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

REPLY TO
ATTENTION OF
Regional Planning and
Environment Division South,
Environmental Planning Branch

FINDING OF NO SIGNIFICANT IMPACT (FONSI) CANAL REMEDIATION ON THE 17TH STREET OUTFALL CANAL ORLEANS AND JEFFERSON PARISHES, LOUISIANA

ENVIRONMENTAL ASSESSMENT #496

Description of Proposed Action: The U.S. Army Corps of Engineers, New Orleans District, proposes to conduct stability remediation activities on the inner western bankline of the 17th Street outfall canal in Orleans and Jefferson Parishes, Louisiana. The project would include placement of a 1-foot (ft) thick layer of 90-pound (lb) rock (rip-rap) placed over a geo-textile fabric on the inner west bank of the canal and will begin from the top of the inner bank, traverse down the canal slope into the water, and terminate approximately 10-ft past the toe near the canal bottom. The remediation would extend north from the Veterans Boulevard Bridge approximately 1.5 miles (7,900 linear ft) north to the existing bank protection at the Old Hammond Hwy Bridge. Total construction impacts within the 17th Street outfall canal are approximately 1.82 acres.

Two methods would be utilized during the placement of rip-rap. In one method, the contractor would load the material onto flexi-float barges located within the 17th Street outfall canal and the rip-rap material would then be placed along the bankline using a crane on a barge. The second method would involve utilizing a crane on Orpheum Avenue to place the rock over the wall and into the canal. The second method would require closing off portions of Orpheum Avenue in 2 to 3 block increments as the rock is moved into place. In the areas where Orpheum Avenue is not paved, it is expected that the contractor would not place the rock over the adjacent wall. The rip-rap to be placed in these areas would be loaded onto a barge, the barge would be moved to the area of placement where a small crane or excavator on an adjacent barge would place the rock. The rock would be loaded onto the barge from either the lot on the east bank at the end of West Harrison Avenue or over the wall close to where the paved section of Orpheum ends eliminating the need to move a crane into the non-paved area of Orpheum.

Equipment access to the canal for placement of the rock would be from the Old Hammond Hwy Bridge. The contractor would utilize the bridge for mobilization and demobilization of equipment including but not limited to a crane, an excavator, haul trucks and flexi float barges. Movement of the equipment would require partial closure of the bridge for safety reasons. Closures would be coordinated with the Louisiana Department of Transportation and

Development (LADOTD) and would be in 2 to 3 day increments. Total partial closure time of the 2 year contract would be approximately 20 days.

Two staging areas would be utilized during the construction period. The first staging area would be located on the east side of the outfall canal in Orleans Parish, in an empty lot at the end of West Harrison on Bellaire Drive, between 6274 Bellaire Drive and 6300 Bellaire Drive. Trucks delivering rock to the Harrison/Bellaire staging location would leave via the delivery route once the load is delivered. A second staging area would be located on the west side of the outfall canal in Jefferson Parish, at West Esplanade and Orpheum Avenue. Use of the lots could include, but not be limited to staging of construction equipment and materials, the placement of construction trailers, access to the canal, loading and unloading of equipment and materials into and out of the outfall canal.

It is estimated that approximately 3,500 trucks carrying rock material would be used during the duration of the contract. Appropriate traffic control measures would be installed in compliance with the project approved Maintenance of Traffic (MOT) plan including, construction entrance and trucks entering roadway signage. In the event a lane closure is necessary, all applicable guidelines would be coordinated with the LADOTD and followed per the approved MOT plan. Hours of operation for construction activities would adhere to local parish ordinances for both Orleans and Jefferson Parishes.

Factors Considered in Determination: This office has assessed the impacts of the Federal action on important resources including: bottomland hardwood forest; terrestrial resources; wildlife; threatened and endangered species; cultural resources; recreational resources; aesthetics (visual resources); and air quality. The New Orleans District concluded that the proposed bankline stability remediation would not result in any significant adverse impacts to the previously listed resources. Additionally, the risk of encountering hazardous, toxic and radioactive waste is considered low.

Environmental compliance for the Federal action was achieved based upon the following actions. By stamped letter on December 20, 2013, the U.S. Fish and Wildlife Service confirmed that the proposed action is not likely to adversely affect any threatened or endangered species. In a letter dated January 17, 2014, the Louisiana Department of Natural Resources concurred with the determination that the proposed action is consistent with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended (Coastal Zone Consistency C20080112). Consultation pursuant to Section 106 of the National Historic Preservation Act with the Louisiana State Historic Preservation Officer (SHPO), Division of Archaeology, was conducted for the study by letter dated October 1, 2008. The SHPO determined by stamped letter dated November 10, 2008 that no historic properties would be adversely affected in the Area of Potential Effect. By letter dated December 11, 2013, the Louisiana Department of Environmental Quality determined

that the requirements for a Water Quality Certificate (WQC 081110-01/A1 161807/CER 20130001) have been met and concludes that the placement of the fill material will not violate water quality standards of Louisiana as provided for in LAC 33:IX, Chapter 11. One public comment was received from Mr. Dennis Lambert of Ben C. Gerwick, Inc. offering additional information of an erosion monitoring report. This comment as well as a response letter is included in Appendix B of EA #496. All comments received during the public comment period for EA #496 were resolved.

Environmental Design Commitments: The following commitments are an integral part of the proposed action:

1 If the proposed action is changed significantly or is not implemented within one year, the New Orleans District will reinitiate consultation with the U.S. Fish and Wildlife Service to ensure that the proposed action would not adversely affect any Federally-listed threatened or endangered species, critical habitat or USFWS trust resources.

2 If any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a New Orleans District staff archeologist has been notified and final coordination with the State Historic Preservation Officer and Tribal Historic Preservation Officer has been completed (New Orleans District standard operating procedure).

Public Involvement: The proposed action has been coordinated with appropriate Federal, state, and local agencies and businesses, organizations, and individuals through distribution of EA #496 for their review and comment. EA #496 is attached hereto and made a part of this FONSI.

Conclusion: This office has assessed the potential environmental impacts of the proposed action. Based on this assessment, a review of the comments made on Environmental Assessment #496 which are referenced in Appendix B to Environmental Assessment #496, and the implementation of the environmental design commitments listed above, a determination has been made that the proposed action would have no significant impact on the human environment. Therefore, an Environmental Impact Statement will not be prepared.

8 April 2014
Date

Richard L. Hansen
Colonel, U.S. Army
District Commander

FINAL ENVIRONMENTAL ASSESSMENT

STABILITY REMEDIATION ON THE 17th STREET OUTFALL CANAL

Jefferson and Orleans Parish, Louisiana
EA #496

US Army Corps
of Engineers®

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ENVIRONMENTAL ASSESSMENT

STABILITY REMEDIATION OF THE 17TH STREET OUTFALL CANAL,

ORLEANS AND JEFFERSON PARISH, LOUISIANA

EA 496

1. INTRODUCTION

The U.S. Army Corps of Engineers, New Orleans District, (CEMVN) Regional Planning and Environmental Division South, has prepared this Environmental Assessment (EA) for the New Orleans District to evaluate the potential impacts associated with floodwall remediation work that would address localized erosion that reduces the cross-section of the bank on the 17th Street outfall canal. This EA has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the U.S. Army Corps of Engineers Engineering Regulations ER 200-2-2. This EA provides sufficient information on the potential adverse and beneficial environmental effects to allow the District Commander, U.S. Army Corps of Engineers, New Orleans District, to make an informed decision on the appropriateness of an Environmental Impact Statement or a Finding of No Significant Impact.

On 15 April 2011, the District Commander signed the Decision Record for Individual Environmental Report Supplemental (IERS) 27.a Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans Parish, Louisiana. On 7 October 2010, the District Commander signed the Decision Record for IER 27, Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans Parish, Louisiana. On 30 June 2009, the District Commander signed the Decision Record for IER 5, Permanent Protection System for the Outfall Canals Project on 17th Street, Orleans Avenue, and London Avenue Canals, Jefferson and Orleans Parishes, Louisiana.

Copies of the previously mentioned documents and other supporting information are available upon request or at www.nolaenvironmental.gov. This EA has been prepared to address proposed project modifications to the Government's approved plan analyzed in IER #5, IER #27 and IERS #27.a and the approved Decision Records associated with these documents. IERs # 27, #27.a. and #5 are hereby incorporated by reference into this document.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of this EA is to assess potential environmental impacts that could result from performing stability remediation activities to address erosion on the banks of the 17th Street outfall canal. Based on recommendations following a site visit by MVN and Southeast Louisiana Flood Protection Authority-East (SLFPA-E) to 17th Street Canal on March 3, 2013, MVN Engineering Division, with assistance from the Geotechnical Branch of the St. Louis District

(MVS), performed geotechnical analysis on the 17th Street Canal localized bank stability. An Engineering Alternative Report (EAR) was drafted to document the remediation for erosion along the 17th Street outfall canal in Jefferson Parish, Louisiana. The east and west banks and the canal bottom were evaluated in the effort. The EAR determined that remediation of the west bank canal is necessary to ensure the integrity of the canal banks because of identified stability issues.

1.2 PROPOSED ACTION

The proposed action consists of canal bank remediation that would include placement of a 1-foot (ft) thick layer of 90-pound (lb) rock placed over a geotextile fabric on the inner west bank of the canal. The placement of rip-rap is necessary to ensure that the bankline remains intact and can support the requirements of the Sewerage and Water Board of New Orleans (SWBNO) in draining rain water from the city. There would be no excavation or grading of the bankline performed with this proposed action.

The rip-rap section would begin from the top of the inner bank, traverse down the canal slope into the water, and terminate approximately 10-ft past the toe near the canal bottom. The remediation would extend north from the Veterans Blvd Bridge approximately 1.5 miles (7,900 linear ft) north to the existing bank protection at the Old Hammond Hwy Bridge. (Figure 1) Total impacts within the 17th Street outfall canal are approximately 1.82 acres.

