

9-10-10

IER#27 Outfall Canal Remediation
Comment

Comments: THANK FOR THE PHONE CALL BUT
UNTIL THE CURRENT ROW INTRUSION ISSUE
OUTSTANDING PROPERTY RIGHTS ARE SOLVED IN
COURT & BY THE LANDOWNER NOTICE AND MATCH
PROPERTY RIGHTS ARE LIKELY AND LIKELY THAT
YOU WILL BE COMPLETELY FINISHED ALL REMEDIATION
WORK WILL BE DONE IN THE ROW
THIS ROW IS UNDER LITIGATION. HOW
DO YOU ~~[illegible]~~ THINK HAVE RIGHTS TO AN
UNDETERMINED PIECE OF PROPERTY?

Name CRAIG BERTHOLD **Affiliation**
Street 6644 BELLAIRE DR. **Phone**
City, St Zip N.O. LA. 70124 **Fax**
E-mail

www.mvn.usace.army.mil

www.nolaenvironmental.gov

9-16-10

IER#27 Outfall Canal Remediation
Comment

Comments: ASSUMING THE WATER DISCHARGED FROM THE OUTFALL CANALS INTO LAKE PONTCHARTRAIN CAUSE WATER QUALITY DECLINE IN THE LAKE. CONSEQUENTLY SWIMMING IS NOT ALLOWED/POSSIBLE.
ARE THERE ANY CONSIDERATIONS TO TREAT THE DISCHARGED WATER ON ITS WAY TO THE LAKE TO IMPROVE THE WATER QUALITY.

Name JORG SIEWEKE **Affiliation** UVA
Street **Phone**
City, St Zip **Fax**
E-mail SIEWEKE@VIRGINIA.EDU

4-16-10
PWD mtg

To: USACE

From: John Trask

974 Topaz St

New Orleans, LA 70124

jtrask1@cox.net

Below is an outline of my concerns for the construction of the permanent pumping station for the Orleans Avenue Canal. Please add these comments to the public record and thank you for considering my view point and I would appreciate a reply to these concerns.

1. Everyone agrees flood protection comes first. We need strong canal walls and reliable pumping stations. This is the proverbial no-brainer.

2. Engineering and science must drive decision making. Public opinion where whoever can corral the most and loudest voices should be irrelevant. Base decisions on science and engineering, not on the group who can shout loudest.

3. Cost should not be a major factor either. Cheap options got us into a bad situation on 8/29/05. Whatever is built and wherever it is built will be with us for a long time. Build it to protect us the best while causing the least amount of harm to the area and as I understand things, looking out significantly for highly impacted areas is a requirement of the USACE process.

4. Regarding location of the pumping stations, a very important question needs to be answered clearly and backed up with science. Is any one of the four proposed locations (A,B,C,D) safer than another?

    a. If so, then pick the safest location.

    b. If not, then it begs the question why was an inferior location ever a possibility?

    c. If all locations are equal in safety, then select a location not on the lakefront.

        i. Why destroy the beauty of the New Orleans lakefront if it is not necessary? The New Orleans Lakefront is the #2 most visited site behind only the French Quarter. It is important and its needs to be heavily considered.

ii. Site location D (south of Robert E Lee), if it is proven by science to be equal in safety, should be selected because it will not harm the lakefront and will even impact fewer home owners compared to locations on the lakefront.

iii. If for some reason D is deemed inferior, why not consider location C? You already have infrastructure in place and you have selected a comparable location on the London Avenue Canal to be used for that pumping station and this site is also the temporary site. Could a similar conversion take place on Orleans? If it cannot, why not?

5. Regardless of where this pumping station is built, it should be built in a way that maximizes performance first. However, everything possible to minimize height, size, noise, and pollution needs to be a high priority. The people of this region will live with this for the rest of our lives. It is unconscionable to build a big ugly pollution machine in the middle of our city's second most visited attraction and needlessly harm all of the lakefront property owners who live there. PLEASE GIVE THIS CONCERN HEAVY CONSIDERATION!!!

6. Is flood protection important? It is the clear #1 priority to all of us. Is aesthetics important? Absolutely. Unfortunately some people will take a position that you can only have one at the expense of the other. That is not true. I have never seen an engineering report that proves big ugly and polluting improves performance. Please use science to develop the best safety option but also use the least harmful location while also maximizing the best possible aesthetics. The people who live along the lakefront deserve this and so do the many visitors who come to enjoy the treasure of the New Orleans Lakefront.

Sincerely,

John Trask

From: natanyab@aol.com [mailto:natanyab@aol.com]
Sent: Friday, September 17, 2010 12:39 PM
To: MVN Environmental
Subject: IER 27 Question

Hi,

I live on the Jefferson side of 17th street canal on 100 Geneva St (one block north of Esplanade). I attended the public meeting last night, but I had additional questions on the impact to my neighborhood.

1) A brand new bike path was recently installed on the 17th street canal. Will this be removed for the Soil/Cement mixing project? I am assuming the drilling and mixing will be on the protected (residential side) of the flood wall, however I am unsure because the report says it will be on the unprotected side from barges where accessible.

2) How quickly will the Construction (Deep soil mixing, etc.) move through our neighborhood (my immediate block, and the adjacent 4-5 blocks around my house)? A few weeks or a few months?

3) Once the Deep Soil Mixing is complete, will there be any additional construction? I heard mention of a clay cap, but I wasn't sure if that will be a separate project from the drilling, or it will be completed at the same time?

4) How loud is the deep soil mixing project? Will I still be able to hear the machinery once it is 2 blocks away?

I reviewed the report draft provided online. but I had difficulty getting any of those details from that summary. I greatly appreciate you taking the time to address my concerns.

Sincerely,
Natanya Black

-----Original Message-----
From: mvnenvironmental@usace.army.mil [mailto:mvnenvironmental@usace.army.mil]
Sent: Saturday, September 25, 2010 11:08 AM
To: MVN Environmental
Subject: NOLA Environmental Comment - Orleans East Bank

Comments to Individual Environmental Report 27 Outfall Canal Remediation on the 17th Street, Orleans Avenue, and London Avenue Canals

Summary statement
Thank you for the opportunity to provide comments on the Outfall Canal work described in the IER 27. Overall I found the document to be lacking in detail and analysis resulting in a difficulty in accepting the rationale used to determine the proposed action. In reading this document I could not determine specifically what the need for this work was, nor is there quantifiable detail presented on what the impacts will be; where those impacts will occur; or what benefits will be achieved by the government taking this action. Given the overall lack of detail and analysis in this document I believe the proposed action discussed in this report to have been determined in an arbitrary and capricious manner. As such, this document should be withdrawn and rewritten to reflect a meaningful discussion of a detailed purpose and need for this action; the specific impacts to the environment that the action will have; and the benefits to the environment if the action is taken.

Specific comments
The stated purpose of the project in this report is to strengthen 7 miles out of 18.2 miles of floodwall along three outfall canals in New Orleans. Strengthen is a very vague term that in no way explains what needs to be accomplished by construction of the proposed action. The write-up goes on to say that there is a need for this project to reduce flood risk and water damage to residences, business, and other infrastructure. Report then states that work is needed to ensure the SWBNO can safely accommodate and pass rain and stormwater. Report further states that without this project there is a potential for localized flooding to occur.