Two methods would be utilized during the placement of rip-rap. In one method, the contractor would load the material onto flexi-float barges located within the 17th Street outfall canal and the material would then be placed along the bankline using a crane on a barge. The second method would involve utilizing a crane on Orpheum Avenue to place the rock over the wall and into the canal. The second method would require closing off portions of Orpheum Avenue in 2 to 3 block increments as the rock is moved into place. In the areas where Orpheum Avenue is not paved, it is expected that the contractor would not place the rock over the adjacent wall. The rock to be placed in these areas would be loaded onto a barge, the barge would be moved to the area of placement where a small crane or excavator on an adjacent barge would place the rock. The rock would be loaded onto the barge from either the lot at the end of Harrison or over the wall close to where the paved section of Orpheum ends eliminating the need to move a crane into the non-paved area of Orpheum.

Equipment access to the canal for placement of the rock would be from the Old Hammond Hwy Bridge. (Figure 2) The contractor would utilize the bridge for mobilization and demobilization of equipment including but not limited to a crane, an excavator, haul trucks and flexi float barges. Movement of the equipment would require partial closure of the bridge for safety reasons. Closures would be coordinated with the Louisiana Department of Transportation and Development (LADOTD) and would be in 2 to 3 day increments. Total partial closure time over the 2 year contract would be approximately 20 days.

Two staging areas would be utilized during the construction period. The first staging area would be located on the east side of the outfall canal in Orleans Parish, in an empty lot at the end of West Harrison on Bellaire Drive, between 6274 Bellaire Drive and 6300 Bellaire Drive. (Figure 3) Trucks delivering rock to the Harrison/Bellaire staging location would leave via the delivery

route once the load is delivered. A second staging area would be located on the west side of the outfall canal in Jefferson Parish, at West Esplanade and Orpheum Avenue. (Figure 4) Use of the lots could include, but not be limited to staging of construction equipment and materials, the placement of construction trailers, access to the canal, loading and unloading of equipment and materials into and out of the outfall canal.

It is estimated that approximately 3,500 trucks carrying rock material would be used during the duration of the contract. Best Management Practices, (BMPs), would be utilized at the construction entrances and around the site, as required, in compliance with the National Pollutant Discharge Elimination System (NPDES) storm water permit. BMPs may consist of, but not be limited to silt fencing, fiber rolls, drain inlet protection, and stabilized construction entrances. Appropriate traffic control measures would be installed in compliance with the project approved Maintenance of Traffic (MOT) plan including, construction entrance and trucks entering roadway signage. In the event a lane closure is necessary, all applicable guidelines would be coordinated with the LADOTD and followed per the approved MOT plan. Hours of operation for construction activities would adhere to local parish ordinances for both Orleans and Jefferson Parishes.

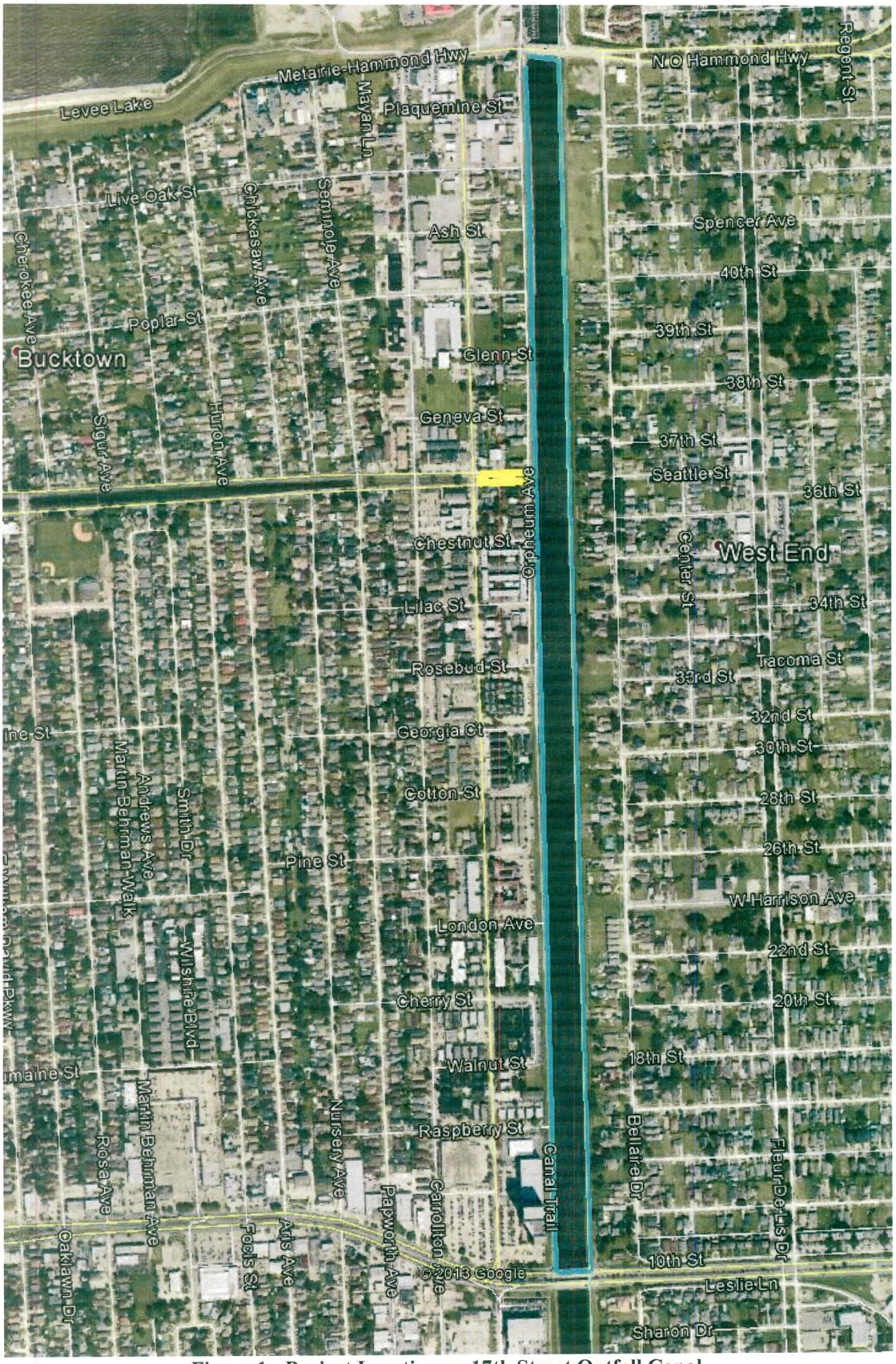

Figure 1: Project Location on 17th Street Outfall Canal

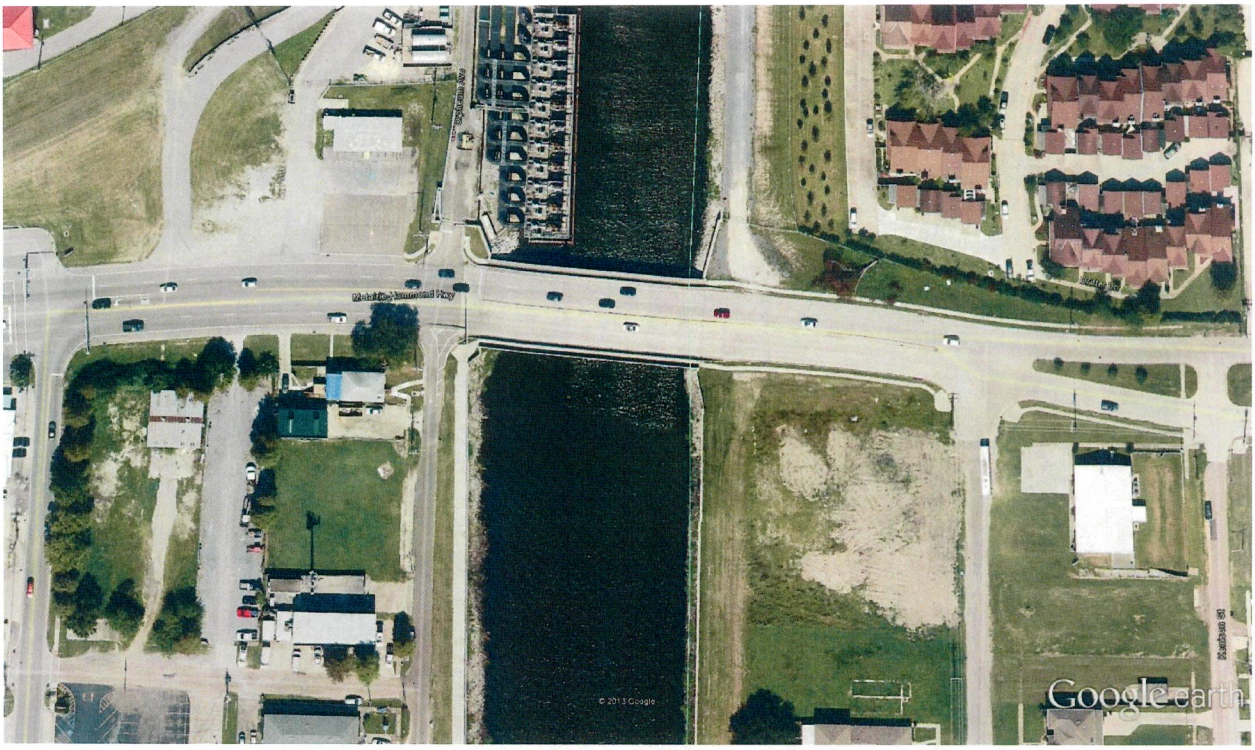

Figure 2: Old Hammond Highway Bridge

Figure 3: Proposed Staging Area at West Harrison and Bellaire Drive

Figure 4: Proposed Staging at West Esplanade and Orpheum

1.3 AUTHORITY FOR THE PROPOSED ACTION

The amended Flood Control Act of 1965 (P.L. 89-298, Title II, Section 204) 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 Lake Pontchartrain and Vicinity (LPV) Project was amended by the Water Resources Development Acts (WRDA) of 1974 (P.L. 93-251, Title I, Section 92); 1986 (P.L. 99-662, Title VIII, Section 805); 1990 (P.L. 101-640, Section 116); 1992 (P.L. 102-580, Section 102); 1996 (P.L. 104-303, Section 325); 1999 (P.L. 106-53, Section 324); and 2000 (P.L. 106-541, Section 432); and the Energy and Water Development Appropriations Acts of 1992 (P.L. 102-104, Title I, Construction, General), 1993 (P.L. 102-377, Title I, Construction, General), and 1994 (P.L. 103-126, Title I, Construction, General).