The purpose for this project as stated by Mr. Bradley at the September 16, 2010 public meeting was to raise the safe water elevations in all three outfall canals to elevation 8 feet. At the public meeting Mr. Bradley was not able to describe any flood damages that are occurring at this time.

The stated project need in Section 1.1 is vague and lacks any quantifiable documentation. Nor does the report contain any information on any flood damages of residences, business, or infrastructure that is occurring during rain or storm events. That the report says there is a need to remediate 7 miles out of 18.2 miles (38% of the project area), but fails to identify the exact area where the 7 miles of work will occur, leaves the public at a severe disadvantage in trying to understand the true extent of the impacts that this work will have on the residents along the outfall canals. The stated purpose in this report does not provide the public or the decision maker with enough detail to properly evaluate the action the Corps is proposing. Given that there is no information in this report that discusses any specific flood damage that is occurring or the impacts of that flooding, then how can the public be expected to provide rational

comments? As a taxpayer, I expect to see information that informs me of the flooding impacts that occur during rain events. If there are no documented flood damages occurring during rain events, then there is no documented need for this work. I believe federal law requires that there be a quantified need for a federal action to proceed.

In Section 2.2, entitled Proposed Action, there is a statement that remediation of the canals is necessary to ensure that the canal walls can support the requirements of the Sewerage and Water Board of New Orleans in removing rain water from the city unimpeded. This is a very broad statement and no where in the report is there a discussion of what the requirements are for the SWBNO to remove rain water unimpeded. How can the public or the decision maker make rationale and informed comments when the report does not contain the very basic information needed to evaluate the government's actions? What analysis was conducted by the Corps to determine what action is needed to meet the SWBNO need to pump rain water from the city unimpeded? Where is that data? Public should be provided a copy of any data or reports collected and analyzed by the Corps for the Corps to arrive at it proposed action. If 8 foot is the safe water elevation goal of this project as stated by Mr. Bradley at the public meeting, how did the Corps determine that 8 feet is the elevation needed that would allow the SWBNO to pump rain waters unimpeded?

The discussion of the proposed action in Section 2.2.1 is too vague for the public to adequately gauge the extent of the impacts that will occur as a result of the government's actions. Specifically where will the 7 miles of work occur; what work will be done on the protected side; what work will be done of the flood side; what will be the impacts to private property be to trees, fences, pools, residences, utility sheds, etc? Report states that all work will be on existing SWBNO right of way. Over the past two years the Corps has provided right of way maps to landowners along the outfall canals that showed that there are what the Corps deems encroachments (residences, pools, fences, trees, utility sheds, etc) on the SWBNO the right of way, it then stands to reason that some impacts to private structures will occur if the proposed action were constructed. What are the impacts going to be from placing a retaining wall at the edge of the right of way as shown in Figure 10? In some cases that retaining wall will be with in inches of private property structures such as pools, residences, utility sheds, etc and in other cases the retaining wall will bisect with residences, pools, utility sheds, etc that the Corps considers being encroachments onto the existing right of way. Section 2.2.2 discusses that the current engineering data is not finalized, so the Corps is considering that remediation work could occur anywhere along the 18.2 miles of floodwalls. The report needs to clearly state where the proposed 7 miles of work will occur; what work will occur on the protected side; what equipment will be used on the protected side; and the exact access points that will be used to get to the protected side work areas. The lack of information in this report is appalling given the high risk of impacts to private property. The lack of sufficient information to justify the proposed action is in itself sufficient for the proposed actions to be considered to be arbitrary and capricious.

In Section 2.2.2.2 there is a description of a concrete slab tying the cutoff wall to the I-wall to increase the embankment. If I understand this correctly this means that in some areas the embankment may be paved over to allow for a

steeper slope then could be achieved using grass. If my understanding is correct then landowners along the outfall canals could find their backyards that are currently grassed up to the floodwalls are paved over in concrete with a vertical retaining wall at the edge of the SWBNO right of way. The lack of specific information in this report on where these impacts will occur is not acceptable since such a change will have dramatic and significant impacts to the people's lives and property values.

Section 2.3 includes a discussion of what the Corps has deemed to be the alternatives to the proposed action. In reading this section I do not believe the Corps has met the requirements of 40 CFR 1502.14 and 1505.1 that establishes the government responsibility to consider and document reasonable alternatives. The government is required to rigorously explore and objectively evaluate reasonable alternative, as well as alternatives eliminated from detailed study. Given that the stated purpose of this project is a need to reduce flood risk and water damage to residences, business, and other infrastructure and to ensure the SWBNO can safely accommodate and pass rain and stormwater, I find that the report as written lacks the rigorous and objective evaluation of reasonable alternatives as required under federal. Under Sections 2.4.1 and 2.4.2, alternatives are arbitrarily and capriciously eliminated because they fail in the Corps eyes to meet the stated purpose and need for the project in a timely manner and the alternative is not funded or congressionally authorized. Given the vague nature of the stated purpose for this report I fail to see how either of the alternatives eliminated from further study do not meet the stated purpose and need for this project. No where in the purpose and need statement is there any information on a time limit for the outfall canal work to occur. Furthermore, no where in the report is there any quantifiable information to show that flood damages are occurring now during rain events or that flood damages can be reasonably expected to occur in the future during rain events that would justify a need for imposing a arbitrary deadline on the completion of the proposed action. I also believe that the Corps has acted in and arbitrarily and capricious manner in claiming that the alternatives can be eliminated due to lack of funding or current congressional authority. 40 CFR 1502.14 requires that government agencies examine all reasonable alternatives and as per the Council on Environmental Quality 40 questions (2) it is specifically stated that the government agency must analyze alternatives that are outside of the scope of the what congress has approved or funded if the are reasonable. As stated above, reasonable alternative is defined as an alternative that meets the stated purpose and need of the project. Given the stated purpose of this project being to reduce flood risk and water damage to residences, business, and other infrastructure and that work is needed to ensure the SWBNO can safely accommodate and pass rain and stormwater it would appear to me on a common sense level that both the alternatives eliminated from consideration meet the test of being reasonable. Furthermore this report fails to provide even the smallest detail on why the two alternatives are not considered reasonable alternatives as defined under federal law.

If the purpose for this project is to raise the safe water elevation in all 3 outfall canals to 8 feet as stated by Mr. Bradley, then why are alternatives that could achieve similar results being eliminated form consideration? How was 8 feet determined by the Corps to be the magic elevation that would allow the SWBNO to pump rain water unimpeded from the city? Why not consider water to the top of

the wall, why not elevation 6 or 10? Based upon the information provided in this report and the lack of any quantifiable data or reports to substantiate the government verbal claims that 8 feet is the right safe water elevation for all 3 outfall canals it is apparent that the government has made arbitrary and capricious decisions in choosing the proposed action.