Congress passed a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade the project systems damaged by the storms. The supplemental appropriations acts gave additional authority to the USACE to construct Hurricane and Storm Damage Risk Reduction System (HSDRRS) projects.

The 3rd Supplement (Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006, P.L. 109-148, Chapter 3, Flood Control and Coastal Emergencies) authorized and appropriated funds for the Corps of Engineers to restore the level of risk reduction for which the flood damage reduction and hurricane and storm damage reduction projects were designed at full federal expense.

Under the 4th Supplement (Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery Act of 2006, P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies), "...shall be used to modify the 17th Street, Orleans Avenue, and London Avenue outfall canals and install pumps and closure structures at or near the lakefront."

Under the 5th Supplement (U.S. Troop Readiness, Veteran's Care, Katrina Recovery, Iraq Accountability Appropriations Act, P.L. 110-28, Title IV, Chapter 3, Flood Control and Coastal Emergencies, General Provisions, Sections 4302 and 4303) Congress directed the Chief of Engineers to investigate the overall technical advantages, disadvantages and operational effectiveness of operating the new pumping stations at the mouths of the 17th Street, Orleans Avenue and London Avenue canals in the New Orleans area directed for construction in Public Law 109-234 concurrently or in series with existing pumping stations serving these canals and the advantages, disadvantages and technical operational effectiveness of removing the existing pumping stations and configuring the new pumping stations and associated canals to handle all needed discharges to the lakefront or in combination with discharges directly to the Mississippi River in Jefferson Parish; and the advantages, disadvantages and technical operational effectiveness of replacing or improving the floodwalls and levees adjacent to the three outfall canals.

On November 28, 2007 the Assistant Secretary of the Army (ASA) submitted the report to Congress, PL 110-28 Chapter 3 SEC 4303. The 5th Supplement, P.L. 110-28, also authorized the

reallocation of funds appropriated in Chapter 3 of the 4th Supplemental (P.L. 109-234) under the heading "Flood Control and Coastal Emergencies" to promote the goal of continuing work at an optimal pace, while maximizing levels of risk reduction to reduce the risk of storm damage to people and property. In February 2008, a portion of the 4th Supplemental funding for the installation of permanent pumps and closure structures was reallocated to the Inner Harbor Navigation Canal Surge Risk Reduction Project.

1.4 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 (P.L. 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.

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 decisionmaking 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 #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.

IER #27, Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans Parishes, Louisiana. This IER was prepared as an evaluation for remediation of floodwalls along the three outfall canals, 17th Street, Orleans Avenue, and London Avenue. The document provides an evaluation of the potential impacts associated with strengthening approximately 7 miles of floodwalls were examined for stability, seepage, settlement, and deflection along the outfall canals. On 7 October 2010, the CEMVN Commander signed a Decision Record for IER #27.

IER #27.a, Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans Parishes, Louisiana. This IER evaluated the temporary use of additional staging and access areas for the construction of activities described for the London Avenue Outfall Canal in IER #27. On 15 April 2011, the CEMVN Commander signed a Decision Record for IER #27.

1.5 DATA GAPS AND UNCERTAINTIES

Data gaps could affect the impacts analysis of some resource areas, including traffic and transportation, aesthetics, air and noise, land use and socioeconomics. These resource areas cannot be precisely analyzed without knowledge of specific engineering details; therefore, the impacts analysis was completed utilizing information currently available. Substantial changes to the proposed action as identified in this document that are relevant to environmental concerns would be addressed in additional supplements to the EA.

1.6 NEPA SCOPING

1.6.1 Public Concerns

Residents in the vicinity of the 17th Street, Orleans Avenue and London Avenue outfall canals have voiced concerns regarding air and noise pollution, the aesthetics, and perception of a loss of property values in connection with several 17th St canal projects including the construction of the interim closure structures (ICS) or temporary pumps and the Permanent Canal Closure and Pumps (PCCP) project. Residents have requested that during construction activities related to the HSDRRS, which would include the proposed project, measures be implemented to reduce air and noise pollution in the vicinity of all three outfall canals. Residents have also voiced the opinion that every effort should be made to keep area bridges open during construction to minimize impacts on neighborhood traffic patterns.

2. ALTERNATIVES TO THE PROPOSED ACTION

NEPA requires that a "No Action" alternative be analyzed to determine the environmental consequences of not undertaking the action(s) or project(s) proposed, and thereby providing a framework for measuring the benefits and adverse effects of other alternatives. Likewise, Section 73 of the WRDA of 1974 (PL 93-251) requires Federal agencies to give consideration to nonstructural measures to reduce or prevent flood damage. The 17th Street Canal project development team (PDT) considered the following alternatives in its decision process; no action alternative, non-structural measures, sheet pile, articulated mat, and riprap. Cost engineers studied these alternatives and due to cost constraints, the non-structural measures as well as the sheet pile and articulated mat alternatives were dismissed immediately and the PDT moved forward with an evaluation of the riprap placement alternative. Herein this report will include an assessment of the environmental impacts associated with this action alternative and the "no action" alternative.

2.1 NO ACTION ALTERNATIVE

Under the no-action alternative, the proposed stability remediation would not take place and no rock would be placed along the inner west bank of the 17th Street outfall canal. The bankline would remain unprotected, leaving the soil exposed to wear from erosional forces.

3. AFFECTED ENVIRONMENT

3.1 ENVIRONMENTAL SETTING

The project area is located within the Lake Pontchartrain and Vicinity study area and includes the area bounded by Lake Pontchartrain to the north, Bellaire Drive to the east, Veterans Boulevard to the south, and Orpheum Avenue to the west. The project features being investigated are the inner bankline of the western shore of the 17th Street outfall canal.

3.1.1 Geological Setting

The portion of the study area where the work will take place is located 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 17th Street, Orleans Avenue and London Avenue 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-ft of hydraulic fill from Lake Pontchartrain. Fill deposits contain sand, silt, and clay. Fill deposits overlay lacustrine deposits except at the 17th Street outfall canal where they overlay approximately 10-ft 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-ft 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-ft 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 overlay 10-ft to 30-ft of bay-sound deposits, which are characterized by soft to medium clays, silts, and some sand containing shell fragments. Pleistocene deposits are beneath bay-sound deposits at approximate elevation -60 NAVD88. These deposits are mainly stiff to very stiff, oxidized clays, silts and sands.

The project 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 one-half foot per century. Eustatic sea level is predicted to rise an additional 1.3-ft over the next century (IPCC 2001). Therefore, the natural, long-term, relative subsidence rate at the project area is estimated to be 1.8-ft per century. Ground subsidence related to artificial lowering of the water table far exceeds the natural rate of subsidence and is estimated at several feet in areas south of the project area.

3.1.2 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 and Jefferson Parishes 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-ft 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 (PS) 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 outfall canal, PS #7 is on the Orleans Avenue outfall canal, and PS #3 and PS #4 are on the London Avenue outfall canal. In 1997, the USACE entered into a Project Cooperation Agreement with the SWBNO to improve drainage. Under the authority of the Southeast Louisiana Flood Control Project (SELA), drainage improvements consist of channel improvement projects, adding capacity to existing pumping stations, and constructing new pumping stations.

3.1.3 17th Street Outfall Canal

The 17th Street outfall canal is an approximately 13,500ft long outfall canal which forms part of the boundary between the cities of Metairie, in Jefferson Parish, and New Orleans, in Orleans Parish. The canal is bounded on the north by Lake Pontchartrain, on the south by the SWBNO Pump Station #6 (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 United States Coast Guard (USCG) station near the mouth of the canal. An Interim Control Structure (ICS) is located on the northern end of the canal, immediately north of the Old Hammond Highway Bridge. Bellaire Drive runs parallel to the eastern side of the canal in Orleans Parish, and Orpheum and Lake Avenues run parallel to the western side of the canal in Jefferson Parish. Three bridges cross the canal, including Old 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.

3.2 RELEVANT RESOURCES

This section discusses the relevant resources 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 farther 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 relevant resources (Table 1) described in this section are those recognized 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.

The following resources have been considered and found to not be affected by the alternative under consideration and as such, they will not be discussed further in this document: estuarine water bodies; Gulf water bottoms; beaches; estuarine or marine fisheries resources, including essential fish habitat; terrestrial resources, including prime and/or unique farmlands; socio-economic resources; and environmental justice.

Table 1: Relevant Resources

Resource	Institutionally Important	Technically Important	Publicly Important
Waters of the United States	Fish and Wildlife Coordination Act of 1958, as amended. **State** policies may apply as well. For example, is the watershed classified by the State of Mississippi as supporting a Fish and Wildlife Classification?	They are a critical element of many valuable freshwater and marine habitats; they are an indicator of the health of the various freshwater and marine habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Wildlife	Fish and Wildlife Coordination Act of 1958, as amended and the Migratory Bird Treaty Act of 1918	They are a critical element of many valuable aquatic and terrestrial habitats; they are an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources.	The high priority that the public places on their esthetic, recreational, and commercial value.
Threatened and Endangered Species	The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940.	USACE, USFWS, NMFS, NRCS, USEPA, LDWF, and LADNR cooperate to protect these species. The status of such species provides an indication of the overall health of an ecosystem.	The public supports the preservation of rare or declining species and their habitats.
Cultural Resources	National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979	State and Federal agencies document and protect sites. Their association or linkage to past events, to historically important persons, and to design and construction values; and for their ability to yield important information about prehistory and history.	Preservation groups and private individuals support protection and enhancement of historical resources.
Recreation Resources	Federal Water Project Recreation Act of 1965 as amended and Land and Water Conservation Fund Act of 1965 as amended	Provide high economic value of to local, state, and national economies.	Public makes high demands on recreational areas. There is a high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana; and the large per-capita number of recreational boat registrations in Louisiana.
Aesthetics	USACE ER 1105-2-100, and National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's National and Scenic River's Act of 1988, and the National and Local Scenic Byway Program.	Visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a study area. State and Federal agencies recognize the value of beaches and shore dunes.	Environmental organizations and the public support the preservation of natural pleasing vistas.
Socio-Economic Resources	River and Harbor Flood Control Act of 1970 (PL 91-611).	N/A	Social concerns and items affecting area economy are of significant interest to community.
Environmental Justice	Executive Order 12898 and the Department of Defense's Strategy on Environmental Justice of 1995,	The social and economic welfare of minority and low-income populations may be positively or disproportionately impacted by the tentatively selected plans.	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.