Section 3, entitled affected environment lacks any discussion of the current conditions that demonstrate that flood damages are occurring. This lack of information directly challenges the purpose and need for this project as well as a determination that this project is in the governments or the people of the United States best interest. Report need to be rewritten to include specific information on the current flood conditions and damages that occur so that the public and the decision maker can make an informed and rational decision.

Section 3.2.2, lacks any discussions of what the current flood conditions are that would justify the construction of this project. Under the no action alternative, the discussion states that lower operational levels in the canals could restrict the SWBNO pumping efforts which could result in water draining from streets at a slower rate which could increase the frequency and intensity of flooding in the drainage area. This statement says to me that under the current safe water elevations no flooding or flood damages are occurring and only if the safe water elevations were lowered would street runoff drain slower. This section makes the case that there are no existing flood damages occurring that would justify the government's construction of the proposed action and again substantiates the premise that the government's proposed action has been determined in an arbitrary and capricious manner.

Section 3.2.2.2.2 states that the strengthen wall would provide a direct benefit to the 100 year hurricane system, but fails to explain this logic or to provide and quantified information to justify the statement. At the September 16, 2010 public meeting Mr. Bradley stated that the proposed outfall canals project is not needed to meet the 100 year level of protection. Report needs to clearly state what benefits are accrued to the 100 year hurricane protection system if the government were to construct the proposed action (assumed to be safe water elevation 8 feet) if that is part of the reason for this project to proceed. Report should quantifiably describe the reduced flood damage impacts that will occur if the government's action is constructed and then explore what the direct benefits to the 100 year hurricane protection system would be if work was done to raise the safe water elevation to 8 foot, to top of the wall, and if either of the 2 alternatives eliminated from further consideration were to be constructed. If proposed action is not tied to the 100 year then the report contains false and misleading statements. Report fails to meet standard of providing a rigorous and objective evaluation of the reasonable alternatives that would meet the stated purpose and need for this project.

Section 3.2.10.2.1 again reinforces the premise that no flood damages are occurring currently that would justify that the construction of the government's action is in the best interest of the government or the people of the United States. The discussion clearly states that localized street flooding would temporarily impact traffic flow and increase traffic congestion during pumping events. Hardly a testimonial to spending 90 million dollars or a justification

that the project is in the governments best interests. The absurdity of this detail in this report actually makes a case for requesting a Government Accounting Office investigation of this project as a waste, fraud, and abuse of federal dollars.

Section 3.2.11.2.1, makes a statement that the only direct action that will occur if government does not construct the proposed action is the potential for slower water removal. No quantified information on flood damages that may be occurring. The discussion of the impacts to aesthetics if the government proceeds with the construction of the proposed action fails to discuss the visual impacts that will occur as a result of people having a vertical retaining wall built in their backyard at the edge of the SWBNO right of way; the loss of pools, utility buildings, etc due to the construction of the retaining walls; or the visual impacts to property owners who's backyard will be covered in slope pavement (see previous discussion of Section 2.2.2.2).

Section 3.3 discusses the socioeconomic impacts of the governments proposed action and is clearly inadequate in regards to addressing the impacts and benefits that would occur if the proposed action is constructed. While there are lots of numbers on employment, income, housing, rental prices, and housing values there is no discussion of what the current flood damages are or the impacts those damages are having on the socioeconomic structure of New Orleans. In fact, the discussion on housing, rental prices, etc add no discernable useful information to this document and in no way provides the public or the decision maker with information that would assist with making a rationale and informed decision. The discussion clearly misses the Council on Environmental Quality standard of providing a clear and concise document. This section should be rewritten to quantifiably discuss the current flood damages that are occurring and the flood damage benefits that would be achieved if the project is constructed. Same write up should be done for all the reasonable alternatives so that the public and the decision maker are able to make a rationale and informed decision.

Section 3.3.2 discusses that the socioeconomic considerations in the write-up are those that are immediately within the project site and right of way. The construction of the government's action will have impacts far outside the project side and right of way and should be discussed in detail. If flooding is occurring as is the premise of this document then socioeconomic impacts are occurring outside of the project area. It also stands to reason then that benefits will occur outside of the project area if the government builds something. Other impacts to business will occur when roads are closed; impacts to private property values will occur when pools, houses, utility buildings, etc are removed from the right of way; impacts to private property values will occur when retaining walls are built at the right of way line or people's back yards are slope paved. Where is the analysis of the property values of a residence that currently has a grassed backyard that is 50 feet deep, but due to the Corps actions the property owner finds himself with a backyard of grass 15 feet deep, a two foot or higher vertical wall, and 35 feet of concrete slope pavement? This report is so severely lacking in data and analysis that the very creditability of t he Corps is called in to question.

The discussions of the current flooding conditions and the flood damage benefits that could be realized if the government's action were built are inadequate in

most of the other Section 3 write-ups. All sections should be rewritten to clearly state what the current flood damage conditions are and what flood damage benefits would accrue if the government took action.

Section 4.3 states that IER 27 in combination with hurricane protection projects in the vicinity would significantly reduce storm induced flooding from Lake Pontchartrain. This statement has no credibility since IER 27 as written has no bearing or impact on 100 year hurricane protection system benefits. Conversely the construction of the hurricane protection projects to hold back the storm surges will have no impact on rain water flood damages.

The Section 5 discussion on the selection rationale provides no logic or rationale for the selection of the proposed government action; the elimination of the no action alternative; the 2 alternatives eliminated from further consideration; or an alternative that might provide a different safe water elevation then 8 feet. The discussion in Section 5 incorrectly states that the no action alternative fails to meet the project purpose and need of providing 100 year level of hurricane risk reduction to the project area and that the no action alternative would restrict full operation of the SWBNO pumping stations. This statement is not consistent with the stated IER 27 purpose and need. The logic that the SWBNO pumping stations could not operate at full capacity is flawed since the operation of those pump station at full operation levels is not the stated purpose or need for this project. Furthermore given the lack of any data or analysis on flood damages or the benefits that would be achieved if the government took action in this report the obvious rationale would lead an informed decision maker to select no action as the government's decision. The discussion in the report of the rationale used to make the determination of the governments proposed action is clearly flawed and inadequate and again highlights that the government is proceeding in an arbitrary and capricious manner.

Section 6 states that if any comments are received that are substantive an addendum to the IER will be prepared and published for an additional 30 day public review. Based upon the above 5 pages of comments I believe that beyond a shadow of doubt my comments are substantive and that an addendum should be prepared that properly addresses the purpose and need for this project. Additionally, the addendum should concisely state what the purpose and need of the project are; what flood damages are currently occurring and with what frequency; what flood damage benefits to the government and the people of the United States would be if the government takes action; the specific areas that will be impacted by reducing flooding; and those areas that will be directly impacted by construction. Addendum should also provide a rigorous and objective analysis of all the reasonable alternatives including the 2 alternatives eliminated without cause.