Resource	Institutionally Important	Technically Important	Publicly Important
Air Quality	Clean Air Act of 1963, Louisiana Environmental Quality Act of 1983.	State and Federal agencies recognize the status of ambient air quality in relation to the NAAQS.	Virtually all citizens express a desire for clean air.
Hydrology and Water Quality	Clean Water Act of 1977, Fish and Wildlife Coordination Act, Coastal Zone Mgt Act of 1972, and La State & Local Coastal Resources Act of 1978.	USACE, USFWS, NMFS, NRCS, USEPA, and State DNR and wildlife/fishery offices recognize value of fisheries and good water quality. the national and state standards established to assess water quality	Environmental organizations and the public support the preservation of water quality and fishery resources and the desire for clean drinking water.

Table 2 presents those relevant resources found within the project area, and notes whether they could be impacted by implementation of the proposed action.

Table 2: Relevant Resources in Project Study Area

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

*= The proposed action poses no impacts therefore these significant resources are not discussed in this document.

3.2.4 Waters of the United States

3.2.4.1 Existing Conditions

Waters of the United States (33 CFR Section 328.3) 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).

The 17th Street outfall 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. Lake Pontchartrain, mapped as sub tidal, estuarine, is the northernmost boundary of the canal. The project area falls within an area identified and cleared in a previous environmental report. (IER #5, Section 3.1 Environmental Setting)

The waters of the United States within the project area consist of the 17th Street outfall canal. This area is 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 include construction and filling within these waters of the United States, specifically the 17th Street outfall canal.

3.2.5 Wildlife

3.2.5.1 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, which is near 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 within the study 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. 68a-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 MBTA (40 Stat. 755, as amended; 16 U.S.C. 703 et. seq.).

Currently, there are no suitable roosting or nesting sites for migratory waterfowl, shorebirds, and wading birds 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.

3.2.6 Threatened and Endangered Species

3.2.6.1 Existing Conditions

The threatened and endangered species that could be present in the vicinity of the 17th Street outfall canal are the West Indian manatee (*Trichechus manatus*), Gulf sturgeon (*Acipenser oxyrinchus desotoi*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), green sea turtle (*Chelonia mydas*), and loggerhead sea turtle (*Caretta caretta*).

3.2.6.1.1 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 just north of the project area. The Gulf sturgeon could enter the mouth of the 17th Street outfall canal 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 the National Oceanic and Atmospheric Administration (NOAA) in the project area; therefore no consultation with NOAA is required.

3.2.6.1.2 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 on 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 mouth of the 17th Street outfall canal 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 23 December 2013. The USFWS determined that the proposed action would have no effect on West Indian Manatee.

3.2.6.1.3 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 Kemp's Ridley Sea Turtle; therefore no consultation with NOAA is required.

3.2.6.1.4 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 the Green Sea Turtle; therefore no consultation with NOAA is required.

3.2.6.1.5 Loggerhead Sea Turtle

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

CEMVN concluded that the proposed work would have no effect on the Loggerhead Sea Turtle; therefore no consultation with NOAA is required.

3.2.7 Cultural Resources

3.2.7.1 Existing Conditions

The proposed additional Rights of Way are composed of lands previously studied for the HSDRRS, and IER(s) #5, #27 and #27.a. As part of this study, cultural resources records, soil records, and historic records were consulted to determine that no potential cultural resources exist within the currently proposed additional Rights of Way (Heller et al. 2012). Coordination with Louisiana State Historic Preservation Officer (SHPO) and federally-recognized Tribes has taken place as part of the HSDRRS process and is documented in the previous IER(s), which can be found at www.nolaenvironmental.gov.

3.2.8 Recreational Resources

3.2.8.1 Existing Conditions

Recreational opportunities within the vicinity of the 17th Street outfall 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 5. 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 is located on the east side of the canal mouth in Orleans Parish. Other parks adjacent to the 17th Street outfall 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 outfall 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. The LRA closed on 30 June 2010 and the project was handed over to the Office of Community Development who broke ground on the project November 2010 and completed Phase 1 in January 2012.

3.2.9 Aesthetics (Visual Resources)

3.2.9.1 Existing Conditions

Located on the Orleans Parish boundary with Jefferson Parish, the 17th Street outfall canal project area is less residential and park-like in setting than the Orleans Avenue and London Avenue outfall canals. The early 20th century lake reclamation project along the 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. 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 outfall canal project area is primarily residential and the Jefferson Parish side is a mixture of residential and service oriented commercial development. Flood risk reduction measures including the ICS and floodwalls made of concrete or metal sheet-piling are evident throughout the project area.

The landscape already consists of stone rip rap along the western edge of the 17th Street Canal. Vegetation in the study area is a typical neighborhood streetscape with sprawling street trees such as oaks, and manicured lawns. Major water resources include Lake Pontchartrain and the 17th Street Canal. Land use in the area is extremely urban with densely developed lands boasting a large residential population along with some retail commercial. Overall access to the immediate project site can be found on the canal trail that runs adjacent to the project site and parallel to both it and the flood wall. Other access can be found along Orpheum Avenue, Metairie-Hammond Highway, and Bellaire Drive, located west, north and east of the project site. Site lines to the project site from the residential areas are screened by the existing levees, so view sheds are minimal from those areas. User activity is relatively high in this region with high volumes of residential and pedestrian traffic.

There are no State or Federally designated Scenic Byways located in or near the project area. There are no state recognized scenic streams in the vicinity of the project area.

Figure 5: Recreational Facilities near 17th Street Outfall Canal

3.2.10 Noise

3.2.10.1 Existing Conditions

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 (Leq) is often used to describe the overall noise environment. Leq 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 sources of noise near the 17th Street outfall 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 outfall canal. There are several schools within one-half mile of the 17th Street outfall 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 noise levels (Leq and DNL) were estimated for the 17th Street outfall canal 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)		
	Leq (daytime)	Leq (nighttime)	DNL
17th Street Avenue Canal	58	52	58

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

Receiving Land Use Category	Time	Sound Level Limit (dBA)		
		New Orleans		Jefferson Parish
		L_{10}	L_{max}	L_{max}
Residential	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 L10 = sound pressure level that is exceeded ten percent of the time

3.2.11 Air Quality

3.2.11.1 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 (PM10 and PM2.5), sulfur dioxide (SO2), carbon monoxide (CO), nitrous oxides (NOx), ozone (O3), 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 project area can be estimated from measurements conducted at an air quality monitoring station (located at City Park), approximately 2 miles from the project area. Recent air quality measurements are below the NAAQS for all criteria pollutants and are a conservative representation of the air quality conditions near the project area. (USEPA 2010a). At any given time, concentrations of criteria pollutants would be expected to be below those outlined in Table 6.

Table 6: 2011 National Ambient Air Quality Standards

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month average	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb (2)	Annual Mean
Ozone [73 FR 16436, Mar 27, 2008]		primary and secondary	8-hour	0.075 ppm (3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution Dec 14, 2012	$PM_{2.5}$	primary	Annual	12 µg/m^3	annual mean, averaged over 3 years
		secondary	Annual	15 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun		primary	1-hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years

22, 2010] [38 FR 25678, Sept 14, 1973]	secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Notes:
a - Source: 40 CFR 50.1-50.12.
b - Source: USEPA 2011
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 PM2.5 concentrations from must not exceed 15.0 µg/m3.
f - The 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor must not exceed 65µg/m3.
ppm = parts per million
µg/m3 = micrograms per cubic meter
NO2 = Nitrogen dioxide

3.2.12 Water Quality

3.2.12.1 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-ft at New Orleans to over 200-ft near the Mississippi border (LDEQ 2008). Lake Pontchartrain is approximately 640 mi^2 in area and averages 12-ft in depth.

The 17th Street outfall canal is in the Lake Pontchartrain Drainage Canals, 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 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. Monitoring information collected by the LPBF was submitted to the Water Permits Division (WPD) and the Water Quality Section (WQS) of the Louisiana Department of Environmental Quality (LDEQ) for inclusion into their 2006 Water Quality Integrated Report. The report indicated that Lake Pontchartrain fully supports designated recreational uses west of LA 11; however along the south shore beaches, primary contact recreation was listed as not being supported due to excessive fecal coliform levels which were believed to be attributed to sanitary sewer overflows (LDEQ 2006).

The Water Quality Integrated Report of 2008 removed fecal coliform impairment from the lake because of supporting data collected by the LPBF (LPBF 2010).

The *2012 Water Quality Integrated Report* was reviewed and approved with three segmented revisions by the Environmental Protection Agency (EPA) on July 18, 2013. The finalized version indicates different water quality supported uses and the revisions are noted below.

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 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 *2012 Water Quality Integrated Report* indicates the Lake Pontchartrain Drainage Canals, Jefferson and Orleans Parishes subsegment, which includes the 17th Street outfall canal, currently does 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.

3.2.13 Hydrology

3.2.13.1 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 outfall 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 outfall 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.

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), and 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 outfall 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 outfall canal ICS is 8,800 cfs to 9,200 cfs.

3.2.14 Socioeconomic Resources

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 potential effects of USACE 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*. (Brookings Institution 2008) 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.

3.2.14.1 Populations and Demographics

Existing Conditions

Population estimates from the U.S. Census provide an indication of population levels post-Katrina. 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).

Orleans Parish

The population of Orleans Parish in 2000 was 484,668. 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. The U.S. Census Bureau has estimated the 2010 population of Orleans Parish as 343,829 as outlined in Table 7.

Jefferson Parish

Metairie is located in Northern Jefferson Parish, and just west of the city of New Orleans, LA. According to the U.S. Census Bureau, in the year 2000, population in Metairie was 146,136 compared to 138,481 by 2010. This shows a population decrease of 5.2 percent during this ten year time window (U.S. Census Bureau). The population of the project area and the state of Louisiana for 2000 and 2010 is outlined in Table 7.