S.Z.S. CONSULTANTS, INC.
ENGINEERS * ENVIRONMENTALISTS * SURVEYORS
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PHONE (504) 561-5724 * FAX (504) 561-5726

September 27, 2010

Ms. Laura Lee Wilkinson, CEMVN
Hurricane Protection Office
U.S. Army Corps of Engineers
New Orleans District; Planning, Programs, and Project
Management Division, CEMVN-PM
Post Office Box 60267
New Orleans, Louisiana 70160-0267

RE: Individual Environmental Report
Outfall Canal Remediation on the 17th Street Canal, Orleans Avenue
and London Avenue Canals, Jefferson and Orleans Parish, Louisiana
IER #27
U. S. Army Corps of Engineers

Dear Ms. Wilkinson:

Reference is hereby made to the report and the public meeting held on Thursday, September 16, 2010, concerning the repairs to the levees along the New Orleans / Jefferson drainage canals.

Shortly after Katrina, we developed a double wall impact protection levee system (Pi Wall) which can be installed easily within the existing right of way, and be more effective than the solution proposed in IER #27. Our rationale as follows:

1) Our system allows the water level to go much higher than the proposed 8 feet maximum, which requires the need to close the flood gates, and thereby effecting the ability of the Sewage and Water Board to successfully pump rain water out of the City in the absence of a new pumping station at the mouth of each canal.

2) Even with the installation of flood gates, we continue to rely on a levee design (I-Wall) that has previously failed with catastrophic results, including the loss of human life.

3) Our design provides a much greater level of protection without having to rely on other elements, such as having to close a flood gate when the water reaches a certain height. The double wall design stands on its own, has a high factor of safety, and has been analyzed by Texas A&M University using the soil conditions as they currently exist along the 17th Street Canal.

4) Our design also helps minimize seepage concerns and its effect.

5) This double wall design has been thoroughly tested and analyzed with documented results that clearly demonstrate the significant risk reduction from surge.

The report from Texas A&M is available upon request, but in the meantime, we hope it is in the best interest of all concerned to review this design technique before implementing those proposed in IER #27 and the awarding of construction contracts.

Yours truly,

Sam Z. Scandaliato, P.E.

cc:
Colonel Robert Sinkler
Commander of Hurricane Protection Office

Colonel Edward P. Fleming
District Commander

APPENDIX C: EMMISION CALCULATIONS

Table B-1 Heavy Equipment Use

Equipment Type	Number of Units	Days on Site	Hours Per Day	Operating Hours
Trenchers Composite	3	230	8	5520
Cement & Mortar Mixers	3	230	6	4140
Cranes	3	230	7	4830
Generator Sets	3	230	4	2760
Tractors/Loaders/Backhoes	6	230	7	9660

Table B-2 Heavy Equipment Emission Factors (lbs/hour)

Equipment	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$	CO_2
Trenchers Composite	0.5080	0.8237	0.1851	0.0007	0.0688	0.0688	58.7
Cement and Mortar Mixers	0.0447	0.0658	0.0113	0.0001	0.0044	0.0044	7.2
Cranes	0.6011	1.6100	0.1778	0.0014	0.0715	0.0715	128.7
Generator Sets	0.3461	0.6980	0.1075	0.0007	0.0430	0.0430	61.0
Tractors/Loaders/Backhoes	0.4063	0.7746	0.1204	0.0008	0.0599	0.0599	66.8

Source: CARB 2007a and 2007b.

Table B-3 Heavy Equipment Emissions (Tons per Year)

Equipment	CO	NO_x	VOC	SO_x	PM_{10}	$PM_{2.5}$	CO_2
Trenchers Composite	1.4021	2.2735	0.5108	0.0019	0.1900	0.1900	162.0708
Cement and Mortar Mixers	0.0926	0.1361	0.0233	0.0002	0.0092	0.0092	15.0037
Cranes	1.4517	3.8882	0.4295	0.0033	0.1728	0.1728	310.7311
Generator Sets	0.4776	0.9632	0.1483	0.0010	0.0593	0.0593	84.1699
Tractors/Loaders/Backhoes	1.9626	3.7411	0.5816	0.0037	0.2892	0.2892	322.6748
Total	**5.39**	**11.00**	**1.69**	**0.0102**	**0.72**	**0.72**	**894.65**

Table B-4 Delivery of Equipment and Supplies

Number of Deliveries	4						
Number of Trips	2						
Miles Per Trip	30						
Days of Construction and Remediation	230						
Total Miles	55200						
Pollutant	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Emission Factor (lbs/mile)	0.0219	0.0237	0.0030	0.0000	0.0009	0.0007	2.7
Total Emissions (lbs)	1211.59	1308.93	165.20	1.42	47.26	40.81	150112.8
Total Emissions (tpy)	**0.61**	**0.65**	**0.08**	**0.0007**	**0.02**	**0.02**	**75.06**

Source: CARB, 2007a.

Table B-5 Surface Disturbance

TSP Emissions	80	lb/acre				
PM_{10}/TSP	0.45					
$PM_{2.5}$/PM_{10}	0.15					
Period of Disturbance	30	days				
Capture Fraction	0.5					
	Area [acres]	**TSP[lbs]**	**PM_{10}[lbs]**	**PM_{10}[tons]**	**$PM_{2.5}$[lbs]**	**$PM_{2.5}$[tons]**
	20.5	49200	22140	11.07	1661	0.83
Total	**20.5**	**49200**	**22140**	**11.07**	**1661**	**0.83**

Sources: USEPA, 1995 and USEPA, 2005.

Table B-6 Worker Commutes

Number of Workers	100						
Number of Trips	2						
Miles Per Trip	30						
Days of Construction and Remediation	230						
Total Miles	1380000						
Pollutant	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Emission Factor (lbs/mile)	0.0105	0.0011	0.0011	0.0000	0.0001	0.0001	1.1
Total Emissions (lbs)	14556.84	1521.98	1489.29	14.83	117.38	73.04	1517354.5
Total Emissions (tpy)	**7.28**	**0.76**	**0.74**	**0.0074**	**0.06**	**0.04**	**758.68**

Source: CARB, 2007a.

Table B-7 Total Remediation/Construction Emissions (tons per Year)

Activity/Source	**CO**	**NO_x**	**VOC**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
Heavy Equipment	5.39	11.00	1.69	0.0102	0.72	0.72	894.65
Delivery of Equipment and Supplies	0.61	0.65	0.08	0.0007	0.02	0.02	75.06
Surface Disturbance	0.00	0.00	0.00	0.0000	11.07	0.83	0.00
Worker Commutes	7.28	0.76	0.74	0.0074	0.06	0.04	758.68
Total Emissions	**13.3**	**12.4**	**2.5**	**<0.01**	**11.9**	**1.6**	**1728.4**

APPENDIX D: MEMBERS OF INTERAGENCY ENVIRONMENTAL TEAM

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

APPENDIX E: INTERAGENCY CORRESPONDENCE

BOBBY JINDAL
GOVERNOR

ROBERT D. HARPER
SECRETARY

State of Louisiana

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF COASTAL MANAGEMENT

July 21, 2010

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

RE: **C20100164**
Corps of Engineers-New Orleans District
Direct Federal Action
IER 27 for Outfall Canal Remediation of floodwalls along the 17th Street, London Avenue and Orleans Avenue Canals, **Jefferson and Orleans Parishes, Louisiana**

Dear Ms Exnicios:

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 please call Brian Marcks of the Consistency Section at (225) 342-7939.

Sincerely,

Gregory J. DuCote
Administrator
Interagency Affairs/Field Services Division

GJD/bgm

Cc: Lee Walker, COE
Dave Butler, LDWF
Jason Smith, Jefferson Parish
Tim Killeen, OCM FI
Charles Allen III, Orleans Parish

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

REPLY TO
ATTENTION OF

August 12, 2010

Planning, Programs, and
Project Management
Environmental Planning and
Compliance Branch

To: James F. Boggs
U.S. Fish & Wildlife Service
Lafayette Field Office
646 Cajundome Blvd., Ste 400
Lafayette, LA 70506

From: Laura Lee Wilkinson, Hurricane Protection Office, U.S. Army Corps of Engineers

Subject: Endangered Species Concurrence Request for Proposed 100 Year Hurricane Protection Projects for Individual Environmental Report #27 (IER #27) for the proposed Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals.

Dear Mr. Boggs:

Provided for your review are the project description, project location map, and determination by the U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN) of the effect that the proposed action would have on threatened and endangered (T&E) species under USFWS jurisdiction. The proposed action, referred to as, Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, is located in Jefferson and Orleans Parishes (Figure 1). This draft IER #27 will be completed in the next few months and will be forwarded to you upon completion.

PROJECT DESCRIPTION

Approximately 18 miles of floodwalls have been examined for stability, seepage, sheet pile penetration levels and maximum water levels on I-walls along the 17th Street, London Avenue and Orleans Avenue Canals in Orleans and Jefferson Parish, Louisiana. Portions of these canals are recommended for remediation to increase the Maximum Operating Water Level (MOWL) in the canals which provide interior drainage for the City of New Orleans by evacuating stormwater from the city into Lake Pontchartrain. The area varies in protection mechanisms with earthen levees, I-Walls, L-Walls, T-Walls and closure gate structures. Increasing the MOWL of the canals is necessary to ensure that the canal walls can support the requirements of the Sewerage and Water Board of New Orleans (S&WB) in removing rain water from the city. This project includes remediation of floodwalls along the three outfall canals (17th Street, Orleans Avenue and London Avenue) in Orleans and Jefferson Parish, Louisiana.

17th Street Outfall Canal is a man-made canal approximately 2.4 miles in length, and approximately 200 feet wide, paralleled by levees with floodwalls on both sides. The canal is oriented in a north/south direction between Lake Pontchartrain and Interstate 10.

Orleans Avenue Outfall Canal is a man-made canal approximately 2.6 miles in length, with average bottom and top widths of 100 to 160 feet, paralleled by levee on the entire east side, by floodwall on the west side between the pumping station # 7 and Robert E. Lee Boulevard, and by a levee on the west side near the lake. The canal is oriented in a north/south direction between Lake Pontchartrain and Interstate 10.

London Avenue Outfall Canal is a man-made canal approximately 4.0 miles in length, with an average bottom and top widths of 100 to 160 feet, respectively. Pumping Station No. 3 lies at the head of the canal near Broad Street. Pumping Station No. 4 is near Prentiss Avenue. The canal is paralleled by earthen levees topped with floodwalls or floodwalls alone from Pumping Station No. 3 to Leon C. Simon Boulevard on the east and to Robert E. Lee Boulevard on the west. From these two boulevards to Lakefront Drive there is an earthen levee on both sides of the canal.

Proposed Action

The project as proposed includes remediation of floodwalls along the three outfall canals (17th Street, Orleans Avenue and London Avenue) in Orleans and Jefferson Parish, Louisiana to raise the MOWL of the canals. Increasing the MOWL of the canals is necessary to ensure that the canal walls can support the requirements of the Sewerage and Water Board of New Orleans (S&WB) in removing rain water from the city. The final MOWL at each of the outfall canals shall be a minimum of 8 feet, with the exception of a portion of Orleans Avenue Canal (minimum SWE of 7 feet). All elevations shall be NAVD88 (2004.65). Construction could occur along the entire reach of each canal. Staging areas would be adjacent to the canals.

Four types of remedial measures could be used along the three canals. These measures include:

Deep Soil Mixing: Using an auger, a mixture of Portland cement and bentonite would be mixed with subsurface soils to create an impermeable wall to cut-off subsurface flow through the subsurface sand layer. Maneuverability would be simpler if the construction took place from the protected side of the existing floodwall. However, equipment could be located on a barge on the floodside and extended over the wall to construct the cutoff wall on the protected side.

Net Embankment Increase/Concrete Slab: The net embankment increase requires adding fill on the protected side of the I-Wall so that SWE is not more than 4 feet above the protected side embankment. A concrete slab tying the cut-off wall to the I-wall may be used to increase the embankment if the 4 foot stick-up requirement cannot be met by adding fill alone. It also may require adding fill to the flood side of the wall. Construction of this alternative would require access on the protected side for equipment and material delivery. The increased embankment height is not expected to exceed 2 feet above the existing embankment.

Sheet pile cut-off: The sheet pile cut-off method requires sheet pile to be installed on the protected side of the I-Wall through the Beach Sand Deposits and into the Bay Sound formation. The sheet piles can be driven from work barges assembled from modular sections placed within the canal on the flood side of the canal I-walls. This will avoid the need for construction access

on the protected side of the flood wall. It is anticipated that the sheet pile would be driven in relatively close proximity to the existing I-wall.

Stability Berm: Placement of fill at the toe of the levee to provide additional weight that will increase the factor of safety against a rotational or translational failure during construction or storm loading. Berms are generally used to concentrate the additional fill where it is needed most and by forcing a substantial increase in the failure path. The berm thickness and width are determined from stability analyses. The toe of the berm will remain within existing right-of-way.

CEMVN DETERMINATION OF IMPACTS TO T&E SPECIES

In conjunction with IER #5 (Permanent Protection System for the Outfall Canals Project on 17th Street, London Avenue and Orleans Avenue Canals) and IER #4 (Orleans East Bank, New Orleans Lakefront Levee, West of Inner Harbor Navigation Canal to Eastbank of 17th St. Canal), we believe that these projects, as planned, would not adversely affect any threatened or endangered species, and any impacts to the designated Gulf Sturgeon critical habitat would be temporary and will have been minimized to the maximum extent practicable. Please review this information and inform us whether or not you agree with our determination.

CONTACT INFORMATION

Please review the enclosed information and provide comments within 30 days of the date of this letter. The IER will not be signed until all environmental review and compliance requirements have been completed. A copy of the signed IER will be provided upon request.

Comments should be mailed to the attention of Ms. Laura Lee Wilkinson; U.S. Army Corps of Engineers; CEMVN-HPO; P.O. Box 60267; New Orleans, Louisiana 70160-0267. Comments may also be provided by E-Mail to Laura.L.Wilkinson@usace.army.mil. Ms. Wilkinson may be contacted at (504) 862-1212, if questions arise.