Table 7: Census Population of the Project Area, 2000 through 2010

Location	2010	2000	2000-2010 % Change
Metairie	138,481	146,136	-5.2
New Orleans	343,829	484,668	-29.06
Louisiana Total	4,533,372	4,468,976	1.8

Source: U.S. Census Bureau, 2010 Population, Census 2000.

From the U.S. Census Bureau's 2007 to 2011 American Community survey, the racial mix of Metairie was predominantly Caucasian (81 percent), followed by Black or African American (10 percent), and Asian (4 percent). The remaining 5 percent of the population was split between American Indian, Alaska Native, and other races. The racial mix of New Orleans was predominantly Black or African American (60 percent), followed by Caucasian (33 percent), and Hispanic or Latino (5 percent). The remaining 2 percent of the population was split between American Indian, Alaska Native, and other races.

3.2.14.2 Business and Economic Conditions

Existing Conditions

In 2011, there were 16,375 firms in Metairie and 27,166 in New Orleans (U.S. Census Bureau 2007-2011 average). In Metairie, 20 percent of the firms were comprised of educational, health care, and social assistance; while, 12 percent offered entertainment or food services for the area. The remaining industries included construction, public administration, and finance, insurance, professional and technical services. The breakdown of New Orleans firms were 28 percent educational health care, and social assistance; 15 percent offering entertainment or food services and the remaining including retail trade, professional, scientific, management, administrative and waste management services and public administration.

2010 Census data showed an unemployment rate of 3.5 percent and 5.5 percent in Metairie and New Orleans respectively, compared to Louisiana's rate of 5 percent. Manufacturing shipments reached $286 million (2010 dollars) with merchant wholesales reaching $971 million. Hotel and food services earned an estimated $376 million. Total retail sales for Metairie firms exceeded $2 billion.

In 2011, the median household income for Metairie was $52,150 and for New Orleans it was $36, 681 (2011 dollars) compared to the Louisiana average of $44,086. Per capita income for the Metairie was $32,281 and for New Orleans it was $26,131.

3.2.14.3 Housing

Existing Conditions

The Town of Metairie had a total of 65,691 occupied housing units in 2010 with the city of New Orleans containing a total of 142,148 occupied units (U.S. Census Bureau). Home ownership was 63 percent for Metairie and 48 percent for New Orleans, compared to the state average of 68 percent. In 2010, the average number of individuals per household was 2.37 (Metairie) and 2.29 (New Orleans) people (U.S. Census Bureau). Finally, the median value of owner-occupied housing was $211,000 (Metairie) and $184,000 (New Orleans) (2011 dollars).

3.2.14.4 Transportation

Existing Conditions

The 17th Street Outfall Canal separates Jefferson and Orleans Parish. Roads and bridges are the main transportation systems within the project area and the only method for citizens to travel over the canal between Orleans and Jefferson Parish. The Old Hammond Highway Bridge and the Veterans Boulevard Bridge provide convenient travel routes east and west over the canal for citizens that reside within the project area. These bridges are 1.5 miles north and south of each other and serve highly populated residential and commercial development. Interstate-10, which sets to the south of the project area, is another travel route over the canal as well.

3.2.14.5 Health and Safety

Existing Conditions

No medical facilities or other public facilities related to safety, such as fire and police stations, are located immediately adjacent to the rights-of-way but related facilities are available within a 5 to 10 mile radius of the construction site.

3.2.14.6 Employment, Income and Local Tax Base

Existing Conditions

The 17th Street outfall canal and associated floodwalls helps to protect an area that generally supports a variety of employment and income opportunities in the Metairie area, and contribute

to the local tax base. Employment and income conditions immediately along the outfall canal include work and revenue generated through the food service, professional and technical services. There are also two schools that are adjacent to this site.

4. ENVIRONMENTAL CONSEQUENCES

4.1 WATERS OF THE UNITED STATES

Approximate lengths of impacts to waters of the United States are given, (see Section 3.1 Environmental Setting) however all dimensions were assumed to be the largest possible footprint impacted and the actual impacts could be minimized during the construction process. During completion of the applicable coordination, the actual acreage of impacts to waters of the United States would be determined on the basis of the amount of rip-rap placed within the inner western shoreline of the 17th Street outfall canal.

No Action Alternative

Direct and Indirect Impacts
The existing 17th Street outfall canal footprint has already impacted waters of the United States, as discussed in section 3.2.1.2.2 of IER #5 and section 3.2.1.2.2 of IER #27. Under the No Action Alterative, an increase in turbidity could occur as the bankline continues to erode from wave action caused by pumping activities within the canal.

Cumulative Impacts
Under the no action alternative, cumulative impacts to waters of the United States in the form of a weakening of the canal wall from continued eroding of the bankline could occur around the project area. This weakening could increase the risk of flooding on the western side of the canal should the wall fail.

Proposed Action Alternative

Direct Impacts
Approximately 13.00 acres of estuarine/riverine (the 17th Street outfall canal) waters of the United States would be directly impacted by filling as a result of the placement of rip-rap on the west bank of the canal. A 1-ft thick layer of rock placed over a geotextile fabric would be placed beginning from the top of the inner bank, traversing down the canal slope into the water, and terminate approximately 10-ft past the toe, near the canal bottom. (Figure 6)

Due to the uneven nature of the bankline, the footprint of the rip-rap placement would vary for the length of the proposed remediation, which is approximately 7,200 linear feet. (Figure 7) The approximate average width of the rip-rap placement is 75-ft (measuring from the top of the inner bank to 10-ft past the toe) for an overall impact of approximately 13 acres.

The use of barges to place the rip-rap along the bankline could lower water quality by causing an increase in turbidity as the barges move through the canal and stir up sediment. This impact

would be temporary and water quality would return to previous conditions upon completion of construction.

Indirect Impacts

Short-term, indirect impacts could occur from construction-related activities including erosion and runoff from the placement of the rip-rap along the bankline, causing temporary increases in turbidity. 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. Any impacts to waters of the United States from construction activities would be temporary and localized.

Cumulative Impacts

Cumulative impacts to waters of the United States in the form of increased sediment in the water column from barge activities could occur in and around the project area. However this amount is negligible when considered with other HSDRRS projects in the area. Past, present and reasonably foreseeable future construction activities related to HSDRRS and non-HSDRRS-related projects including permanent pump stations at the mouths of the outfall canals and construction along the Lake Pontchartrain shoreline (i.e. as referenced in IERs #5, #27 and #27.a) could be expected to impact riverine and estuarine wetlands by causing temporary increases in turbidity within the 17th Street canal and Lake Pontchartrain. The use of construction BMPs and SWPPPs for this project and others would continue to be utilized in order to minimize the incremental impacts of each project.

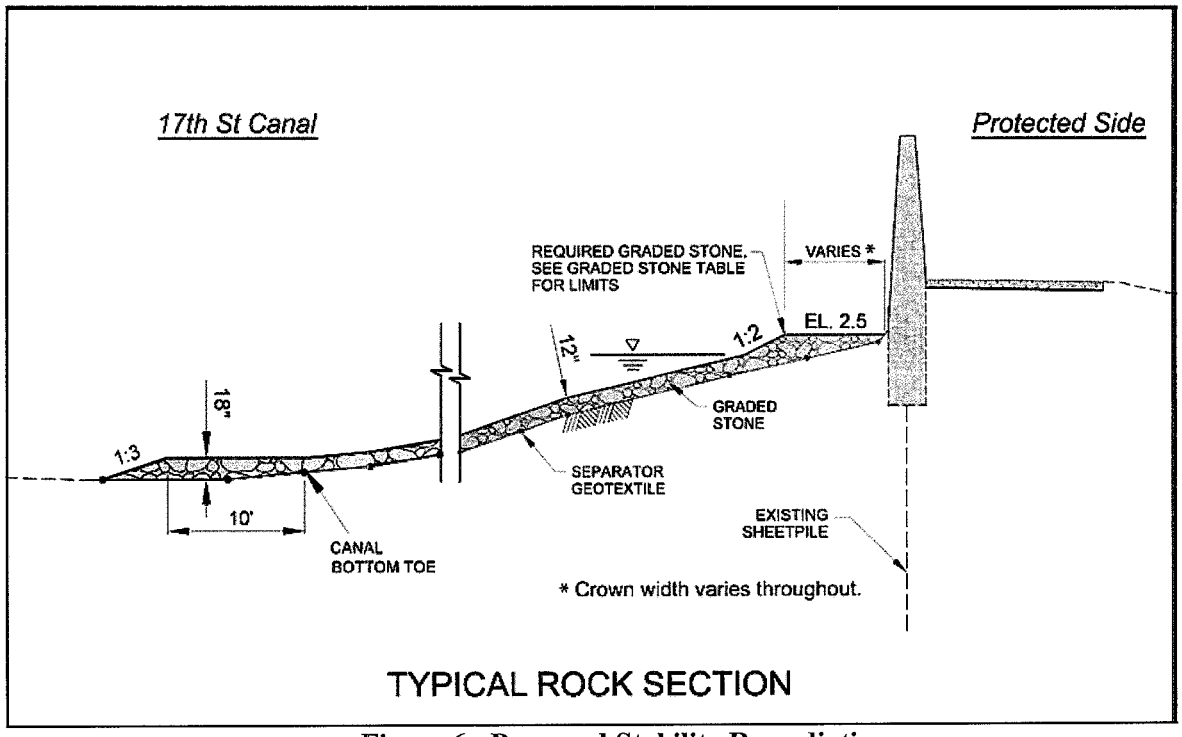

Figure 6: Proposed Stability Remediation

Figure 7: Existing Erosion of Inner Bankline

4.2 WILDLIFE

No Action Alternative

Direct and Indirect Impacts

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

Cumulative impacts would not be expected, since there would be no direct or indirect impacts to wildlife.

Proposed Action Alternative

Direct and Indirect Impacts

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
Cumulative impacts would occur along the southern shoreline of Lake Pontchartrain, particularly in those areas encompassed by the proposed action, and discussed in IERs #5, #27 and #27.a. Temporary impacts to fisheries, wildlife and some avian species, in the form of displacement, could occur as a result of construction activities during other HSDRRS 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.

4.3 THREATENED AND ENDANGERED SPECIES

No Action Alternative

Direct and Indirect Impacts
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
Cumulative impacts would not be expected, since there would be no direct or indirect impacts to threatened and endangered species associated with the no action alternative.

Proposed Action Alternative

Direct and Indirect Impacts
Threatened and Endangered Species are not likely to occur in the project area, which is located south of the ICS and contains no critical habitat. Therefore, impacts should not occur as a result of the proposed action.

Cumulative Impacts
Threatened and Endangered Species are not likely to occur in the project area, which is located south of the ICS and contains no critical habitat. Therefore, cumulative impacts should not occur as a result of the proposed action.

4.4 CULTURAL RESOURCES

No Action Alternative

Direct and Indirect Impacts
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
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.

Proposed Action Alternative

Direct Impacts
The proposed action for the 17th Street outfall canal would have no direct impact on cultural resources. The entire 17th Street outfall 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 with identified 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
Implementation of the proposed action for the 17th Street outfall canal would provide an added level of flood risk reduction to known and unknown cultural resources located inside and outside of the project area by reducing the risk of damage caused by flood events.

Cumulative Impacts
Implementation of the proposed action for the 17th Street outfall 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.

4.5 RECREATIONAL RESOURCES

No Action Alternative

Direct, Indirect and Cumulative Impacts
The 17th Street outfall canal, currently does not support primary and secondary contact recreation, (as defined in paragraph 3.2.12) therefore there would be no direct or indirect impacts to recreation under the no action alternative.

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 recreational fishing in the project area along Lake Pontchartrain. The no action alternative would not impede these benefits.

Proposed Action Alternative

Direct Impacts
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. Any disruptions of recreation resources would be temporary and would only occur during construction activities.

Indirect Impacts
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
Implementation of the proposed action would have beneficial cumulative impacts on recreational resources throughout the greater New Orleans metropolitan area. This proposed action is part of the ongoing Federal effort to reduce the threat to property posed by flooding. The combined effects from construction of the multiple projects underway and planned for the LPV HSDRRS aids in reducing flood risk and storm damage to hundreds of recreation facilities and associated infrastructure and parks.

4.6 AESTHETICS (VISUAL RESOURCES)

No Action Alternative

Direct and Indirect Impacts
Under the no action alternative, there would no direct or indirect impacts to visual resources within the study area. Visual resources would most likely evolve from existing conditions in a natural process, or change as dictated by future land use maintenance practices and policies.

Cumulative Impacts
With the no action alternative, there are no foreseen cumulative impacts to visual resources in the study area.

Proposed Action Alternative

Direct and Indirect Impacts
Under the future with project conditions, direct impacts to visual resources would be minimal due to the fact that stone rip rap is already in use. The landscape and its design will see no significant change. There are no public or institutionally significant resources in the area.

Temporary impacts could potentially occur due to construction efforts in the area. Increased traffic due to construction vehicles, dust, debris and increased noise volumes could affect the

residential and commercial areas located around the project site. These temporary impacts should return to normal upon completion of the project.

Cumulative Impacts
There are no foreseen cumulative impacts to visual resources in the study area. Cumulative impacts would include, among other things, the incremental direct and indirect impacts of implementing the proposed action combined with impacts from continued growth and development in the area. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region.

4.7 NOISE

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.

No Action Alternative

Direct, Indirect and Cumulative Impacts
Under the no action alternative, noise receptors near the project corridor would not experience additional noise associated with the proposed action construction activities ; 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 in IER #5. 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.

Proposed Action Alternative

Direct and Indirect Impacts
Short-term increases in noise due to construction activities including trucks and rock moving equipment 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 8 presents typical noise levels (dBA at 50 feet) that USEPA has estimated for the main phases of outdoor construction.

Table 8: 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

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 outlined in Sec. 20-102 of the Jefferson Parish noise ordinance (see Table 9). Special variances to the local noise ordinance or mitigation measures could 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 may be employed to reduce the noise:

Table 9: Maximum Permissible Sound Levels by Receiving Land Use Category (Jefferson Parish)

Land Use Category	Time	Sound Level Limit (dB(A))
Residential, noise-sensitive area, public space	7:00 a.m.—9:59 p.m.	60
	10:00 p.m.—6:59 a.m.	55
Multifamily dwelling	7:00 a.m.—9:59 p.m.	50
	10:00 p.m.—6:59 a.m.	45
Commercial, convention	7:00 a.m.—9:59 p.m.	65
	10:00 p.m.—6:59 a.m.	60
Industrial	At all times	75

Source: Jefferson Parish code of Ordinances (http://library.municode.com/index.aspx?clientId=14447)

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 could be partially enclosed with noise barriers at some locations. The following mitigation measures could be used to address noise impacts identified at the construction sites, as necessary:

- Enclose construction power units
- 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
There would be no long-term cumulative impacts on the existing noise environment. During project construction, 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.

4.8 AIR QUALITY

The Clean Air Act General Conformity rule applies to federal activities in non-attainment and maintenance areas. Orleans and Jefferson Parishes are in attainment for all National Ambient Air Quality Standards (NAAQS). Because the proposed action would be within an area designated by USEPA as in attainment for all criteria pollutants, the general conformity regulations do not apply. Nevertheless, the *de minimis* threshold values were used here as a standard against which to evaluate the level of effects under NEPA.

No Action Alternative

Direct, Indirect and Cumulative Impacts
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.

Proposed Action Alternative

Direct and Indirect Impacts
During construction of the proposed action, increases in emissions due to trucking, 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 are not expected to exceed 100 tpy of any criteria pollutant, exceed the CEQ GHG presumptive effects threshold, or contribute to a violation of air regulations.

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 10

Table 10: Annual Air Emissions Compared to Applicability Thresholds

	Emissions (tons/year)						*De minimis* Threshold	Would Emissions Equal/Exceed *De minimus* 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 because they would be spread out over a longer time period. 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/mitigation 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
- Appropriate use of portable fuel containers
- Meeting new engine standards for nonroad vehicles

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

Cumulative Impacts

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.

4.9 WATER QUALITY

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 projects discussed in IERs #5, #27 and #27.a potentially impacted or will impact water quality. A temporary increase in concentration of fine sediments within the water column due to upland erosion or sediment disturbance in waterways that could arise under the no action alternative, would be additive to similar impacts caused by levee improvement projects as well as other projects in the area. 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 that are in place to regulate and improve water quality, could decrease cumulative impacts over time.

Proposed Action Alternative

Direct and Indirect Impacts
Implementation of the proposed action alternative would result in direct impacts in the form of reduced erosion of the western bankline of the 17th Street outfall canal. Additionally, since construction would occur in a waterbody, sediments disturbed during the construction process could cause localized impacts that could include increased turbidity and low DO levels. These impacts would be short-term and water quality and DO levels would be expected to return to normal upon completion of construction.

Cumulative Impacts
Other past, present, and future projects are not expected to have a significant impact on the largescale 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 projects addressed in IERs #5, #27 and

#27.a potentially impacted or could impact water quality. A temporary increase in concentration of fine sediments within the water column due to project-related erosion or sediment disturbance in waterways, would be additive to similar impacts caused by other past, present, and reasonably foreseeable levee and non-levee related improvement projects. This could 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.

4.10 SOCIOECONOMIC RESOURCES

No Action Alternative

Direct, Indirect and Cumulative Impacts

Under the no action alternative, remediation of bankline within the 17th Street outfall canal would not be implemented. Without implementation of the proposed action, the canal wall would not meet current seepage, deflection and stability criteria, for current or future operational capacities. 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 associated with evacuation, clean-up, debris removal, building and infrastructure repair, vehicular damage, and re-occupation of homes and businesses.

Proposed Action Alternative

Direct Impacts

Implementing the proposed action would result in temporary direct impacts to those residents living near the properties assigned for staging and construction access. The staging areas would be utilized to store equipment and materials necessary for construction, but would be returned to their preconstruction conditions once construction has been completed. Construction activities associated with this alternative would temporarily increase the level of spending in the area.

This alternative decreases the chances of 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

Construction activities would have a short term minor adverse impacts due to increased traffic in the project area. Local traffic within the neighborhoods would be impacted by increased traffic related to the construction activities. 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.

Cumulative Impacts
The cumulative effect of the proposed action, combined with all the other projects in the HSDRRS, on human, economic, and community resources would be both beneficial due to the decreased risks of flood damage.

4.11 TRANSPORTATION

No Action Alternative

Direct, Indirect and Cumulative Impacts
There would be no direct, indirect or cumulative impacts to transportation in the surrounding area of the outfall canal if no action is taken. However, a failure of the outfall canal wall would result in inundation on road ways and possibly bridges. Road inundation would result in costly and timely traffic reroutes.

Proposed Action Alternative

Direct, Indirect and Cumulative Impacts
Temporary traffic delays and reroutes would be expected for the proposed action. Equipment access to the canal for placement of the material would be from the Old Hammond Hwy Bridge. Construction crews would utilize the bridge for mobilization and demobilization of equipment during the remediation process. Movement of the equipment would require partial closure of the bridge for safety reasons. Closures would be coordinated with the Louisiana Department of Transportation and Development (LADOTD) and would be in two to three day increments. Total partial closure time of the Hammond Highway Bridge over the two year contract would be approximately 20 days. The proposed action would not have any impact on rail or water transportation, since neither of these transportation methods fall within the project area.

4.12 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

Engineer Regulation (ER) 1165-2-132 sets forth the Corps guidance for the reasonable identification and evaluation of Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of proposed actions. It It also states that is Corps policy to avoid the use of project funds for HTRW removal and remediation activities. An American Society for Testing and Materials (ASTM) E 1527-05 Phase 1 Environmental Site Assessment (ESA), HTRW 13-13 dated 13 November 2013, has been completed for the project area. A copy of Phase 1 ESA will be maintained on file at the U.S. Army Corps of Engineers, New Orleans District Headquarters.

Personnel from CEMVN-PDC-CEC made a field inspection on 31 October 2013 of the 17th Street Canal project area and the staging areas. The areas were inspected for the presence of pipes, containers, tanks or drums, ponds or lagoons, car bodies, tires, refrigerators, trash dumps, electrical equipment, oil drilling equipment, gas or oil wells, discoloration of vegetation or soils,

water sheens, out-of-place dirt mounds or depressions in the landscape, evidence of fire, stressed soils with lack of vegetation, animal remains, unusual animal behavior, biota indicative of a disturbed environment, and odors indicative of poor water quality or chemical presence. None of these indicators of possible HTRW problems were noted.

Government and commercial environmental databases, historical aerial photographs, and historic topographical maps were also reviewed for the presence of Recognized Environmental Conditions (RECs) that could affect the proposed project. A review of the databases, aerial photographs, and topographic maps did not reveal any evidence of RECs that would affect the proposed project.

The probability of encountering HTRW for the proposed action is low based on the initial site assessment. If no recognized environmental conditions are identified in relation to the project site, the probability of encountering HTRW for this project will be considered low. If a recognized environmental condition is identified in relation to the project site, the U.S. Army Corps of Engineers, New Orleans District would take the necessary measures to avoid the recognized environmental condition so that the probability of encountering or disturbing HTRW would continue to be low.

4.13 SUMMARY OF CUMULATIVE IMPACTS

The Council on Environmental Quality's (CEQ) regulations (40 CFR 1500-1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.) define cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR 1508.7)". Cumulative Effects can result from individually minor but collectively significant actions taking place over a period of time."

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 near the project area 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 EA #496 proposed action would significantly reduce storm surge-induced flooding from Lake Pontchartrain and protect the neighborhoods and commercial businesses in the vicinity of the 17th Street outfall canal. 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. Implementing construction BMPs and SWPPPs could 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 this remediation and the nearby 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 this project.

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 this project.

While the proposed action would result in minor impacts as previously noted, it is expected that no significant adverse cumulative impacts would occur as a result of implementation of the project. The direct, indirect, and cumulative impacts from associated projects were previously addressed in the reports identified in the Prior Reports Section, above. These reports also provided an evaluation of the direct, indirect, and cumulative impacts associated with the stability remediation construction in the project area. The discussions of potential cumulative impacts contained in the cited documents are incorporated herein by reference.

Overall, the proposed action, in comparison to past, present, and reasonably foreseeable future actions, would not incrementally contribute adversely to the general project area. This flood risk reduction feature is part of an overall comprehensive plan for the HSDRRS. The proposed action alternative would accomplish flood risk reduction objectives, which are of great importance in the Lower Mississippi Valley, and provide for the preservation and enhancement of the very significant fish, wildlife, and other natural resources of the basin. Providing stability remediation on the 17th Street outfall canal would aid in the ability of the levee to reduce the risk of flood damage to the natural and human environment on the protected side of the levee. The cumulative impacts of the proposed action are not expected to result in long-term adverse impacts.

5 COORDINATION

Preparation of this Environmental Assessment and Finding of No Significant Impact (FONSI) is being coordinated with appropriate Congressional, Federal, state, local interests, and Indian Tribes, as well as environmental groups and other interested parties. The following federal and state agencies, non-governmental organizations, as well as other interested parties will receive copies of this Environmental Assessment and the Finding of No Significant Impact:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources (LADNR), Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer

6 MITIGATION

No wetland impacts are anticipated from the proposed action. The compensatory mitigation discussed in IERs #5, #27, and #27.a remain unchanged.

7 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the Federal action would be achieved upon: coordination of this EA and FONSI with appropriate agencies, organizations, and individuals for their review and comments; USFWS confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species; LADNR concurrence with the LCRP; receipt of a Water Quality Certificate from the State of Louisiana Department of Environmental Quality (LADEQ); public review of the Section 404(b)(1) Public Notice; signature of the Section 404(b)(1) Evaluation; receipt of the Louisiana SHPO determination of No Affect on cultural resources; receipt and acceptance or resolution of all USFWS Coordination Act recommendations; and receipt and acceptance or resolution of all LADEQ comments on the air quality impact analysis documented in the EA. The FONSI will not be signed until the Federal action achieves environmental compliance with applicable laws and regulations, as described above.

According to USFWS, a Coordination Act Report is not needed since the environment impacted is located in an urban area, is not of significant size, and does not provide high quality habitat to any of our fish and wildlife trust resources no report is necessary (i.e., USFWS has no recommendations to minimize impacts to fish and wildlife habitat). Service review of the NEPA document fulfills coordination requirement under Section 2(a) of the FWCA.

Any change in the proposed project features, locations or plans would be coordinated in advance with the 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.

The USFWS reviewed the proposed action to see if it would affect any threatened and endangered species under its jurisdiction, or their critical habitat. The USFWS concurred with

the CEMVN in a stamped submittal dated 23 December 2013 that the proposed action would not have adverse impacts on T&E species under its jurisdiction. (Appendix D)

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 17 January 2014. (Appendix D).

Section 106 of the National Historic Preservation Act, as amended, requires consultation with the Louisiana State Historic Preservation Officer (SHPO) and Native American tribes. The proposed additional Rights of Way are composed of lands previously studied for the HSDRRS, and IER(s) #5, #27 and #27.a. As part of this study, cultural resources records, soil records, and historic records were consulted to determine that no potential cultural resources exist within the currently proposed additional Rights of Way (Heller et al. 2012). Coordination with SHPO and federally-recognized Tribes has taken place as part of the HSDRRS process and is documented in Appendix D of IER #5.

A Water Quality Certificate from the LADEQ on 11 December 2013 stating that the department made a determination that the requirements for a WQC have been met and concluding that the placement of fill would not violate water quality standards of Louisiana as provided by LAC 33:IX.Chapter 11.

8 CONCLUSION

The proposed action includes stability remediation of the inner west bank of the 17th Street outfall canal in Jefferson and Orleans Parish, Louisiana. The placement of rip-rap is necessary to ensure that the bankline remains intact and can support the requirements of the SWBNO in removing rain water from the city. The rip-rap should provide necessary protection against erosional forces within the canal and support the requirements of the SWBNO in removing rain water from the city.

9 PREPARED BY

Environmental Assessment #496 and the associated Finding of No Significant Impact were prepared by Ms. Patricia Leroux, Environmental Resource Specialist, with relevant sections and contributions prepared by: Mr. Joseph Musso (HTRW); Dr. Paul Hughbanks (Cultural Resources); Mr. Brandon Davis (Socioeconomics). The address of the preparers is: US Army Corps of Engineers, New Orleans District; Regional Planning Division South, Environmental Compliance Branch, Coastal Environmental Compliance Section, CEMVN-PDN-CEP; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

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APPENDIX A: LIST OF ACRONYMS AND DEFINITION OF COMMON TERMS

AQCR – Air Quality Control Region
ASA – Assistant Secretary of the Army
ASTM – American Society for Testing Materials
BGEPA – Bald and Golden Eagle Protection Act
BMPs – Best Management Practices
CAA – Clean Air Act
CEMVN – U.S. Army Corps of Engineers, New Orleans District
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
CIAP – Coastal Impact Assistance Program
COCs – Constituents of Concern
CWA – Clean Water Act
CWPPRA Coastal Wetlands Planning Protection Restoration Act
dBA - Decibels
DNL – Day/Night Levels
EA – Environmental Assessment
EAR – Engineering Alternative Report
EIS – Environmental Impact Statement
EPA – Environmental Protection Agency
ESA – Environmental Site Assessment
ER – Engineering Regulation
FONSI – Finding of No Significant Impact
FR – Federal Register
Ft - Feet
GHG – Greenhouse Gases
GNODC – Greater New Orleans Community Data Center
HSDRRS – Hurricane and Storm Damage Risk Reduction
ICS – Interim Control Structure
IER – Individual Environmental Report
IERS – Supplemental Individual Environmental Report
Lb - Pounds
LPV – Lake Pontchartrain and Vicinity
LADNR – Louisiana Department of Natural Resources
LADOTD – Louisiana Department of Transportation and Development
LDEQ – Louisiana Department of Environmental Quality
LDHH – Louisiana Department of Health and Hospitals
LDWF – Louisiana Department of Wildlife and Fisheries
Leq – Equivalent sound level
MBTA – Migratory Bird Treaty Act
mi^{2-} Square miles
MOT – Maintenance of Traffic
MSA – Metro Statistical Area

MVN – Mississippi Valley, New Orleans
NAAQS – National Air Quality Standards
NAVD88 – North American vertical Datum (2204/65)
NEPA – National Environmental Policy Act
NMFS – National Marine Fisheries
NOAA – National Oceanic and Atmospheric Administration
NPDES – National pollutant Discharge Elimination System
NRHP – National register of Historic Places
NWI – National Wetland Inventory
PS – Pump Station
RECs – Recognized Environmental Concerns
ROI – Region of Influence
RPC – Regional Planning Commission
SHPO – State Historic Preservation Officer
SLFPA-E – Southeast Louisiana Flood Protection Authority - East
SOCs – Sites of Concern
SWBNO – Sewerage and Water Board of New Orleans
SWPPP – Stormwater Pollution prevention Plan
USGS – U.S. Coast Guard
WRDA – Water Resources Development Act

APPENDIX B: PUBLIC COMMENT

From:	Dennis Lambert
To:	Leroux, Patricia S MVN
Cc:	MVN Environmental; "Felton Suthon"; Mike O'Sullivan; Dale Berner; Sam Yao; Jean Tolliez; Ryan Walsh
Subject:	[EXTERNAL] Public Comment for EA #496 - Canal Remediation on 17th Street Outfall Canal
Date:	Tuesday, March 11, 2014 3:12:29 PM
Attachments:	2010-074-001 - Erosion report.pdf

Dear Ms. Leroux,

On behalf of the Southeast Louisiana Flood Protection Authority – East (SLFPA-E)and the Orleans Levee District (OLD), please find attached an erosion monitoring report for the 17th Street Canal. Ben C. Gerwick, Inc. has been monitoring the 17th Street Canal, London Avenue and Orleans Avenue Canals since 2011 on behalf of the SLFPA-E/OLD. We are willing to provide each report if necessary though the updates are cumulative (see appendices). We have reviewed the EA obtained by Ryan Walsh of our New Orleans office and noted the work was not referenced.

We are grateful to be of service and look forward to your response. I will remain

Respectfully yours,

Dennis G. Lambert, P.E.
Area Manager

Ben C. Gerwick, Inc. | COWI
400 Poydras Street, Suite 1160
New Orleans, LA 70130

United States

Cell: 504.206.7665

Office: 504.528.2004
Fax: 504.528.2434
Email: delm@gerwick.com <mailto:delm@gerwick.com>

gerwick.com <http://www.b-t.com/> | cowi.com <http://www.cowi.com/>

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For other important information concerning this email please click www.cowi.com/disclaimer

APPENDIX C: MEMBERS OF INTERAGENCY ENVIRONMENTAL TEAM

Kyle Balkum	Louisiana Dept. of Wildlife and Fisheries
Catherine Breaux	U.S. Fish and Wildlife Service
Mike Carloss	Louisiana Dept. of Wildlife and Fisheries
David Castellanos	U.S. Fish and Wildlife Service
Frank Cole	Louisiana Department of Natural Resources
Greg Ducote	Louisiana Department of Natural Resources
John Ettinger	U.S. Environmental Protection Agency
David Felder	U.S. Fish and Wildlife Service
Michelle Fischer	U.S. Geologic Survey
Deborah Fuller	U.S. Fish and Wildlife Service
Mandy Green	Louisiana Department of Natural Resources
Jeffrey Harris	Louisiana Department of Natural Resources
Richard Hartman	NOAA National Marine Fisheries Service
Brian Heimann	Louisiana Dept. of Wildlife and Fisheries
Jeffrey Hill	NOAA National Marine Fisheries Service
Christina Hunnicutt	U.S. Geologic Survey
Barbara Keeler	U.S. Environmental Protection Agency
Kirk Kilgen	Louisiana Department of Natural Resources
Tim Killeen	Louisiana Department of Natural Resources
Brian Lezina	Louisiana Dept. of Wildlife and Fisheries
Brian Marks	Louisiana Dept. of Wildlife and Fisheries
Ismail Merhi	Louisiana Department of Natural Resources
David Muth	U.S. National Park Service
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 D: INTERAGENCY AND TRIBAL GOVERNMENT CORRESPONDENCE

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

REPLY TO
ATTENTION OF

Environmental Planning Branch
Regional Planning and
Environment Division - South

December 20, 2013

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

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.

23 Dec 2013

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

Date

From: Patricia Leroux, Environmental Planning Branch, U.S. Army Corps of Engineers

Subject: Endangered Species Concurrence Request for Environmental Assessment #496 (EA #496) Proposed Remediation Work at the 17th Street Outfall Canal

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, 17th Street Outfall Canal Remediation, is located in Jefferson and Orleans Parishes (Figure 1). EA #496 will be forwarded to you upon completion.

PROJECT DESCRIPTION

The purpose of this EA is to assess potential environmental impacts that could result from performing stability remediation activities to address erosion approximately 1.5 miles of the inner western bank of the 17th Street Outfall Canal. Based on recommendations following a site visit by MVN and Southeast Louisiana Flood Protection Authority-East (SLFPA-E) to 17th Street Canal on March 3, 2013, MVN Engineering Division, with assistance from the Geotechnical Branch of the St. Louis District (MVS), performed geotechnical analysis on the 17th Street Canal localized bank stability. An Engineering Alternative Report (EAR) was drafted to document the remediation for erosion along the 17th Street Outfall Canal in Jefferson Parish, Louisiana. The east and west banks and the canal bottom were evaluated in the effort. The EAR determined that remediation of the west bank canal is necessary to ensure the integrity of the canal banks because of identified stability issues.

Proposed Action

The proposed action consists of canal bank remediation that would include placement of a 1-foot (ft) thick layer of 90-pound (lb) rock placed over a geotextile fabric on the inner west bank of the canal. The placement of rip-rap is necessary to ensure that the bankline remains intact and can support the requirements of the Sewerage and Water Board of New Orleans (SWBNO) in draining rain water from the city.

BOBBY JINDAL
GOVERNOR

PEGGY M. HATCH
SECRETARY

State of Louisiana

DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

DEC 1 1 2013

U.S. Army Corps of Engineers- New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Attention: Patricia Leroux

RE: Water Quality Certification (WQC 081110-01/AI 161807/CER 20130001)
Individual Environmental Report #5 (IER #5) revision
Jefferson & Orleans Parishes

Dear Ms. Leroux:

The Louisiana Department of Environmental Quality (the Department) has reviewed your application to install and maintain three permanent pump stations for improvements to the hurricane protection levee system, on the 17th Street, Orleans Avenue and London Avenue Canals at Lake Pontchartrain in New Orleans, Louisiana. This revision concerns the additional placement of fill material for erosion control and extension of the permanent right-of-way.

Based on the information provided in the application, the Department made a determination that the requirements for a Water Quality Certification have been met and concludes that the placement of the fill material will not violate water quality standards of Louisiana as provided for in LAC 33:IX.Chapter 11. Therefore, the Department hereby issues a Water Quality Certification to the U.S. Army Corps of Engineers- New Orleans District.

If you have any questions, please call Jamie Phillippe at 225-219-3225.

Sincerely,

Scott Guilliams
Administrator
Water Permits Division

SG/jp

Post Office Box 4313 • Baton Rouge, Louisiana 70821-4313 • Phone 225-219-3181 • Fax 225-219-3309
www.deq.louisiana.gov

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

REPLY TO
ATTENTION OF:

October 1, 2008

Planning, Programs, and
Project Management Division
Environmental Planning
and Compliance Branch
Attn: CEMVN-PM-RN

Mr. Scott Hutcheson
State Historic Preservation Officer
Office of Cultural Development
Department of Culture, Recreation, and Tourism
P.O. Box 44247
Baton Rouge, Louisiana 70804

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, Individual Environmental Report #5, Jefferson and Orleans Parishes, Louisiana.

Dear Mr. Hutcheson:

The U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District (CEMVN), is amending the Area of Potential Effects (APE) for the project area currently being studied under Individual Environmental Report #5, Lake Ponchartrain and Vicinity Hurricane Protection Project, Orleans East Bank Outfall Canals. Individual Environmental Report #5, Jefferson and Orleans Parishes, Louisiana. This amendment shifts the Orleans Avenue Canal APE to the north and slightly extends the London Avenue Canal APE north to Lakeshore Drive. No changes are proposed to the 17th Street Canal APE.

In our letter to your office dated February 22, 2008, the District provided project documentation in support of a "no historic properties affected" finding for the three original project APE's located at Orleans Avenue, London Avenue, and 17th Street Canals. Your office concurred with our opinion in a letter dated March 17, 2008. Copies of these letters are attached herein.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), the District, in consultation with the State Historic Preservation Officer (SHPO) and Indian Tribes, will determine if the amended areas of potential effects (APE) established for the Orleans Avenue Canal and the London Avenue Canal contains historic properties.

The amended Orleans Canal APE, as proposed, is approximately 30 acres in size and has been shifted to the north where it now partially extends into Lake Pontchartrain. The amended APE for the London Avenue has been slightly extended north approximately 140 feet and is now adjacent to south side of Lakeshore Drive. Maps showing the boundaries of the amended APE's are attached herein.

Proposed activities in the APE's include the construction of a new permanent pump station and gates at or near the mouth of each of the outfall canals operating in series with the existing Sewerage and Water Board of New Orleans (SWBNO) pump stations (PS). Under normal conditions, the gates would remain open and bypass flow through the new pump station. During those events where the combination of storm surge from Lake Pontchartrain and flow from the existing SWBNO pump stations could create a condition where the safe water elevation in the canals is exceeded, the gates would be closed and the new pump stations operated. The existing SWBNO PS #3, #4, #6, and #7 would remain in service and operate concurrently or in series with the new pump stations and the outfall canals would continue to convey stormwater from the SWBNO pump stations to the new pump stations. The proposed action leaves in place the floodwalls that flank the outfall canals, and these floodwalls would remain an integral part of the city's internal flood protection system. The floodwalls on the protected side of the new pump stations would be maintained in their current condition and would not be reconstructed.

In a recent cultural resources investigation conducted by R. Christopher Goodwin & Associates, Inc, researchers utilized background research, previous cultural resource investigation review, soil and topographic analyses, field reconnaissance data, and remote sensing survey data to assess historic structures, identify high potential areas for archaeological resources, and locate remote sensing targets exhibiting cultural resources characteristics in the IER #5 study area (Heller et al. 2008). This study evaluated the amended APE locations. No terrestrial or submerged cultural resources were identified in the amended Orleans Avenue Canal or London Avenue Canal APE's.

Based on a review of the information summarized above, it is our view that the proposed project activities in the amended APE's will not impact any significant cultural resources. However, in the event that cultural resources are encountered during construction activities, work will be halted and your office will be contacted for further consultation. Any resources encountered will be recorded and documented, and state archaeological site forms will be provided.

Please review the enclosed project documentation and provide this office with your opinion regarding our "no historic properties affected" finding within 30 days of receipt of this letter. If you have any questions and/or concerns, please contact Mr. Michael Swanda at (504) 862-2036.

Sincerely,

For Elizabeth Wiggins
Chief, Environmental Planning
and Compliance Branch

Enclosures

CF: Klima, Advisory Council on Historic Preservation
Rivet, Louisiana State Historic Preservation Office
Varnado, Louisiana State Historic Preservation Office

References Cited

Heller, Nathanael, Troy J. Nowak, Kathryn A. Ryberg, Katy Coyle, Lindsay Hannah, and Ginny Jones.

2008 *Management Summary: Phase I Cultural Resources Survey and Archeological Inventory of the Lake Pontchartrain and Vicinity Project, Individual Environmental Report Area 5 (IER #5), Jefferson and Orleans Parishes, Louisiana.* Prepared by R. Christopher Goodwin & Associates, Inc., New Orleans. On file, New Orleans District Corps of Engineers.

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

REPLY TO
ATTENTION OF:

October 1, 2008

Planning, Programs, and
Project Management Division
Environmental Planning
and Compliance Branch
Attn: CEMVN-PM-RN

No known historic properties will be affected by this undertaking. This effect determination could change should new information come to our attention.

Scott Hutcheson 11-10-08
Scott Hutcheson Date
State Historic Preservation Officer

Mr. Scott Hutcheson
State Historic Preservation Officer
Office of Cultural Development
Department of Culture, Recreation, and Tourism
P.O. Box 44247
Baton Rouge, Louisiana 70804

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OCT 2008
DIV. OF ARCHAEOLOGY

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Sincerely,

For Elizabeth Wiggins
Chief, Environmental Planning
and Compliance Branch

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