Sincerely,

Laura Lee Wilkinson

Laura Lee Wilkinson
Environmental Coordinator
Hurricane Protection Office
U.S. Army Corps of Engineers,
New Orleans District

Figure 1 - IER #27 Project Area

Source: 2009 DOQQ

Legend

- Interstate
- Outfall Canal
- City Park
- PumpStations

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

REPLY TO
ATTENTION OF

August 12, 2010

Planning, Programs, and
Project Management
Environmental Planning and
Compliance Branch

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

Aug 13 2010
Date

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

To: James F. Boggs
U.S. Fish & Wildlife Service
Lafayette Field Office
646 Cajundome Blvd., Ste 400
Lafayette, LA 70506

From: Laura Lee Wilkinson, Hurricane Protection Office, U.S. Army Corps of Engineers

Subject: Endangered Species Concurrence Request for Proposed 100 Year Hurricane Protection Projects for Individual Environmental Report #27 (IER #27) for the proposed Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals.

Dear Mr. Boggs:

Provided for your review are the project description, project location map, and determination by the U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN) of the effect that the proposed action would have on threatened and endangered (T&E) species under USFWS jurisdiction. The proposed action, referred to as, Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, is located in Jefferson and Orleans Parishes (Figure 1). This draft IER #27 will be completed in the next few months and will be forwarded to you upon completion.

PROJECT DESCRIPTION

Approximately 18 miles of floodwalls have been examined for stability, seepage, sheet pile penetration levels and maximum water levels on I-walls along the 17th Street, London Avenue and Orleans Avenue Canals in Orleans and Jefferson Parish, Louisiana. Portions of these canals are recommended for remediation to increase the Maximum Operating Water Level (MOWL) in the canals which provide interior drainage for the City of New Orleans by evacuating stormwater from the city into Lake Pontchartrain. The area varies in protection mechanisms with earthen levees, I-Walls, L-Walls, T-Walls and closure gate structures. Increasing the MOWL of the canals is necessary to ensure that the canal walls can support the requirements of the Sewerage and Water Board of New Orleans (S&WB) in removing rain water from the city. This project includes remediation of floodwalls along the three outfall canals (17th Street, Orleans Avenue and London Avenue) in Orleans and Jefferson Parish, Louisiana.

17th Street Outfall Canal is a man-made canal approximately 2.4 miles in length, and approximately 200 feet wide, paralleled by levees with floodwalls on both sides. The canal is oriented in a north/south direction between Lake Pontchartrain and Interstate 10

OPTIONAL FORM 99 (7-90)
FAX TRANSMITTAL

To Laura Lee	# of pages ▶
Dept./Agency	From
Fax #	Phone #
	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

United States Department of the Interior

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

August 19, 2010

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL

To Laura Lee	# of pages ▶ 3
From David Walther	
Dept./Agency	Phone #
Fax #	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

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

Dear Colonel Fleming:

Please reference the August 12, 2010, letter providing information regarding additional work needed on the 17th Street, Orleans Avenue and London Avenue Canals to ensure they can support an increase in the Maximum Operating Water Level (MOWL). That work will be addressed in Individual Environmental Report (IER) 27, Proposed Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans parishes, Louisiana. That letter was provided by Ms. Laura Lee Wilkinson, Environmental Coordinator for the Hurricane Protection Office. That IER is being prepared the under the approval of the Council on Environmental Quality (CEQ) to obtain compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347) and is authorized Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4), and Public Law 110-28, U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental). Those laws authorized the Corps of Engineers (Corps) to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana to provide 100-year hurricane protection. This draft report provides planning objectives and recommendations to minimize project impacts to fish and wildlife resources resources.

The U.S. Fish and Wildlife Service (Service) provided a November 26, 2007, Draft Programmatic Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) report that addresses the hurricane protection improvements authorized in Supplemental 4. Construction of measures needed to provide 100-year hurricane protection along the floodwalls was addressed in IER 5. Since those reports the Corps has identified additional work needed to ensure that floodwalls along the outfall canals can support an increase in the MOWL in the canals. That increase is needed to provide the Sewage and Water Board of New Orleans sufficient depth (i.e., storage area) prior to removal of rainwater from the city's drainage canals by pumping. This report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA and has been provided to the Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service; their comments will be incorporated into our final report.

TAKE PRIDE IN AMERICA

The study area is located in Jefferson and Orleans parishes within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Higher elevations occur on the natural levees of the Mississippi River and its distributaries. Developed lands are primarily associated with natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development. Federal, State, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. The Mississippi River and Lake Pontchartrain are prominent landscape features, as are channels and canals utilized for urban flood control. Extensive wetlands and open waters dominate the landscape outside the flood control levees.

Habitat types in the project area include open water and developed areas. Open-water habitat within the project area consists of Lake Pontchartrain and drainage canals. Lake Pontchartrain encompasses approximately 630 square miles. Urbanization, stormwater discharges, inadequate wastewater treatment, shoreline armoring and agricultural activities have degraded the lakes water quality. The salinity in the lake is affected by saltwater intrusion from the Inner Harbor Navigation Canal and the Gulf Intracoastal Waterway. Lake Pontchartrain is also connected to the more saline waters of Lake Borgne and the Gulf of Mexico through the Chef Menteur and Rigolets Passes. The salinity in Lake Pontchartrain can be diluted, however, by fresh water flows from the Pearl River system on the eastern side of the lake and other smaller rivers on the western side. Stratification of the saline and fresh water does occur which can lead to hypoxic conditions that negatively affect the benthic organisms over a large area.

Drainage canals enclosed within the hurricane protection project are stagnant except when pumps are operating to remove water. Runoff from developed areas has reduced the habitat value of that habitat by introducing various urban pollutants, such as oil, grease, and excessive nutrients. Clearing and development has eliminated much of the riparian habitat that historically would normally provide shade and structure for many aquatic species.

Developed habitats in the study area include residential and commercial areas, as well as roads and existing levees. Those habitats do not support significant wildlife use. Most of the development is located on higher elevations of the Mississippi River natural levees and former distributary channels; however, vast acreages of swamp and marsh have been placed under forced drainage systems and developed.

As previously mentioned, the Service has provided a programmatic FWCA Report for the authorized hurricane protection project and for hurricane protection work associated with these canals (i.e., IER 5). Those reports contain a thorough discussion of the significant fish and wildlife resources (including habitats) that occur within the study area. For brevity, those discussions are incorporated by reference herein but the following information is provided to supplement the previously mentioned reports and provide specific recommendations regarding the proposed change in plans.

The proposed plan involves upgrading flood protection on 3 outfall canals all located within developed areas. The 17th Street Canal and the Orleans Avenue Canal are located between Lake Pontchartrain and U.S. Interstate Highway 10. The 17th Street Canal and the Orleans Avenue Canal are approximately 2.4 miles long and 200 feet wide and 2.6 miles long and approximately

160 feet wide, respectively. The London Avenue Canal is approximately 4 miles long and approximately 160 feet wide. All the canals are paralleled by floodwalls and/or levees. Four alternative methods are being investigated to remediate flood protection along those floodwalls. Those measures include deep soil mixing, net embankment increase (earthen and/or concrete), sheet pile cut-offs, and stability berms. Deep soil mixing would require construction activities (e.g., subsurface mixing with augers and injection of Portland cement and bentonite) on the protected side of the floodwall but some equipment could be located on the floodside. Net embankment increase would raise the height of the existing protected side embankment not more than 2 feet with either earthen fill or a combination of concrete slab and earthen fill. If the concrete slab method is utilized some floodside fill may be needed. Sheet pile cut-off would require sheet piles to be installed on the protected side adjacent to the existing floodwalls. They could, however, be driven from the floodside through the use of special equipment. Stability berms would consist of earthen fill placed at the toe of the levees but within the existing right-of-way. The size of the berm would be determined by additional engineering investigations.

SERVICE POSITION AND RECOMMENDATIONS

Because the proposed changes do not require mitigation and will not impact high quality fish and wildlife habitat, 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 shall be provided an opportunity to review and submit recommendations on the draft plans and specifications for all work addressed in this report.

2. Any proposed change in the proposed project features, locations or plans or to features associated with IER 5 shall be coordinated in advance with the Service, NMFS, LDWF, and LDNR.

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.

Sincerely,

for James F. Boggs
Supervisor
Louisiana Field Office

cc: Hurricane Protection Office, New Orleans District, New Orleans, LA
National Marine Fisheries Service, Baton Rouge, LA
EPA, Dallas, TX
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources, CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA

SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE

TRIBAL HISTORIC
PRESERVATION OFFICE

SEMINOLE TRIBE OF FLORIDA
AH-TAH-THI-KI MUSEUM

34725 WEST BOUNDARY ROAD
CLEWISTON, FL 33440

PHONE: (863) 983-6549
FAX: (863) 902-1117

TRIBAL OFFICERS
CHAIRMAN
MITCHELL CYPRESS
VICE CHAIRMAN
RICHARD BOWERS JR.
SECRETARY
PRISCILLA D. SAYEN
TREASURER
MICHAEL D. TIGER

Paul Hughbanks
Department of the Army
New Orleans District Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160-0267

THPO#: 006576

August 20, 2010

Subject: Orleans East Bank Outfalls Canals, Remediation Project, Jefferson and Orleans Parishes, Louisiana

Dear Mr. Hughbanks,

The Seminole Tribe of Florida's Tribal Historic Preservation Office (STOF-THPO) has received the New Orleans District Corps of Engineers' correspondence concerning the aforementioned project. The STOF-THPO has no objection to your findings at this time. However, the STOF-THPO would like to be informed if cultural resources that are potentially ancestral or historically relevant to the Seminole Tribe of Florida are inadvertently discovered during the construction process. We thank you for the opportunity to review the information that has been sent to date regarding this project. Please reference *THPO-006576* for any related issues.

We look forward to working with you in the future.

Sincerely,

Direct routine inquiries to:

Willard Steele
Tribal Historic Preservation Officer
Seminole Tribe of Florida

Anne Mullins
Compliance Review Supervisor
annemullins@semtribe.com

JLP:am

ALABAMA-COUSHATTA TRIBE OF TEXAS
571 State Park Rd 56 • Livingston, Texas 77351 • (936) 563-1100

August 26, 2010

Paul Hughbanks
New Orleans District, Corps of Engineers
Attn: CEMVN-PM-R
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Dr. Hughbanks:

On behalf of Mikko Oscola Clayton Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your efforts to consult us regarding the Orleans East Bank Outfalls Canals remediation proposal in Jefferson and Orleans Parishes.

Our Tribe maintains ancestral associations within Louisiana despite the absence of written records to completely identify Tribal activities, villages, trails, or grave sites. However, it is our objective to ensure significances of Native American ancestry, especially of the Alabama-Coushatta Tribe, are administered with the utmost attention.

Upon review of your July 30, 2010 submission, no impacts to religious, cultural, or historical assets of the Alabama-Coushatta Tribe of Texas should occur as activities are subject to previously disturbed locations. We concur with your "no historic properties affected" recommendation and request adherence to your Inadvertent Discovery Clause in the event of occurrence.

Should you require additional assistance, please do not hesitate to contact us.

Respectfully submitted,

Bryant J. Celestine
Historic Preservation Officer

Telephone: 936 – 563 – 1181 celestine.bryant@actribe.org Fax: 936 – 563 – 1183

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

REPLY TO
ATTENTION OF:

July 26, 2010

Regional Planning and
Environmental Division, South
New Orleans Environmental Branch
Attn: CEMVN-PDR-RN

Mr. Phil Boggan
Deputy State Historic Preservation Officer
Department of Culture, Recreation, and Tourism
P.O. Box 44247
Baton Rouge, Louisiana 70804

The proposed undertaking will have no adverse effect on historic properties. This effect determination could change should new information come to our attention.

Phil Boggan 9-2-10
Phil Boggan Date
Deputy State Historic Preservation Officer

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 Outfall Canals, Remediation Project, Jefferson and Orleans Parishes, Louisiana.

Dear Mr. Boggan:

The U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District (CEMVN), will conduct remediation to increase the Safe Water Elevations (SWE) for outfall canals in greater New Orleans. This work will include a variety of activities along the 17th Street, London Avenue and Orleans Avenue Outfall Canals. This remediation area overlaps areas that have been previously discussed and coordinated with your office for cultural resources (Heller et al. 2008) as part of Individual Environmental Report (IER) #5, but also includes some areas previously not coordinated for "no historic properties affected" with your office.

In our letters to your office dated February 22, 2008, and October 1, 2008 the District provided project documentation in support of a "no historic properties affected" finding for the project APEs located at Orleans Avenue, London Avenue, and 17th Street Canals. Your office concurred with our opinion in letters dated March 17, 2008, and November 10 2008.

RECEIVED
JUL 28 2010
ARCHAEOLOGY

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

September 10, 2010 F/SER46/LA:jk
225/389-0508

Ms. Joan M. Exnicios
Environmental Planning and Compliance Branch
Planning, Programs, and Management Division
New Orleans District, U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Ms. Exnicios:

NOAA's National Marine Fisheries Service (NMFS) has received the draft **Individual Environmental Report (IER) #27** provided by your letter dated September 2, 2010. The draft IER evaluates embankment remediation on the 17th Street, Orleans Avenue, and London Avenue outfall canals in Jefferson and Orleans Parish, Louisiana.

NMFS has reviewed the draft IER and finds that the disclosure and assessment of impacts associated with the embankment improvements are adequately addressed. NMFS also agrees that project implementation would not adversely impact wetlands or essential fish habitat. As such, we have no comments to provide on the draft IER #27.

We appreciate the opportunity to review and comment on the draft IER.

Sincerely,

for Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, Lafayette, Walther
EPA, Dallas, Ettinger
LA DNR, Consistency, Ducote
F/SER46, Swafford
Files

United States Department of the Interior

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

October 1, 2010

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

Dear Colonel Fleming:

Please reference the August 12, 2010, letter from Ms. Laura Lee Wilkinson, Environmental Coordinator for the Hurricane Protection Office, providing information regarding additional work needed on the 17th Street, Orleans Avenue and London Avenue Canals to ensure they can support an increase in the Maximum Operating Water Level (MOWL). That work was also addressed in Individual Environmental Report (IER) 27, Proposed Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans parishes, Louisiana dated September 2010. That IER was prepared the under the approval of the Council on Environmental Quality (CEQ) to obtain compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347) and is authorized Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4), and Public Law 110-28, U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental). Those laws authorized the Corps of Engineers (Corps) to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana to provide 100-year hurricane protection. This report provides recommendations to minimize project impacts to fish and wildlife resources resources.

The U.S. Fish and Wildlife Service (Service) provided a November 26, 2007, Draft Programmatic Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) report that addresses the hurricane protection improvements authorized in Supplemental 4. Construction of measures needed to provide 100-year hurricane protection along the floodwalls was addressed in IER 5. Since those reports the Corps has identified additional work needed to ensure that floodwalls along the outfall canals can support an increase in the MOWL in the canals. That increase is needed to provide the Sewage and Water Board of New Orleans sufficient depth (i.e., storage area) prior to removal of rainwater from the city's drainage canals by pumping. This report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA and has been provided to the Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service; their comments, if any, have be incorporated into this final report.

TAKE PRIDE® IN AMERICA

The study area is located in Jefferson and Orleans parishes within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Higher elevations occur on the natural levees of the Mississippi River and its distributaries. Developed lands are primarily associated with natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development. Federal, State, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. The Mississippi River and Lake Pontchartrain are prominent landscape features, as are channels and canals utilized for urban flood control. Extensive wetlands and open waters dominate the landscape outside the flood control levees.

Habitat types in the project area include open water and developed areas. Open-water habitat within the project area consists of Lake Pontchartrain and drainage canals. Lake Pontchartrain encompasses approximately 630 square miles. Urbanization, stormwater discharges, inadequate wastewater treatment, shoreline armoring and agricultural activities have degraded the lakes water quality. The salinity in the lake is affected by saltwater intrusion from the Inner Harbor Navigation Canal and the Gulf Intracoastal Waterway. Lake Pontchartrain is also connected to the more saline waters of Lake Borgne and the Gulf of Mexico through the Chef Menteur and Rigolets Passes. The salinity in Lake Pontchartrain can be diluted, however, by fresh water flows from the Pearl River system on the eastern side of the lake and other smaller rivers on the western side. Stratification of the saline and fresh water does occur which can lead to hypoxic conditions that negatively affect the benthic organisms over a large area.

Drainage canals enclosed within the hurricane protection project are stagnant except when pumps are operating to remove water. Runoff from developed areas has reduced the habitat value of that habitat by introducing various urban pollutants, such as oil, grease, and excessive nutrients. Clearing and development has eliminated much of the riparian habitat that historically would normally provide shade and structure for many aquatic species.

Developed habitats in the study area include residential and commercial areas, as well as roads and existing levees. Those habitats do not support significant wildlife use. Most of the development is located on higher elevations of the Mississippi River natural levees and former distributary channels; however, vast acreages of swamp and marsh have been placed under forced drainage systems and developed.

As previously mentioned, the Service has provided a programmatic FWCA Report for the authorized hurricane protection project and for hurricane protection work associated with these canals (i.e., IER 5). Those reports contain a thorough discussion of the significant fish and wildlife resources (including habitats) that occur within the study area. For brevity, those discussions are incorporated by reference herein but the following information is provided to supplement the previously mentioned reports and provide specific recommendations regarding the proposed change in plans.

The proposed plan involves upgrading flood protection on 3 outfall canals all located within developed areas. The 17th Street Canal and the Orleans Avenue Canal are located between Lake Pontchartrain and U.S. Interstate Highway 10. The 17th Street Canal and the Orleans Avenue Canal are approximately 2.4 miles long and 200 feet wide and 2.6 miles long and approximately

160 feet wide, respectively. The London Avenue Canal is approximately 4 miles long and approximately 160 feet wide. All the canals are paralleled by floodwalls and/or levees. Four alternative methods are being investigated to remediate flood protection along those floodwalls. Those measures include deep soil mixing, net embankment increase (earthen and/or concrete), sheet pile cut-offs, and stability berms. Deep soil mixing would require construction activities (e.g., subsurface mixing with augers and injection of Portland cement and bentonite) on the protected side of the floodwall but some equipment could be located on the floodside. Net embankment increase would raise the height of the existing protected side embankment not more than 2 feet with either earthen fill or a combination of concrete slab and earthen fill. If the concrete slab method is utilized some floodside fill may be needed. Sheet pile cut-off would require sheet piles to be installed on the protected side adjacent to the existing floodwalls. They could, however, be driven from the floodside through the use of special equipment. Stability berms would consist of earthen fill placed at the toe of the levees but within the existing right-of-way. The size of the berm would be determined by additional engineering investigations.

SERVICE POSITION AND RECOMMENDATIONS

Because the proposed changes will not impact high quality fish and wildlife habitat they do not require mitigation. Therefore, 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 shall be provided an opportunity to review and submit recommendations on the draft plans and specifications for all work addressed in this report.

2. Any proposed change in the proposed project features, locations or plans or to features associated with IER 5 or IER 27 shall be coordinated in advance with the Service, NMFS, LDWF, and LDNR.

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.

Sincerely,

James F. Boggs
Supervisor
Louisiana Field Office

cc: Hurricane Protection Office, New Orleans District, New Orleans, LA
National Marine Fisheries Service, Baton Rouge, LA
EPA, Dallas, TX
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources, CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA

United States Department of the Interior

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

October 1, 2010

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

Dear Colonel Fleming:

The U.S. Fish and Wildlife Service (Service) has reviewed the September 2, 2010, draft Individual Environmental Report (IER) 27, Proposed Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans parishes, transmitted to our office via a letter from Ms. Joan Exnicios, Chief of your Environmental Planning and Compliance Branch. 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 (i.e., Supplemental 4). That law authorized the Corps of Engineers (Corps) to upgrade the Lake Pontchartrain and Vicinity and the West Bank and Vicinity hurricane protection projects to provide protection against a 100-year hurricane event. The Service submits the following comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852; 42 U.S.C. 4321 et seq.) and the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

The IER is well-written and provides a good description of fish and wildlife resources in the project area and project impacts on those resources. The proposed project would not impact any wetlands or high quality fish and wildlife habitat, therefore no mitigation is necessary. The Service has previously concurred by letter dated August 13, 2010, with the Corps determination that the proposed project would have no effect on any threatened or endangered species or critical habitat under our jurisdiction. 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.

The Service thus far does not object to the proposed hurricane protection features for IER 27. Thank you for the opportunity to provide comments on the draft IER. If you have any questions

TAKE PRIDE IN AMERICA

regarding our comments, please contact David Walther at (337) 291-3122.

Sincerely,

James F. Boggs
Supervisor
Louisiana Field Office

cc: EPA, Dallas, TX
National Marine Fisheries Service, Baton Rouge, LA
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources (CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA