

DRAFT INDIVIDUAL ENVIRONMENTAL REPORT SUPPLEMENTAL

ADDITIONAL RIGHTS OF WAY FOR CONSTRUCTION OF
PERMANENT PUMPS STATIONS AT 17TH STREET, LONDON AVENUE AND
ORLEANS AVENUE OUTFALL CANALS,
ORLEANS AND JEFFERSON PARISH, LOUISIANA
IERS 5.a



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1. INTRODUCTION

The U.S. Army Corps of Engineers, Mississippi Valley Division, Regional Planning and Environmental Division South, has prepared this Individual Environmental Report Supplemental 5.a (IERS 5.a) for the New Orleans District to evaluate the potential impacts associated with actions to occur on additional permanent and temporary Right of Way (ROW) in the construction of the permanent pump stations to be built at the 17th Street, London Avenue and Orleans Avenue outfall canals in Orleans and Jefferson parishes. This IER supplements the Government approved plan analyzed in Individual Environmental Report 5 (IER 5), Permanent Protection System for the Outfall Canals Project on 17th Street, Orleans Avenue, and London Avenue Canals, Jefferson and Orleans Parishes, Louisiana, which is incorporated by reference along with the Decision Record, signed 30 June 2009. IER 27 and IERS 27.a Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans Parish, Louisiana and their associated Decision Records, which were signed on 7 October 2010 and 15 April 2011 respectively, are also incorporated by reference.

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

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

Copies of the previously mentioned documents and other supporting information are available upon request or at www.nolaenvironmental.gov.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to reduce the risk to the City of New Orleans and Jefferson Parish from storm surge-induced flooding through the 17th Street, Orleans Avenue, and London Avenue Outfall Canals, while not impeding the ability of the area's internal drainage system to function. The proposed action results from a defined need to reduce the risk of flood and storm damage to residences, businesses, and other infrastructure from storm-induced and tidally driven 100-year storm events in Lake Pontchartrain.

The IER 5 impact assessment was based on the maximum anticipated footprints necessary for a typical conceptual design of a pump station that could handle the needed drainage and pumping capacity of each outfall canal permanent pump station. The Corps used a design-build delivery approach as the contracting mechanism to design and construct the pump stations. For more information on the design-build analysis, see IER 5, Section 1.6.

Further design of the pump stations has resulted in refinement of additional project actions and the need for additional right-of-way (ROW) for some facilities and utilities associated with the pump stations.

1.2 PERMANENT PUMP STATION DESIGNS

The evaluation of the approved action contained in IER 5 was based on a conceptual design for each of the pump stations. The Design-Build contract for the permanent pump stations was awarded on April 17, 2013. The designs for the entirety of the project are still underway. Final site plans are anticipated in the Summer/Fall of 2014. Design details as they are known today are included in Appendix F.

1.3 PROPOSED ACTION

The proposed action consists of acquiring the additional permanent and temporary ROW necessary for construction of the permanent pump stations at the 17th Street, London Avenue and Orleans Avenue Outfall Canals. The combined additional ROW for all three outfall canals measures approximately 18.43 acres and would be used by the contractor for the unloading and staging of construction equipment and materials, employee parking, onsite office trailers, utility corridors for power, water, and sewage utilities for the structures and future permanent road access to the permanent pumps stations.

Additionally, the following design details warrant additional analysis in this IER Supplement, and are thus considered part of the proposed action. With the exception of additional haul routes, all of these actions are taking place within the ROW described in IER 5.

- Excavation of the 17th Street Peninsula
- Excavation at the London Avenue Canal

- T-wall construction at the 17th Street Canal
- Additional Acreage of Impact within existing ROW to Waters of the US by placement of fill material
- Dredging details and turbidity Best Management Practices
- Additional Haul Routes for Disposal

The description of the proposed action is provided for each canal below, followed by details of additional haul routes common to all three canals.

1.3.1 17th Street Canal ROW

1.3.1.1. Additional Temporary ROW 17th Street Outfall Canal

Additional temporary ROW for the 17th Street outfall canal is shown in yellow hatch on the attached aerial photo. (Figure 1)

The area is located north of the former Coconut Beach Volley Ball club and west of the marina waterfront park in the old restaurant public parking lot. It is bordered by West Roadway Street on the east and South Roadway Street to the south. The area measures approximately 1.8 acres. The west half of the parking lot, which is bordered by Breakwater Drive, is currently approved as temporary ROW for use by USACE for the permanent pump station project. The existing concrete paved lot is currently being used as a drop off point for the unloading of construction materials that would be incorporated into the 17th Street outfall canal pump station. The contractor would restore the site to its original state upon completion of the project, which is expected to last until late 2016.

1.3.1.2 Additional Permanent ROW 17th Street Outfall Canal

Three locations for additional permanent ROW for the 17th Street outfall canal are shown in red hatch on the attached aerial photos. (Figure 2)

The first location is in Lake Pontchartrain, northwest of the existing 17th Street Outfall Canal Interim Water Control Structure (IWCS). The new gate system adjacent to the new pump station will transition into T-wall with a top of wall at approximately El +18 (NAVD88) which will run south, roughly parallel to the existing peninsula, eventually tying in to the existing HSDRSS levee with either a levee or T-wall. This levee or T-wall tie-in is described further below. Because much of the T-wall would be in the harbor adjacent to the 17th Street Canal, erosion protection would be required in the form of rip-rap to be placed at the base of the wall. Work would include placement of a 3-4 ft thick layer of 1.5-2 ft (dia) rock placed over a geotextile fabric on the west side of the T-wall being constructed as part of the current permanent pump project. The rip-rap section would begin from the top of the T-wall embankment, traverse down the slope into the water, and terminate approximately 15-20 ft past the toe at the harbor bottom. A portion of this rip rap may extend outside of the ROW boundaries described in IER 5, and extend into the approximately .267 acre red hatched area shown in figure 2.

The second location is east of the existing 17th Street outfall canal Interim Water Control Structure (IWCS). It is bordered by West Roadway Street on the east and the IWCS on the west and measures approximately .721 acres. The site would be utilized for water, and sewage utilities to and from the site. It is currently estimated that the 6-8 inch (in) diameter water line would be buried 30 in deep in a trench that is approximately 36 in wide. The sewer line would likely be an 8 in diameter line would be buried 10 ft deep. Man-hole covers would be installed to allow maintenance of these utilities. Additionally, a 25-foot (ft) wide asphalt access road may be installed and would serve as a secondary access point to the pump station during emergency events (tropical storms) once construction is complete. This road may extend from W. Roadway Street and turn north just west of the existing floodwall crossing at W. Roadway. Alternatively, the secondary access could remain on existing roads (proceeding from Lake Marina Drive to Lake Marina Avenue, then turn north toward the existing floodwall. In either case, a portion of the footprint of this road may encroach to a limited extent on this additional ROW.

The third location for permanent ROW is west of the 17th Street outfall canal IWCS, on the Jefferson Parish side, just north of Hammond Highway, between the Coast Guard station and the existing IWCS and is within an area cleared as a temporary construction easement in IER5. The area measures approximately .7415 acres, is 5 ft east of the Coast Guard property line, and would be used to construct an earthen levee or T-Wall to tie into the existing HDRRS system to the southwest of the project area. Since plans and specifications for the 17th Street permanent pump station are still in the design phase, it is unknown at this time whether a levee or a T-wall would be constructed in this location.

In the instance that a levee is selected, the levee design slopes would be 1:3 to 1:5, (vertical: horizontal), with vegetation on both slopes. (Figure 3) In the instance that a T-wall is selected, it would be founded on sheet piling, H-pile, and/or pipe pile. (Figure 4) In both cases, the levee and/or the T-wall would tie into the existing HDRRS levee at approximately +16.00-ft elevation near Old Hammond Highway and turn north, going between the Coast Guard station and the existing pump station and tying in at approximately +18.00-ft elevation, to an adjacent T-wall that is currently being constructed as a part of the new permanent pump station. If design requires it, there may be armoring in the form of rip-rap placed to protect the levee and/or T-wall once construction is complete.

1.3.1.3 Design details within existing ROW which warrant further analysis

Excavation of the 17th Street Peninsula

In order to allow flow to pass from the existing canal, around the new pump station and through the new adjacent gate system, the existing peninsula at the mouth of the 17th Street Canal would be removed. This is an area that measures approximately 1.3 acres. Additionally, the area (including approximately .7 acres of the adjoining harbor to the west of the existing peninsula) would be dredged to an elevation of -15 ft to allow sufficient flow. However, a flow training berm would be built to the north west of the gate structure to ensure the existing channel used by the Coast Guard station to enter and exit the adjacent harbor is not adversely impacted by the flow through these gates. In order to construct the pump station while maintaining canal flow,

the gate structure would serve as a flow bypass around a temporary cofferdam within which the pump station will be built.

In order to remove the peninsula on the west side of the 17th Street canal, a barge-mounted trackhoe would excavate the peninsula starting at the north end of the peninsula and excavating in the southeast direction, then beginning at the southern edge of the peninsula and moving north. Material removal would include the peninsula itself as well as sand which was temporarily placed adjacent to the peninsula during construction of the bypass cofferdam and gates. Sand that is removed from the peninsula would be temporarily placed on the east bank of the canal, on land, within the existing ROW. Excavated material would be loaded onto barges and transported directly off-site to an existing disposal facility. Uncontaminated material would be offloaded at an existing facility which can accept uncontaminated excavation material, such as #7 River Road, Jefferson LA or Crescent Resources in New Orleans, LA. . If the construction schedule allows, some material may temporarily remain within the ROW for several days or weeks in order to reduce the moisture content of the material before hauling to an offsite disposal site. Additional details on disposal of excavated material are provided in Appendix F. Approximately 40 bargeloads of material are expected to be removed from the peninsula excavation site. A portion of the peninsula is known to contain a creosote timber piling tie-back system associated with a remnant bulkhead. As the peninsula is excavated and these piles are encountered, any excavated material containing creosote timber would be separated from uncontaminated material and disposed of in dumpsters that would be hauled to an appropriately permitted landfill (e.g., River Birch landfill in Jefferson Parish).

Peninsula excavation to the final design cross section opening the channel for flow through the Bypass Gate Structure is expected to take between 3 and 4 months. Hours of operation for this excavation would likely be 6:30 a.m. to 6 p.m., but work could occur 24 hours a day if necessary. During this excavation, a Type III turbidity curtain would be installed to limit migration of turbidity into Lake Pontchartrain. The curtain would begin at the southwest corner of the peninsula and continue around the peninsula, ending either at the southeast corner of the peninsula or crossing the 17th St. Canal and terminating on the east side of the canal. The turbidity curtain would need to be opened and reclosed in order to allow barge access into the excavation site, but the turbidity curtain would be put back into place before resuming turbidity-causing activities.

Turbidity monitoring would be conducted to ensure that turbidity control measures are effective, and turbidity controls would be adjusted as needed. Three readings would be taken per work day with a turbidity meter within 500 feet lakeside from the point of discharge to ensure that at no point in time a 50 NTU in difference is exceeded.

17th Street T-Wall

A T-wall, approximately 600 feet long, is being constructed at elevation +18 parallel to 17th Street Canal (adjacent to the Coast Guard Channel). This wall would be constructed in approximately 50 foot monoliths. Starting on the northern end of the existing peninsula, a flow-training berm would run south along the west side of the peninsula (adjacent to the Coast Guard Channel) and would connect with the T-wall, which would run south through the harbor and

once on land would transition into an earthen levee section for approximately 200 feet to tie-into the existing perimeter protection. The duration of this construction is approximately 6 months.

Additional Acreage of Impact within existing ROW to Waters of the US by placement of fill material

A total of approximately 7.5 acres of waters of the U.S. would be permanently filled by project features such as the pump station, rip-rap, T-wall, training berm and bypass gate. This is an additional 4.27 acres than what was originally estimated in IER #5.

1.3.2 Orleans Avenue Outfall Canal ROW

1.3.2.1 Additional Temporary ROW Orleans Avenue Outfall Canal

Additional temporary ROW for the Orleans Avenue outfall canal is shown in yellow hatch on the attached aerial photo. (Figure 5)

The area is directly west of the permanent pumps project site and is bordered by Lakeshore Drive to the north and the existing levee to the south. This proposed temporary ROW would be utilized as an employee parking area and measures approximately 1.5632 acres. The existing grassy area would be developed by installing a geo-grid base and sand fill, and capped with a layer of base rock. A 6-ft high security fence would be installed around the perimeter of the site for safety and security of the site. The contractor would restore the site to its original state upon completion of the project, which is expected to last until late 2016.

1.3.2.2 Additional Permanent ROW Orleans Avenue Outfall Canal

Additional Permanent ROW for the Orleans Avenue Canal is shown in red hatch on the attached aerial photos. (Figures 6, 7, and 8)

The first area, which measures approximately .325 acres, is located off Crystal Street, on the west bank of the Orleans Avenue outfall canal. (Figure 6) The site would be utilized for underground power, water, and sewage utilities to and from the site. It is currently estimated that the 6-8 in diameter water line would be buried 30 in deep in a trench that is approximately 36 in wide. The sewer line would likely be an 8 in diameter line would be buried 10 ft deep. Man-hole covers would be installed to allow maintenance of the utilities. Additionally, a 25 ft wide asphalt access road would be installed and would serve as a secondary access point to the pump station during emergency events (tropical storms) once construction is complete.

The second location for permanent ROW follows the west side of the Orleans Avenue outfall canal and runs in a southerly direction for a length of approximately 3,000 linear ft from the proposed Orleans Avenue outfall canal permanent pump station project site to Robert E. Lee Blvd. (Figures 7 and 8) The entire area measures approximately 6.333 acres, a portion of which would be utilized to run underground power (electrical conduit) from Robert E. Lee Blvd to the new station. This electrical conduit could be installed by digging a small trench (approximately 3' deep and 1' wide) the length of the conduit, which would be covered and reseeded after the conduit is installed. The conduit construction may also include directional drilling if this

construction method is deemed practical. This utility conduit would have to remain an adequate distance from the toe of the canal levee to ensure not impact to canal stability. Every effort would be made to site the conduit to avoid impacts to trees. However, in cases in which there is not adequate room to install the conduit at the toe of the levee, tree removal may be required. The limits of ROW within which this conduit would be built would vary in width as it would extend from the toe of the levee to the curb of General Haig Street. Along the portions of General Haig Street, where private residences are located on the west bank of the canal, the permanent ROW would narrow to avoid impacts to the properties, falling outside the property lines.

1.3.2.3 Design details which warrant further analysis

Additional Acreage of Impact within existing ROW to Waters of the US by placement of fill material

Due to increased velocities within the canal during construction, approximately .15 acres of rip rap would be placed along the canal bottom just southeast of Lakeshore Drive to reduce channel scour. Also, a small breakwater impacting .06 acres of canal bottom would be temporarily built just southwest of Lakeshore Drive to reduce wave action during construction of the pump station cofferdam.

A total of approximately 3.86 acres of waters of the U.S. would be permanently filled by project features such as the pump station, rip-rap, and bypass gate. This is an additional 1.49 acres than what was originally estimated in IER #5.

Dredging details and turbidity Best Management Practices

Details regarding dredging within the canal are provided in Appendix F. A Type III turbidity curtain would be installed at the north end of the project boundary to limit migration of turbidity into Lake Pontchartrain. If it is necessary to detach a portion of the turbidity curtain to allow movement of equipment into the project site, the turbidity curtain would be fully reinstalled before resuming turbidity-causing activities.

Turbidity monitoring would be conducted to ensure that turbidity control measures are effective, and turbidity controls would be adjusted as needed. Three readings would be taken per work day with a turbidity meter within 500 feet lakeside from the point of discharge to ensure that at no point in time a 50 NTU in difference is exceeded.

1.3.3 London Avenue Canal ROW

1.3.3.1 Additional Permanent ROW London Avenue Outfall Canal

Additional permanent ROW is shown in red hatch on the attached aerial photo. (Figures 9 and 10)

The first area, which is an existing access road located off Leon C. Simon Drive, between the London Avenue Canal and the University of New Orleans, would be utilized as the primary access road to the pump station once construction is complete. The area measures approximately 2.483 acres and would also be utilized for underground power, water and sewage utilities to and from the site. It is currently estimated that the 6-8 in diameter water line would be buried 30 in deep in a trench that is approximately 36 in wide. The sewer line would likely be an 8 in diameter line would be buried 10 ft deep. Power would be provided either via overhead utility poles or be buried underground in a conduit. Man-hole covers would be installed to allow maintenance of the utilities.

The second area, which is directly west of the project site, is positioned between Pratt Drive and the London Avenue canal and measures approximately 1.769 acres. This area would be utilized to allow maintenance of the utilities once the pump station construction is complete.

1.3.3.2 Design details which warrant further analysis

Additional Acreage of Impact within existing ROW to Waters of the US by placement of fill material

A total of approximately 3.96 acres of waters of the U.S. would be permanently filled by project features such as the pump station, rip-rap, and bypass gate. This is an additional 2.68 acres than what was originally estimated in IER #5.

Dredging details and turbidity Best Management Practices

Details regarding dredging within the canal are provided in Appendix F. A Type III turbidity curtain would be installed at the north end of the project boundary to limit migration of turbidity into Lake Pontchartrain. If it is necessary to detach a portion of the turbidity curtain to allow movement of equipment into the project site, the turbidity curtain would be fully reinstalled before resuming turbidity-causing activities.

Turbidity monitoring would be conducted to ensure that turbidity control measures are effective, and turbidity controls would be adjusted as needed. Three readings would be taken per work day with a turbidity meter within 500 feet lakeside from the point of discharge to ensure that at no point in time a 50 NTU in difference is exceeded.

Excavation of London Avenue

Excavation in London Avenue Canal would be accomplished using a long reach excavator to remove material and would include excavation to construct and install the following features of work: the pump station, bypass structure, utility tie-ins, maintenance dredging to maintain canal flows, dredging for rip rap placement on the intake and outflow of the pump station, and the removal of access roads and laydown yards. This excavation would include the removal of approximately 0.55 acres of the canal bank on the east side of the canal for construction. During excavation in the canal, a Type III turbidity curtain would be installed to limit migration of turbidity into Lake Pontchartrain. Material removal would also include the sand which was

temporarily placed for construction access into the canal. Sand that is removed from canal would be temporarily placed on the east bank of the canal, on land, within the existing ROW. Excavated material would be loaded onto dump trucks and transported directly off-site to an existing disposal facility. Uncontaminated material would be offloaded at an existing facility which can accept uncontaminated excavation material, such as #7 River Road, Jefferson LA or Crescent Resources in New Orleans, LA. Wet material may be stockpiled on site for days or weeks prior to removal from the site in order to dry the material. Additional details on disposal of excavated material are provided in Appendix F. Up to 160 loads of material will be taken off site per day. Excavation and hauling is expected to be complete by Mar 2016. Regulated material would be hauled to an appropriately permitted landfill (.e.g., River Birch landfill in Jefferson Parish).

The haul routes could include the following streets and highways:

1. Lakeshore Dr.;
2. Elysian Field;
3. I-610 East, I-610 West and I-10 E and I-10 W;
4. Dowman Rd;
5. Old Gentilly;
6. Almonaster Rd;
7. Causeway;
8. US-90; and
9. Kenner Ave.

Hours of operation for this excavation would likely be 6:30 a.m. to 6 p.m., but work could occur 24 hours a day if necessary.



Figure 1: 17th Street Canal Temporary ROW



Figure 2: 17th Street Canal Permanent ROW

EARTHEN LEVEE SECTION

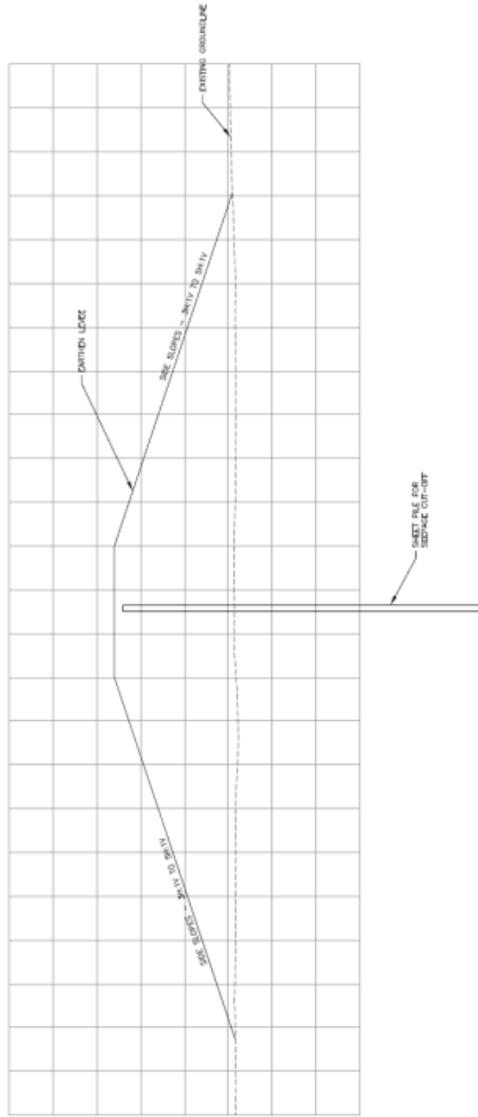


Figure 3: Levee Design

T-WALL SECTION

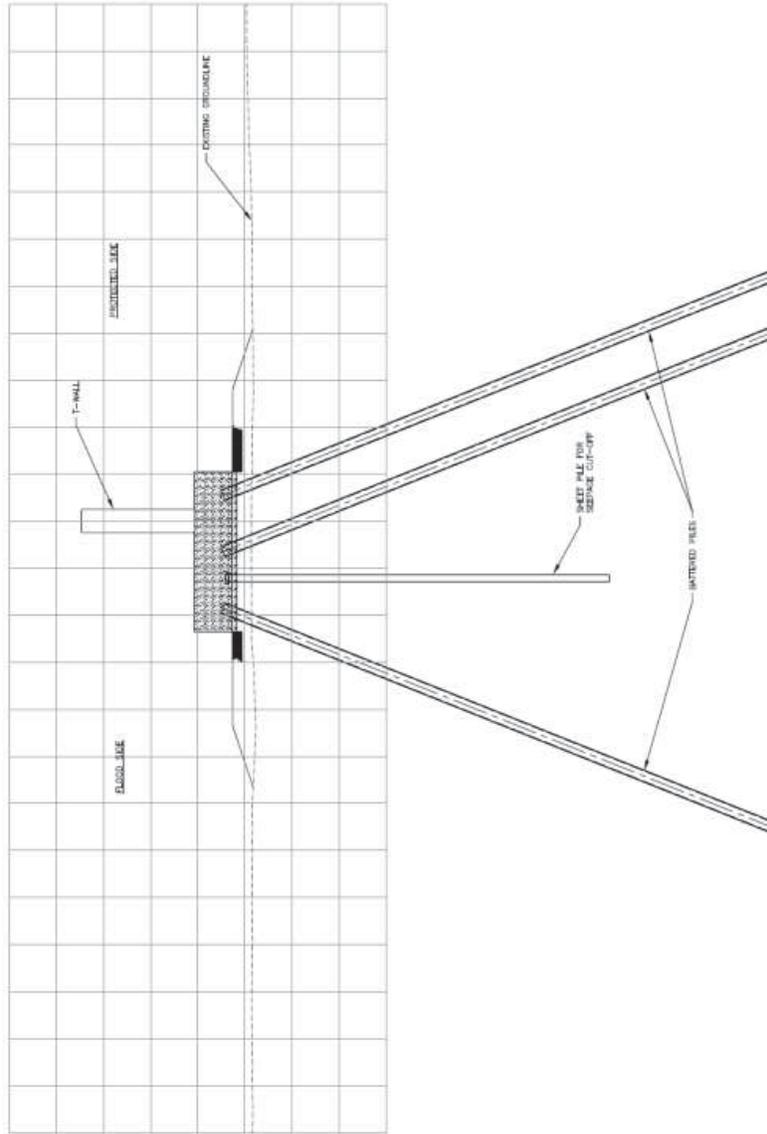


Figure 4: T-Wall Design



Figure 5: Orleans Avenue Canal Temporary ROW



Figure 6: Orleans Avenue Canal Permanent ROW



Figure 7: Orleans Avenue Canal Permanent ROW (cont)

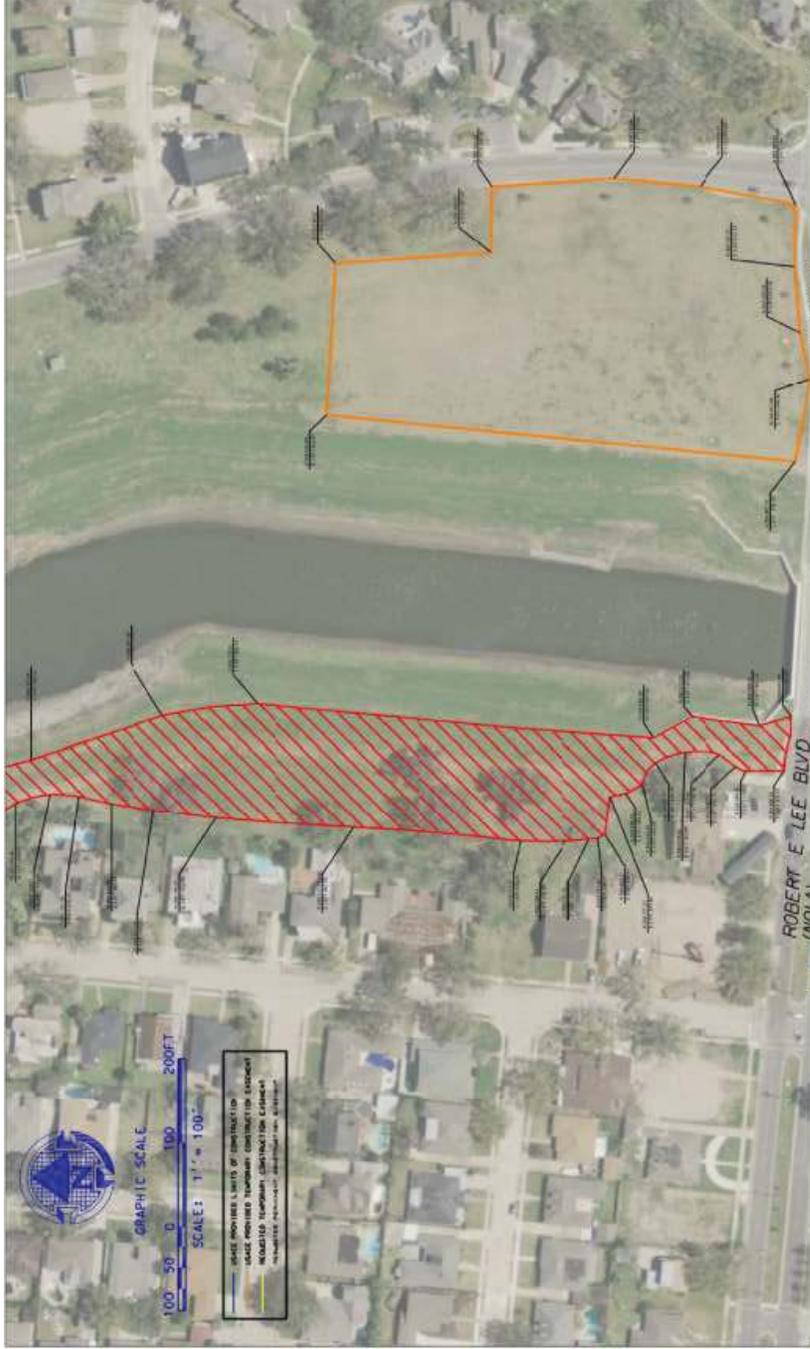


Figure 8: Orleans Avenue Canal Permanent ROW (cont)



Figure 9: London Avenue Canal Permanent ROW

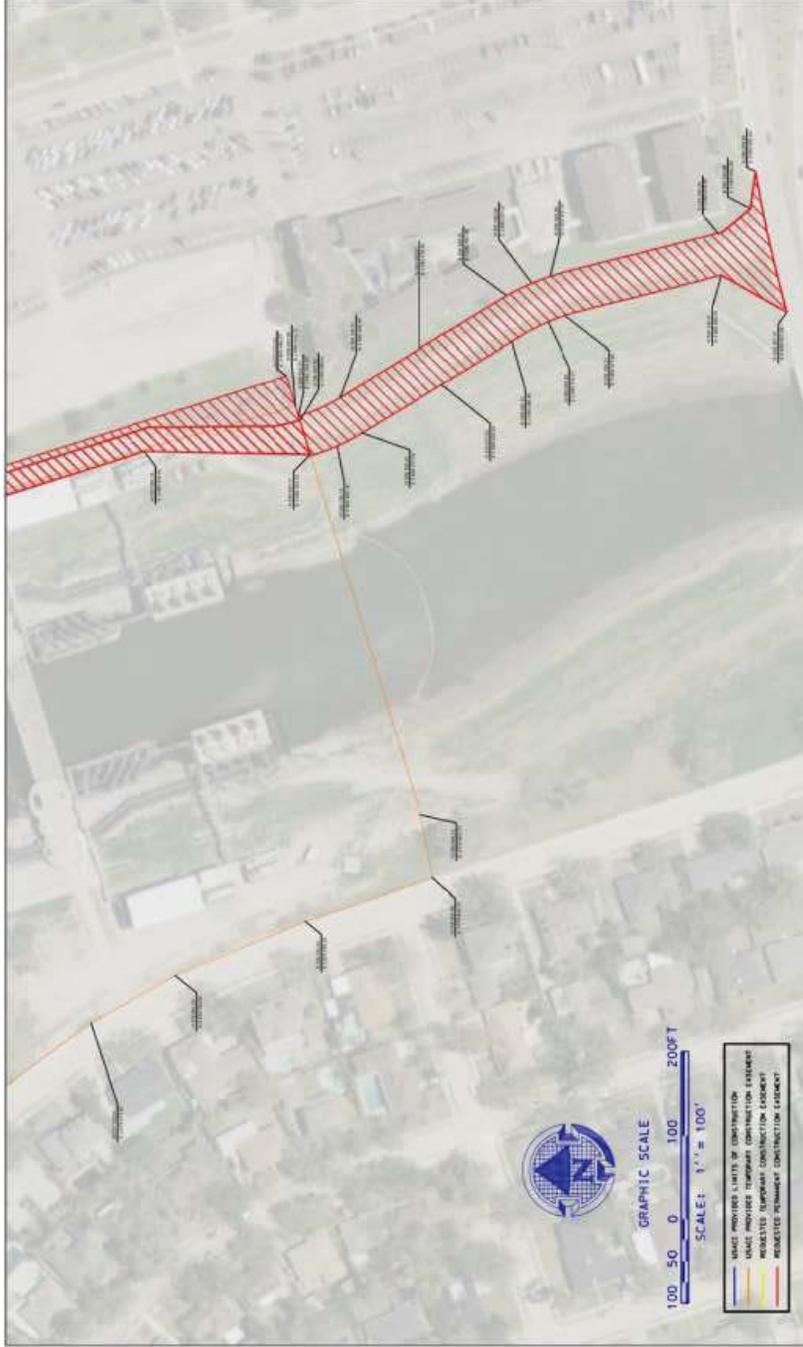


Figure 10: London Avenue Canal Permanent ROW (cont)

1.4 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), appropriations “...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, Section 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, in accordance with PL 110-28.

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 prosecute projects in a manner which promotes the goal of continuing work at an optimal pace, while maximizing, to the greatest extent practicable, levels of protection 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.

The 6th Supplement, P.L. 110-252, Title III, Chapter 3, Construction, page 26 (122 STAT. 2349-2350) provided: “For an additional amount for ‘Flood Control and Coastal Emergencies,’ for necessary expenses related to the consequences of Hurricane Katrina and other hurricanes of the 2005 season,” and further provided that “\$704,000,000 shall be used to modify the 17th Street, Orleans Avenue, and London Avenue drainage canals and install pumps and closure structures at or near the lakefront.”

1.5 PRIOR REPORTS

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

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

Final Environmental Statement, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project (1974). The purpose of this report was to describe the protective features and identify the environmental effects of the LPV Hurricane Protection Project. This project was authorized by the Flood Control Act of 1965 (Public Law 89-298), approved 27 October 1965, and described in House Document No. 231, 89th Congress, 1st Session. The proposed action for this hurricane protection project consisted of a barrier at the east end of Lake Pontchartrain to prevent storm surge from entering the lake. The barrier consisted of three major structural complexes at the Rigolets, Chef Menteur Pass, and Seabrook. Adverse environmental effects associated with this project included loss of marsh and wetlands, a decrease in the amount of secondary production of organic material in Lake Pontchartrain, and loss of wildlife habitat.

17th Street Canal Drainage Basin Study (1983). This report provided the first in-depth study of the 17th Street Canal Drainage Basin comprising 7,860 acres of Orleans Parish and 2,550 acres of Jefferson Parish. Recommended improvements to the drainage system included increasing the capacity of Pumping Station #6 by 50 percent; widening and deepening the outfall canal along its entire length; increasing the capacity of the 17th Street Canal between Pumping Station #6 and Jefferson Highway; increasing the capacity of Pumping Station #1, improving the

Palmetto, Hoey's, and Geisenheimer Canals; and doubling the capacity of the existing gravity systems.

Reevaluation Study, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project (1984). The purpose of this study was to review the ongoing LPV Hurricane Protection Project to determine if the plan of improvement (barrier plan) originally proposed was still the most feasible method to achieve hurricane protection for the Metropolitan New Orleans area, and if not, what modifications to the plan were necessary to provide the most feasible hurricane protection project. This study was conducted in response to a 1977 Federal court injunction, which stopped construction of portions of the project on the basis that the 1975 final EIS for the project was inadequate. The court directed that the EIS be rectified to include adequate development and analysis of alternatives to the proposed action. This study determined that the high-level plan was the most feasible plan for providing hurricane protection. The high-level plan design concept consisted of raising and strengthening levees and floodwalls.

Environmental Assessment (EA) #76, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Orleans Avenue Outfall Canal (1988). This EA was prepared to evaluate two alternatives of providing hurricane protection to the Orleans Avenue Canal. The USACE recommended a *butterfly valve* structure at or near the lakefront end of the canal, while the Orleans Levee Board preferred to construct a system of parallel protection by raising the existing levees and constructing floodwalls adjacent to the canal. It was concluded that impacts to fish and wildlife resources, recreation, threatened and endangered species, cultural resources, aesthetics, noise, and community cohesion would be minimal with either plan. A Finding of No Significant Impact (FONSI) was signed 25 July 1988.

EA #79, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, London Avenue Outfall Canal (1988). This EA was prepared to evaluate two alternatives of providing hurricane protection to the London Avenue Canal. The USACE recommended a *butterfly valve* structure at or near the lakefront end of the canal, while the Orleans Levee Board preferred to construct a system of parallel protection by raising the existing levees and constructing floodwalls adjacent to the canal. It was concluded that impacts to fish and wildlife resources, recreation, threatened and endangered species, cultural resources, aesthetics, noise, and community cohesion would be minimal with either plan. A FONSI was signed on 17 October 1988.

EA #102, Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, 17th Street Outfall Canal (1990). This EA was prepared to evaluate two alternatives of providing hurricane protection to the 17th Street Canal. The two alternatives were a *butterfly valve* structure and construction of a system of parallel protection by raising the existing levees and constructing floodwalls adjacent to the canal. The USACE recommended the parallel protection plan. It was concluded that impacts to fish and wildlife resources, recreation, threatened and endangered species, cultural resources, aesthetics, noise, and community cohesion would be minimal with either plan. A FONSI was signed on 12 March 1990.

EA #279, Lake Pontchartrain Lakefront, Breakwaters, Pump Stations 2 and 3 (1998). This EA evaluated the impacts associated with providing fronting protection for outfall canals and

pump stations. It was determined that the action would not significantly impact resources in the immediate area. A FONSI was signed on 30 October 1998.

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 #19, Pre-Approved Contractor Furnished Borrow Material, Jefferson, Orleans, St. Bernard, Iberville, and Plaquemines Parishes, Louisiana, and Hancock County, Mississippi (2008). The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS. On 14 February 2008, the CEMVN Commander signed a Decision Record on IER # 19.

IER #18, Government Furnished Borrow Material, Jefferson, Orleans, Plaquemines, St. Charles, and St. Bernard Parishes, Louisiana (2008). The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of excavating borrow areas for use in construction of the HSDRRS. On 21 February 2008, the CEMVN Commander signed a Decision Record on IER #18.

IER #11, Improved Protection on the Inner Harbor Navigation Canal, Tier 1, Orleans and St. Bernard Parishes, Louisiana (2008). The document was prepared to evaluate potential impacts associated with building navigable and structural barriers to prevent storm surge from entering the Inner Harbor Navigation Canal from Lake Pontchartrain and/or the Gulf Intracoastal Waterway-Mississippi River Gulf Outlet-Lake Borgne complex. This document also cites specific prior reports for MRGO projects and Coastal Wetlands Planning Protection Restoration

projects. On 14 March 2008, the CEMVN Commander signed a Decision Record on IER # 11 (Tier 1).

IER #23, Pre-Approved Contractor Furnished Borrow Material # 2, St. Bernard, St. Charles, Plaquemines Parishes, Louisiana and Hancock County, Mississippi (2008). The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavation borrow areas for use in construction of the HSDRRS. On 6 May 2008, the CEMVN Commander signed a Decision Record on IER # 23.

IER #3, Lake Pontchartrain and Vicinity, Lakefront Levee, Jefferson Parish, Louisiana (2008). The proposed action includes rebuilding earthen levees, upgrading foreshore protection, replacing floodgates, constructing fronting protection for four pumping stations, and constructing or modifying breakwaters at four pumping stations in Jefferson Parish, Louisiana. On 25 July 2008, the CEMVN Commander signed a Decision Record on IER #3.

IER #26, Pre-Approved Contractor Furnished Borrow Material # 3, Jefferson, Plaquemines, and St. John the Baptist Parishes, Louisiana and Hancock County, Mississippi (2008). The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS. On 20 October 2008, the CEMVN Commander signed a Decision Record on IER # 26.

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

IER #25, Government Furnished Borrow Material, Orleans, Plaquemines and Jefferson Parishes, Louisiana (2009). The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of excavating borrow areas for use in construction of the HSDRRS. On 3 February 2009, the CEMVN Commander signed a Decision Record on IER # 25.

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

IER #5, Permanent Protection System for the 17th Street, Orleans Avenue, and London Avenue Canals (2009). The document was prepared to evaluate the potential impacts associated with the construction and maintenance of a permanent protection system for the 17th Street, Orleans Avenue, and London Avenue Canals. On 30 June 2009, the CEMVN Commander signed a Decision Record for IER # 5.

EA #474, Orleans Parish Pump Stations Stormproofing Activities (2009). This EA was prepared to evaluate stormproofing activities for 22 Orleans Parish pump stations, the Carrollton Frequency Changer Building, the Old River Intake Station, the New River Intake Station, and the Carrollton Water Plant and Power Complex. It was concluded that the proposed action would have no significant impact on the human environment. A FONSI was issued on 16 June 2009.

EA #475, Jefferson Parish Pump Station Stormproofing Activities (2009). This EA was prepared to evaluate stormproofing activities for 21 of the existing drainage pump stations in Jefferson Parish, Louisiana. It was concluded that the proposed action would have no significant impact on the human environment. A FONSI was issued on 16 June 2009.

IER # 7, Lake Pontchartrain and Vicinity, New Orleans Lakefront to Michoud Canal, Orleans Parish, Louisiana (2009). The document evaluates the potential effects associated with proposed improvements to three reaches of the East Orleans Hurricane Risk Reduction Levee that were originally constructed as part of the LPV project. On 19 June 2009, the CEMVN Commander signed a Decision Record on IER #7.

IER # 6, Lake Pontchartrain and Vicinity, New Orleans East Citrus Lakefront Levee, Orleans Parish, Louisiana (2009). The document evaluates the potential effects associated with proposed improvements to three reaches of the East Orleans Hurricane Risk Reduction Levee that were originally constructed as part of the LPV project. On 25 June 2009, the CEMVN Commander signed a Decision Record on IER #6.

IER # 28, Government-Furnished Borrow Material #4, Plaquemines, St. Bernard and Jefferson Parishes, Louisiana (2009). The document evaluates the potential impacts associated with approving government-furnished borrow areas and an access route for use in construction of the HSDRRS. On 31 July 2009, the CEMVN Commander signed a Decision Record on IER # 28.

IER #29, Contractor-Furnished Borrow Material #4, Orleans, St. John the Baptist, and St. Tammany Parishes, Louisiana (2009). The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrows areas for use in construction of the HSDRRS. On 20 September 2009, the CEMVN Commander signed a Decision Record on IER #29.

IER #30, Contractor-Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana, and Hancock County, Mississippi (2009). The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrows areas for use in construction of the HSDRRS. On 28 September 2009, the CEMVN Commander signed a Decision Record on IER #30.

IER #32, Contractor-Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana (2010). The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrows areas for use in construction of the HSDRRS. On 22 January 2010, the CEMVN Commander signed a Decision Record on IER #32.

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

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.

1.6 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. Portions of the project are still at a level of design that does not afford exact details. For example, geotechnical and structural analysis is currently underway to determine the necessary cross-section for the levee and t-wall alternatives for the 17th Street tie-in to the existing protection, and a decision has not yet been made as to which design alternative would be appropriate. These resource areas cannot be precisely analyzed without knowledge of specific engineering details; therefore, the impacts analysis was completed utilizing information currently available. Pump station designs are not yet final. The evaluation of anticipated impacts is based on the current designs. In the event design changes would substantially change the proposed action as identified in this document and/or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts to the natural or human environment, such changes and/or circumstances would be addressed in additional supplements to this IERS if necessary.

1.7 PUBLIC CONCERNS

Residents along the outfall canals in the vicinity of the interim closure structures (ICS) have voiced concerns regarding air and noise pollution, the aesthetics, and perception of a loss of property values. These concerns focus mainly on the construction of the ICS and wind-driven dust that could drift onto adjacent properties and roadways. Residents have requested that during construction of the permanent pump systems, 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 CEMVN Project Delivery Team (PDT) considered the proposed action and a no action alternative in this EA.

2.1 NO ACTION ALTERNATIVE

Under the no-action alternative, the proposed expansion of ROW at the 17th Street, Orleans Avenue and London Avenue Outfall Canals would not take place. The existing ROW would remain as previously determined in IER 5, which could delay construction of the permanent pump stations at the mouths of the outfall canals, potentially impacting the ability of the SWBNO to evacuate water from the City of New Orleans during a flood event during the prolonged construction period.

If required rip rap cannot be placed within the extended ROW near the 17th Street Canal, the stability of the new T-wall could be compromised. In the southwest corner of the 17th Street site, there is currently not adequate space to construct a levee, and a T-wall is infeasible because the pile foundation of such a wall at this location would conflict with other piles in the subsurface of the pump station. At all three canals, sewer and water tie-ins should be located on the protected side of the HSDRRS to increase the reliability of these systems. If the additional ROW in the proposed action cannot be acquired for these tie-ins, the tie-ins would have to either occur on the flood side, which could prove infeasible, or tie in to sewer and water mains further from the new pump stations requiring more additional ROW than the proposed action.

At the Orleans Avenue site, if additional ROW for secondary access cannot be acquired, secondary access would have to be restricted to the top of the existing HSDRRS levee, which could make access for emergency vehicles during tropical events infeasible, increasing risk to worker safety. If additional ROW cannot be acquired to install electric utilities along Orleans Avenue Canal, large on-site generators would be required to provide electricity during construction. If this utility corridor is not available for future operation of the completed stations, non-storm operation of the facility would be impractical because alternative routes/methods of power supply are less reliable and/or not acceptable to the local sponsor/operator. If additional temporary ROW cannot be acquired for additional staging/parking at Orleans Avenue, workers would face increased safety risk in attempting to cross from the existing staging area/parking, across Lakeshore Drive, to the worksite. Additionally, movement of construction equipment and supplies from the current staging area would have more traffic impacts than use of the staging area in the proposed action.

At London Avenue, if permanent access cannot be provided from Leon C. Simon, primary access to the pump station would have to occur through the University of New Orleans, which would increase public safety concerns.

3. AFFECTED ENVIRONMENT

3.1 ENVIRONMENTAL SETTING

The project area includes the area bounded by Lake Pontchartrain to the north, the IHNC to the east, the Mississippi River to the south, and most of Jefferson Parish's east bank to the west. The project features being investigated are the acquisition of temporary and permanent ROW at the 17th Street, Orleans Avenue and London Avenue Outfall Canals. Figure 11 depicts the project area potentially impacted by the proposed action in this document.

3.1.1 Geological Setting

The project area is on the south shore of Lake Pontchartrain in the southeastern portion of the Mississippi River deltaic plain. Dominant physiographic features in the vicinity include Lake Pontchartrain, the lakefront 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 overly 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.



Figure 11: Outfall Canal 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 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 Outfall Canal

The 17th Street Outfall Canal is an approximately 13,500-ft long outfall canal which forms part of the boundary between the cities of Metairie, in Jefferson Parish, and New Orleans, in Orleans Parish. (Figure 12) The canal is bounded on the north by Lake Pontchartrain, on the south by the New Orleans Sewerage and Water Board Pump Station #6 (SWBNO PS #6), on the east and west by the foot of the floodwall and levee complex. The surrounding vicinity of the canal is composed of a mixture of residential homes and commercial businesses and includes West End Park, Municipal Yacht Harbor, Orleans Marina, and a 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.

3.1.4 Orleans Avenue Outfall Canal

The Orleans Avenue Canal is an approximately 11,000-foot-long outfall canal in New Orleans in Orleans Parish between the 17th Street Canal and Bayou St. John. (Figure 13) The canal is bounded on the north by Lake Pontchartrain, on the south by SWBNO PS #7, on the east and

west by the foot of a floodwall and levee complex. The surrounding vicinity of the canal is composed of a mixture of residential homes, commercial businesses, and green space, including City Park, Tourmaline Park, Orleans Park, and Lakeshore Park. The ICS is on the northern end of the canal, south of Lakeshore Drive near the intersection of General Haig Street and Crystal Street. Marconi Drive and City Park run parallel to the eastern side of the canal and Orleans Avenue, and General Haig Street runs parallel to the western side of the canal. Five bridges cross the canal, including Lakeshore Drive, Robert E. Lee Boulevard, Filmore Avenue, Harrison Avenue, and I-610.

3.1.5 London Avenue Outfall Canal

The London Avenue Canal is an approximately 15,000-ft-long outfall canal in New Orleans in Orleans Parish, between Bayou St. John and UNO. (Figure 14) The canal is bounded on the north by Lake Pontchartrain, on the south by SWBNO PS #3, and on the east and west by the foot of a floodwall and levee complex. The surrounding vicinity of the canal is composed of a mixture of residential homes, commercial businesses, green space, UNO, and Dillard University. The ICS is on the northern end of the canal between Lakeshore Drive and Leon C. Simon Drive, adjacent to UNO. Warrington Drive, UNO, and Dillard University run parallel to the eastern side of the canal, and Pratt Drive and Francis W. Gregory Junior High School run parallel to the western side of the canal. Eight bridges cross the canal, including Lakeshore Drive, Leon C. Simon Drive, Robert E. Lee Boulevard, Filmore Avenue, Mirabeau Avenue, Gentilly Boulevard, I-610, and Southern Railroad tracks.

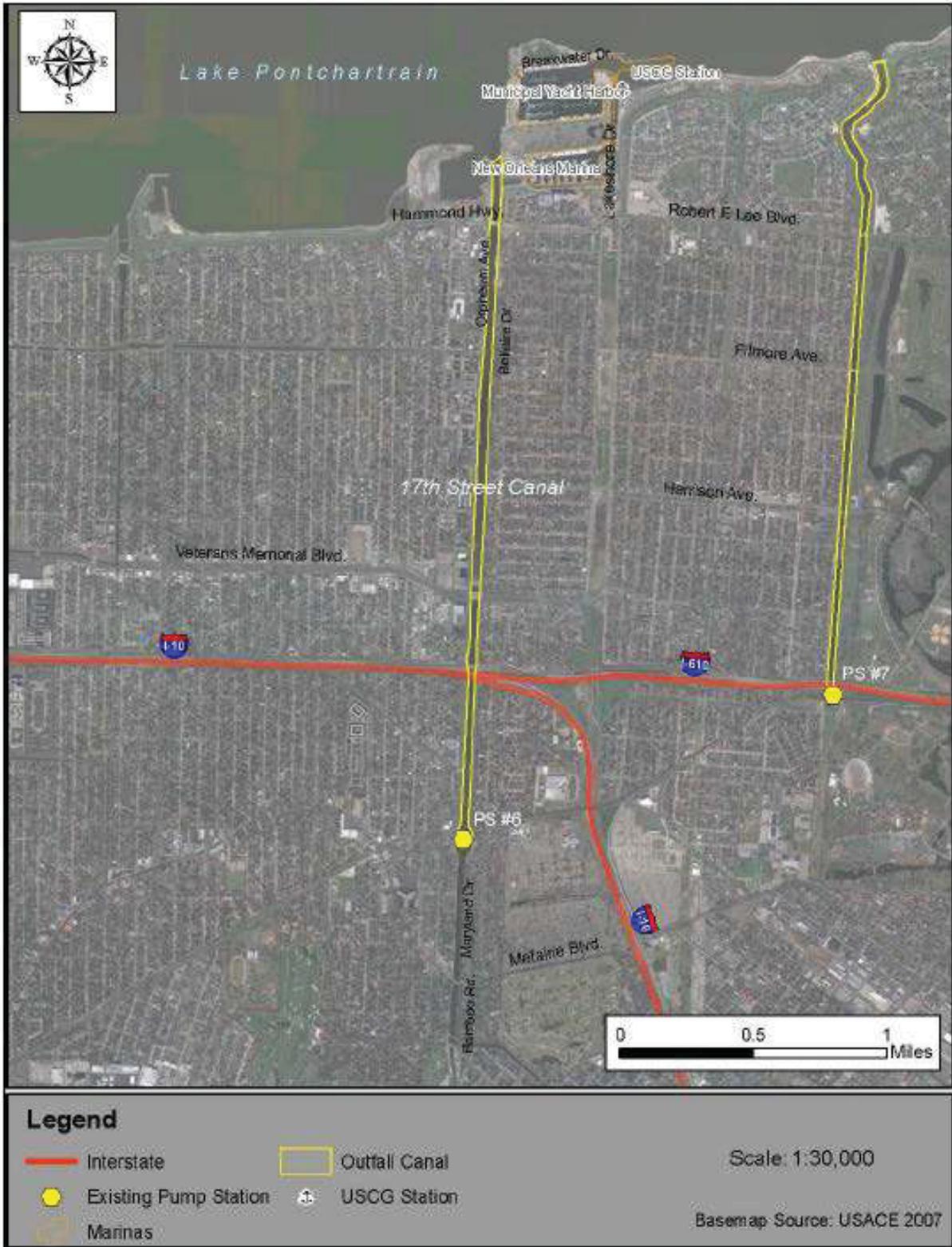


Figure 12: 17th Street Outfall Canal



Figure 13: Orleans Avenue Outfall Canal



Figure 14: London Avenue Outfall 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 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 taking 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 important 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 proposed action under consideration and the evaluation of impacts contained in IER 5 remains unchanged: 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
Soils, Water bottoms, Prime and Unique Farmlands	Council on Environmental Quality (CEQ) memorandum dated August 11, 1980, entitled "Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing the National Environmental Policy Act (NEPA)"; Executive Order 11990 - Protection of Wetlands; Agriculture and Food Act of 1981 (Public Law 97-98) containing the Farmland Protection Policy Act (PL 97-98; 7 U.S.C. 4201 <i>et seq.</i>).	Technically significant in determining soils engineering and environmental suitability, based on their physical and chemical properties, for proposed activities. Water bottoms are technically significant because the estuarine bottom sediment characteristics (water bottoms) benthic organismal distribution and is an integral component of the benthic boundary layer.	Significant to the public for determining suitability of construction capabilities, agriculture suitability, and suitability for septic tank type disposal of sanitary waste.
Hydrology	NEPA of 1969; Clean Water Act of 1972; Storm Damage Control Act of 1944; Coastal Barrier Resources Act of 1982; Rivers and Harbors Act of 1899; River and Harbor and Storm Damage Control Act of 1970; Watershed Protection and Storm Damage Prevention Act of 1954; Submerged Lands Act of 1953; Coastal Zone Management Act of 1972; Safe Drinking Water Act of 1974; Estuary Protection Act of 1968; Resource Conservation and Recovery Act of 1976; Comprehensive Environmental Response, Compensation and Liability Act of 1980; Executive Order 11988 Floodplain Management.	Civil Works water resources development projects typically impact (positively or negatively) the interrelationships and interactions between water and its environment.	Publicly significant because the public demands clean water, hazard-free navigation, and protection of estuaries and floodplain management.
Water Quality	Clean Water Act of 1972; Pollution Prevention Act of 1990, the Safe Drinking Water Act of 1974; Water Resources Planning Act of 1965.	Technically significant to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.	Publicly significant because of the desire for clean water and water-related activities such as boating, swimming, fishing, and as a source of potable water.
Vegetation Resources	Coastal Barrier Resources Act of 1982; Coastal Zone Management Act of 1972; Emergency Wetlands Resources Act of 1986; Estuary Protection Act of 1968; Fish and Wildlife Conservation Act of 1980; Fish and Wildlife Coordination Act of 1958; NEPA of 1969; North American Wetlands Conservation Act of 1989; the Water Resources Development Acts of 1976, 1986, 1990, and 1992; Executive Order 13186 - Migratory Bird Habitat Protection.	Technically significant because they are a critical element of the barrier shoreline habitats. Vegetation resources serve as the basis of productivity, contribute to ecosystem diversity, provide various habitat types for fish and wildlife, and are an indicator of the health of coastal habitats.	Publicly significant because of the high priority that the public places on their aesthetic, recreational, and commercial value.
Wildlife Resources	NEPA of 1969; Coastal Zone Management Act of 1972; Estuary Protection Act of 1968; Fish and Wildlife Coordination Act of 1958; Migratory Bird Conservation Act of 1929; Migratory Bird Treaty Act of 1918; Endangered Species Act of 1973; Fish and Wildlife Conservation Act of 1980; North American Wetlands Conservation Act of 1989; Executive Order 13186 - Migratory Bird Habitat Protection; Marine Mammal Protection Act of 1972.	Technically significant because they are a critical element of the barrier shoreline ecosystem, they are an indicator of the health of various coastal habitats, and many wildlife species are important recreation and commercial resources.	Publicly significant because of the high priority that the public places on their aesthetic, recreational, and commercial value.

Resource	Institutionally Important	Technically Important	Publicly Important
Aquatic Resources	National Environmental Policy Act of 1969; Coastal Zone Management Act of 1972; Estuary Protection Act of 1968.	Technically significant because plankton provide a major, direct food source for animals in the water column and in the sediments; are responsible for at least 40 percent of the photosynthesis occurring on the earth; important for their role in nutrient cycling; plankton productivity is a major source of primary food-energy for most estuarine systems throughout the world; and phytoplankton production is the major source of autochthonous organic matter in most estuarine ecosystems (Day et al. 1989).	Publicly significant because plankton constitute the lowest trophic food level for many larger organisms important to commercial and recreational fishing. There is also public health concern with noxious plankton blooms (red and brown tides) that produce toxins, and large-scale blooms can lead to hypoxic conditions, which can result in fish kills.
Fisheries	Fish and Wildlife Coordination Act of 1958; Endangered Species Act of 1973; Magnuson-Stevens Fishery Conservation and Management Act of 1976; Coastal Zone Management Act of 1972; Estuary Protection Act of 1968.	Technically significant because they are a critical element of many valuable freshwater and marine habitats, they are an indicator of the health of various freshwater and marine habitats, and many fish species are important commercial resources.	Publicly significant because of the high priority that the public places on their esthetic, recreational, and commercial value. Fisheries resources in the project area include marine and estuarine finfish and shellfish.
Essential Fish Habitat	Magnuson-Stevens Fishery Conservation and Management Act of 1976.	Technically significant because it includes those waters and substrate necessary to Federally-managed fish species for spawning, breeding, feeding or growth to maturity.	Publicly significant because of the high value that the public places on seafood and the recreational and commercial opportunities it provides.
Threatened and Endangered Species	Endangered Species Act of 1973; Marine Mammal Protection Act of 1972; Bald Eagle Protection Act of 1940.	Technically significant because the status of such species provides an indication of the overall health of an ecosystem.	Publicly significant because of the desire of the public to protect them and their habitats.
Cultural and Historic Resources	National Historic Preservation Act of 1966; Abandoned Shipwreck Act of 1987; Archeological Resources Protection Act of 1979; National Environmental Policy Act of 1969.	Technically important because of their association or linkage to past events, to historically important persons, and to design and/or construction values; and for their ability to yield important information about prehistory and history.	Publicly important because preservation groups and private individuals support their protection, restoration, enhancement, or recovery.
Recreational Resources	Federal Water Project Recreation Act of 1965; Land and Water Conservation Fund Act of 1965.	Technically significant because of the high economic value of recreational activities and their contribution to local, state, and national economies.	Publicly significant because of the 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.
Air Quality	Clean Air Act of 1963, as amended, and the Louisiana Environmental Quality Act of 1983, as amended.	Air quality is technically significant because of the status of regional ambient air quality in relation to the National Ambient Air Quality Standards (NAAQS).	Air quality is publicly significant because of the desire for clean air and public health concerns expressed by many citizens.

Resource	Institutionally Important	Technically Important	Publicly Important
Socioeconomic and Human Resources	National Environmental Policy Act of 1969; Estuary Protection Act of 1968; Clean Water Act of 1972; Rivers and Harbors Act of 1899; Watershed Protection and Storm damage Protection Act of 1954. Executive Order 12898 of 1994 – Environmental Justice.	Technically significant because the social and economic welfare of the Nation may be positively or adversely impacted by the proposed action; the social and economic welfare of minority and low-income populations may be positively or disproportionately impacted by proposed actions.	Publicly significant because of the public’s concern for health, welfare, and economic and social well-being from water resources projects; also public concerns about the fair and equitable treatment of all people

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

Table 2: Relevant Resources in Project Study Area

Relevant Resource	Impacted	Not Impacted
Waters of the United States	X	
Wildlife		X
Fisheries		X
Threatened and Endangered Species		X
Cultural Resources		X
Recreational Resources		X
Noise	X	
Air Quality	X	
Water Quality	X	
Hydrology		X
Traffic and Transportation	X	
Aesthetics		X
Socioeconomics		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). No wetlands are located in the new proposed ROW areas. Because of the lack of wetlands in the project area, the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and Louisiana Department of Wildlife and Fisheries (LDWF) have concurred that a habitat

evaluation analysis (i.e., wetland value assessment) of the impacts on wetlands is not necessary for this project.

The waters of the United States (US) within the project area consist of the 17th Street, Orleans and London Outfall Canals and the southern shoreline of Lake Pontchartrain in the vicinity of the outfall canals. The 17th Street Outfall Street Canal from approximately Veterans Boulevard north to the mouth of the canal is an excavated, lower perennial, riverine system; from Veterans Boulevard south to PS #6, it is an excavated, estuarine system. The Orleans and London Avenue Canals are excavated, sub tidal, and estuarine. Lake Pontchartrain is sub tidal, estuarine and forms the northernmost boundary of the 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, of the project area support a large number of waterfowl of the Central Flyway. Although some species such as mottled duck (*Anas fulvigula*) are year-round residents, most use the project area as wintering grounds. Dabbling ducks such as mallard (*Anas platyrhynchos*), green-winged teal (*Anas crecca*), blue-winged teal (*Anas discors*), northern pintail (*Anas acuta*), gadwall (*Anas strepera*), widgeon (*Anas americana*), and northern shoveler (*Anas clypeata*) use freshwater and intermediate marshes in fall and early winter, later moving on to saline marshes as food supplies dwindle. Mottled duck, wood duck (*Aix sponsa*), and hooded merganser (*Lophodytes cucullatus*) utilize the marshes, swamps, and bottomland forests of the project area as nesting habitat. Within the vicinity of the Orleans Avenue Canal, the Oak Tree Bird Sanctuary is well known as a viewing area for migratory birds and is often visited by birding enthusiasts.

Diving ducks use the open-water areas of the project area primarily as wintering grounds. More than 90 percent of the lesser scaup (*Aythya affinis*) that inhabit the Mississippi Flyway during the winter in Louisiana concentrate in the open waters of Lake Pontchartrain and Lake Borgne. Other common species include greater scaup (*Aythya marila*), canvasback (*Aythya valisineria*), and redhead (*Aythya americana*). Game birds such as king rail (*Rallus elegans*), clapper rail (*Rallus longirostris*), common snipe (*Gallinago gallinago*), coot (*Fulica americana*), purple gallinule (*Porphyryla 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*).

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 Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et. seq.).

Currently, there are no suitable roosting or nesting sites in the project area. Urban wildlife, such as squirrels, nutria, and other small rodents, can be found in the vicinity of the project area. Nutria are often found foraging in the outfall canals and are considered a nuisance species in the area. An abundance of these urban species can be found in City Park and other parks in the vicinity of the outfall canals.

Bottlenose dolphins are protected under the Marine Mammal Protection Act of 1972, and are found in temperate and tropical waters around the world including Lake Pontchartrain and Lake Borgne. There are coastal populations that migrate into bays, estuaries and river mouths as well as offshore populations that inhabit waters along the continental shelf. Their coloration ranges from light gray to black with lighter coloration on the belly. Inshore (coastal) and offshore individuals vary in color and size. Inshore animals are smaller and lighter in color, while offshore animals are larger, darker in coloration and have smaller flippers. Coastal animals prey on benthic invertebrates and fish, and offshore animals feed on squid and fish.

Based on a 2007-2008 bottlenose dolphin monitoring effort, bottlenose dolphins are most commonly seen in the eastern portions of Lake Pontchartrain near Rigolets Pass and Chef Menteur pass (Barry et al). Individual dolphins will sometimes venture further west into Lake Pontchartrain.

3.2.6 Fisheries/Aquatic Species

3.2.6.1 Existing Conditions

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*).

3.2.7 Threatened and Endangered Species

3.2.7.1 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*).

3.2.7.1.1 *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 within the Mississippi River Basin, Lake Pontchartrain Basin, Pearl River Basin, and Mississippi Sound. Two incidental captures, thought to be the result of aberrant winter marine foraging activities, have occurred west of the Mississippi River. However, no spawning population has been identified in any of the rivers west of the Mississippi River nor have there been any documented sightings or catches of Gulf sturgeon in these rivers. Gulf sturgeon have been collected in Lake Pontchartrain and incidentally caught by shrimp trawlers, netters, and recreational anglers (USFWS 1995b).

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

Critical habitat within Lake Pontchartrain for the Gulf sturgeon is listed as those areas east of the Lake Pontchartrain Causeway, which includes the lake waters on the northern end of the project area. The Gulf sturgeon could enter the 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.

3.2.7.1.2 *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). Use of these areas appears to be related to the availability of aquatic vegetation. The decline of manatees throughout their range is attributed to collisions with boats and habitat loss. Additionally, because Louisiana is located outside of the manatees traditional range, cold weather also contributes to manatee deaths in Louisiana.

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).

3.2.7.1.3 Kemp's Ridley Sea Turtle

The Kemp's Ridley sea turtle is federally listed as endangered. Kemp's Ridley sea turtles are omnivores, feeding on mollusks, crustaceans, jellyfish, fish, algae or seaweed and sea urchins. 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.

3.2.7.1.4 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.

3.2.7.1.5 Loggerhead Sea Turtle

The loggerhead sea turtle is listed as threatened. Similar to the Kemp's Ridley seas turtle, the loggerhead sea turtle is not a full-time resident of the study area, but uses the estuaries as feeding and developmental habitat. The loggerhead sea turtle is omnivorous, feeding mainly on bottom-dwelling invertebrates such as crabs, conchs and whelks.

3.2.8 Cultural Resources

3.2.8.1 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. In conjunction with IER #5, CEMVN contracted R. Christopher Goodwin and Associates, Inc. to conduct a reconnaissance level cultural resources investigation of all areas being considered as alternative locations for the permanent pump

stations on each of the three outfall canals. The study covered the entire length of all proposed project alternatives within a 1,000 foot wide area measuring 500 feet on both sides of the alignment centerline. As part of the 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). Please see IER #5, Section 3.2.7 for additional discussion of the cultural resources present in the project areas and the cultural resource surveys conducted in connection with IER #5.

In letters to the Louisiana State Historic Preservation Officer (SHPO) and federally-recognized Indian Tribes (Tribes) dated 22 February 2008 and 1 October 2008, the CEMVN provided project documentation and evaluation of cultural resources potential in the project area, and found that the proposed permanent pump stations would have no impact on cultural resources. The SHPO concurred with our “no historic properties affected” finding in a letter dated 17 March 2008 and again 10 November 2008, and the Seminole Tribe of Florida concurred in a letter dated 11 November 2008. Remaining Tribes did not respond with any questions or concerns to the finding of no historic properties affected. Coordination with SHPO and 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. The SHPO will be given an opportunity to comment on the current action during the public review period for this IERS.

3.2.9 Recreational Resources

3.2.9.1 Existing Conditions

The recreational resources section in IER 5 is herein incorporated; however there are changes to the existing recreational resources conditions which include the following:

- a) Coconut Beach has relocated and is no longer in the project area.
- b) Pontchartrain Beach is closed to the public.
- c) Bucktown Marina is now constructed and open to the public. The marina includes floating piers for recreational boats, decorative lighting and a promenade walkway.

3.2.10 Aesthetics (Visual Resources)

3.2.10.1 Existing Conditions

17th Street Canal

Located on the Orleans Parish boundary with Jefferson Parish, the 17th Street Canal project area is less residential and park-like in setting than the Orleans Avenue and London Avenue Canals. The early 20th century lake reclamation project along the New Orleans lakefront resulted in the construction of the west end marina complex along the eastern side of this canal. The western (Jefferson Parish) side of the canal is closely tied to the historic Bucktown community that has existed in the area for over a hundred years.

The visual setting of the 17th Street project area is diverse. South of Hammond Hwy, the project area contains Orleans Avenue and London Avenue Canals. Adjoining land uses include restaurants, several marinas, boat houses, a Coast Guard Station, public recreation areas like West End Park, and multilevel residential structures. Unlike the Mariners Cove residential

complex and two eighteen story condominium developments. North of Hammond Hwy, the New Orleans side of the 17th St Canal project area is primarily residential and the Jefferson Parish side is a mixture of residential and service oriented commercial development. Flood protection measures including the interim control structure (ICS) and floodwalls made of concrete, or metal sheet-piling are evident throughout the project area.

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.

Orleans Avenue Canal

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

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

The public green space along the Orleans Avenue Canal corridor is expansive and holds great value as a visual and physical connection to the lakeshore recreation areas. On the east side of the canal, the underlying ownership is City Park and Marconi Drive has a parkway visual setting as it heads northward from the middle of the city, passes along the western edge of City Park, crosses Robert E. Lee Boulevard and continues on to connect with Lakeshore Drive. The adjoining Lake Vista neighborhood enjoys a park-like setting highlighted by wide open grassy expanses broken up by mature live oak and pine trees. The western side of the Orleans Avenue Canal from Robert E. Lee Blvd to the lakefront includes the Lakeshore neighborhood bordering the corridor of undeveloped green space that extends to the public road that provides access to the lakefront. Consisting of single-family homes, the Lakeshore neighborhood enjoys the benefits of a park-like setting regularly maintained by the Orleans Levee District.

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.

London Avenue Canal

The London Avenue Canal project area is located within the public green space that extends from the Lake Pontchartrain shoreline to the Leon C. Simon Boulevard Bridge crossing. This green corridor is centered along the meandering footprint of the London Avenue Canal and provides a visual and physical connection from the public park areas along the lakeshore to the main east-west roadway setback from the shore. Grass-covered earthen levees topped with

concrete or metal sheet-pile, floodwalls line both banks of the canal and the ICS is prominently located just south of the canal's meander.

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

On the east side of the canal is the main campus of the University of New Orleans. Most of the adjoining land uses are utilitarian (parking areas and maintenance and storage facilities). The northern reach, however, is the location of student housing.

On the west side of the canal is a corridor of undeveloped green space that extends from the lake to Pratt Drive, a public road that provides access to the lakefront. A well-designed and maintained residential neighborhood of single-family homes, Lake Terrace, borders the east side of Pratt Drive. The homes fronting Pratt Drive and neighboring homes enjoyed the park-like setting provided by the London Avenue corridor. These public green spaces are regularly maintained by the Orleans Levee District.

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.

3.2.11 Noise

3.2.11.1 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 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-weighting*, 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.

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

Existing noise levels (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 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	Ringling telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998

Table 4: Estimated Existing Noise Levels

Location	Existing Noise Levels (dBA)		
	Leq (daytime)	Leq (nighttime)	DNL
17 th Street Avenue Canal	58	52	58
Orleans Avenue Canal	53	47	55
London Avenue Canal	53	47	55

Source: ANSI 2003

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

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

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

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

3.2.12 Air Quality

3.2.12.1 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 (NO_x), 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 proposed action area can be estimated from measurements conducted at a nearby air quality monitoring station. Recent air quality measurements are below the NAAQS for all criteria pollutants and are a conservative representation of the air quality conditions near the sites (USEPA 2010a). At any given time, concentrations of criteria pollutants would be expected to be below those outlined in Table 6.

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

Greenhouse Gases and Global Warming. Greenhouse gases (GHGs) are components of the atmosphere that trap heat relatively near the surface of the earth, and therefore, contribute to the greenhouse effect and global warming. Most GHGs occur naturally in the atmosphere, but increases in their concentration result from human activities such as the burning of fossil fuels. Global temperatures are expected to continue to rise as human activities continue to add carbon dioxide (CO₂), methane, nitrous oxide, and other greenhouse (or heat-trapping) gases to the atmosphere. Whether or not rainfall will increase or decrease remains difficult to project for specific regions. (USEPA, 2010b; IPCC, 2007)

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 22, 2010] [38 FR 25678, Sept 14, 1973]		primary	1-hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		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 PM_{2.5} 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 65 µg/m³.

ppm = parts per million

µg/m³ = micrograms per cubic meter

NO₂ = Nitrogen dioxide

3.2.13 Water Quality

3.2.13.1 Existing Conditions

Surface Water

The project area is within the Lake Pontchartrain Basin. Lake Pontchartrain Basin comprises over 10,000 square miles (mi²) 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. Ground 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 mi² in area and averages 12-ft in depth.

The 17th Street, Orleans Avenue and London Avenue Outfall Canals are 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. (LDEQ 2008).

Current Monitoring

The *2012 Water Quality Integrated Report* has been reviewed and approved by the Louisiana Department of Environmental Quality (LDEQ) and the Environmental Protection Agency (EPA) and the draft *2012 Water Quality Integrated Report* was approved with three segmented revisions by EPA on July 18, 2013. The most current draft 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, Orleans Avenue and London Avenue Outfall Canals, 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.

3.2.14 Hydrology

Existing Conditions

Topographically, much of New Orleans lies below sea level, which leaves the city prone to flooding during storm events. Hydrology in the project area is influenced by a complex network of internal drainage features of Orleans and Jefferson Parishes, and includes the pump stations,

canals. The pump stations and canals are responsible for evacuating storm water out of the project area into Lake Pontchartrain. The major canals and Sewage and Water Board New Orleans (SWBNO) pump stations in the project area include the 17th Street, Orleans Avenue, and London Avenue Canals, and SWBNO PS #3, #4, #6, and #7. Each canal flows north toward Lake Pontchartrain, draining the Orleans East Bank sub basin in Orleans Parish, and in the case of the 17th Street Canal, some portion of the East Bank Drainage Basin of Jefferson Parish. An overview of each of these drainage features is presented below.

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. Three pump stations discharge directly into the canal, including SWBNO PS #6, the Canal Street Pump Station (160 cfs), the I-10 Pump Station (860 cfs). The canal is approximately 13,500 feet long, with an average width of 175 feet, and has earthen banks and bottom. It is lined with a combination of concrete and sheet pile flood walls. 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 total pump capacity of SWBNO PS #6 is 9,480 cfs. The pumping capacity of the new 17th Street Canal permanent pump station would range between approximately 500 and 12,500 cfs.

The Orleans Avenue Canal conveys drainage water from the central area of Orleans Parish to Lake Pontchartrain. SWBNO PS #7 discharges stormwater into the Orleans Avenue Canal. The canal is approximately 11,100 feet long, with an average width of 145 feet, and has earthen banks and bottom. The channel geometry has various configurations along its length. SWBNO PS #7 is at the head of the Orleans Avenue Canal and lifts drainage water to allow gravity flow from the pump station to Lake Pontchartrain. The total pump capacity of SWBNO PS #7 is 2,690 cfs. The pumping capacity of the Orleans Avenue Canal permanent pump station would range between approximately 500 and 2,700 cfs.

The London Avenue Canal conveys drainage water from the eastern portion of Orleans Parish to Lake Pontchartrain. SWBNO PS #3 and #4 discharge drainage water into the London Avenue Canal. The canal is approximately 14,835 feet long, with an average width of 115 feet, and has earthen banks and bottom. The channel geometry has various configurations along its length. SWBNO PS #3 is at the head of the London Avenue Canal and lifts drainage water to allow gravity flow from the pump station to Lake Pontchartrain. The total pump capacity of SWBNO PS #3 is 4,260 cfs. SWBNO PS #4 is at the midpoint of the London Avenue Canal, approximately 1.9 miles north of SWBNO PS #3, and lifts drainage water to allow gravity flow from the pump station to Lake Pontchartrain. The total pump capacity of SWBNO PS #4 is 3,720 cfs. The pumping capacity of the London Avenue Canal permanent pump station would range between 500 and 9,000 cfs.

Hydrology in the New Orleans area is influenced by tidal flows within Lake Pontchartrain. Tidal exchange with the Gulf of Mexico and Lake Pontchartrain occurs through Lake Borgne and the Chef Menteur and Rigolets passes. Salinity entering from these tidal movements is partially flushed out by freshwater entering the lake, mainly from the Pearl River system.

3.2.15 Socio Economics

General

These three outfall canals are a critical element of the flood control system serving as drainage conduits for much of the city of New Orleans. The permanent pump stations would provide a permanent and more sustainable measure for reducing the risk of a 100-year level storm surge entering the outfall canals from Lake Pontchartrain. The permanent pump stations would replace the Interim Closure Structures, which were constructed in 2006. The information provided by the socio economic analysis would provide a social and macroeconomic overview of the area of interest.

Study Purpose and Scope

The purpose of this analysis is to assess potential socio and economic impacts that could result from acquiring additional permanent and temporary ROW to be utilized during the construction of the permanent pump stations at the mouths of the 17th Street, London Avenue and Orleans Avenue outfall canals leading into Lake Pontchartrain. The Combined additional ROW for all three outfall canals measures approximately 12.35 acres and would be used by the contractor for the unloading and staging of construction equipment, employee parking, onsite office trailers and future access to the permanent pumps stations.

The project area for this socio economic analysis focuses on the U.S. Census tracts (201.01, 76.03, 133.01 and 133.02) which include all three permanent pump station locations. On the west side, the project area is bordered by Homestead Avenue in Jefferson parish and by the Industrial canal (near the Lakefront Airport) in Orleans parish on the east side. The south side is bordered by West Esplanade Avenue in Jefferson Parish and Robert E Lee Blvd and Leon C Simon Blvd in Orleans parish. Lake Pontchartrain waterfront represents the northern border.

Socio Economic Analysis

Table 1 displays basic U.S. Census data for the project area. Over the 2006 to 2010 time period the average population was nearly 11,000 with the number of households averaging around 4,700. The majority of households were comprised of families with an average size of 2.96 children. Nearly 90 percent of the population is Caucasian.

Table 1 U.S. Census Data of the Project Area (2006 - 2010 Average Estimates)	
Population	10,765
Number of Households	4,658
Number Employed	7,852
Number Who Commute to Work	4,708

Business and Economic Conditions

Existing Conditions

Table 1 shows the relatively high level of employment (73 percent) in the study area when compared to the state of Louisiana average of 55 percent. In 2010, the median income in the project area located in Jefferson parish was about \$55,000 whereas in the Orleans parish side of the project area the median income was about \$120,000. According to the U.S. Census, the majority of those employed worked in Management, Sales or Office type positions.

Housing

Existing Conditions

The project area, during the 2006-2010 period of time, had an average of 5,200 housing units with the median value of \$202,000 in the Jefferson Parish side of the project area and \$360,000 in the Orleans Parish side of the project area.

Transportation

Existing Conditions

The most heavily used thoroughfares within the study area include West Esplanade Avenue in Jefferson Parish. In Orleans Parish, they include Canal Blvd, Robert E Lee Blvd, Leon C Simon Blvd, Paris Avenue, Pontchartrain Blvd, West End Blvd. and Lakeshore Drive. Existing traffic congestion results from normal commuting levels and patterns.

4. ENVIRONMENTAL CONSEQUENCES

4.1 WATERS OF THE UNITED STATES

Currently, it is anticipated that .267 acres of impacts to new ROW in addition to those discussed in IER #5 would occur within waters of the United States through the placement of rip-rap along a small section of a T-wall, which will be constructed parallel to the 17th St. Canal in a harbor

adjoining the canal. The T-wall and a flow training berm extending north from it will be constructed within the maximum footprint discussed in IER 5. Additionally, the peninsula at the mouth of the 17th St. Canal would be removed and replaced with a canal bypass. This area is also within the maximum ROW discussed in IER 5.

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. This design includes placement of rip-rap, fill, erosion protection, closure structures, pilings, and breakwaters within waters of the United States for the construction of the permanent pump stations at the mouths of the outfall canals. The original IER #5 project design would directly impact approximately 3.23 acres of waters of the US in the 17th Street Canal, 2.37 acres in Orleans Avenue Canal, and 1.28 acres in the London Avenue Canal. The footprint for the ROW for the entire project including land and water was approximately 37 acres on the 17th Street Canal, 21 acres on the Orleans Avenue Canal, and 21 acres on the London Avenue Canal which could be indirectly impacted by erosion, runoff, and temporary increases in turbidity related to construction activities. Under the No Action Alternative, no further direct or indirect impacts would occur.

Cumulative Impacts

Under the No Action Alternative, cumulative impacts to waters of the United States would occur around the project area when considered with other HSDRRS projects in the area. Construction of HSDRRS permanent pump stations at the mouths of the outfall canals and construction along the Lake Pontchartrain shoreline associated with HSDRRS projects in the area (reference IERs #3, #4, #5, #11, #27 and #27.a) would impact riverine and estuarine wetlands.

Proposed Action Alternative

Direct Impacts

The refined design for the permanent pump stations would directly impact approximately 7.23 acres of waters of the US in the 17th Street Canal, 3.86 acres in the Orleans Avenue Canal, and 3.96 acres in the London Avenue Canal. All of this acreage is within the land and water acreage identified as part of the ROW required for the IER #5 original design. The State is aware of the project plans, including the proposed excavation of the peninsula. The only canal to have additional waters of the US impacts is the 17th Street canal. The refined design proposes to directly impact an additional approximately .267 acres of new ROW within waters of the US through the placement of rock/rip-rap along the floodside of a small section of floodwall to be constructed parallel to the 17th St. Canal in the harbor adjoining the canal. The refined design includes a floodwall and flow training berm that extends in a northerly direction but is still within the maximum footprint discussed in IER 5. The refined design also includes the removal of the peninsula at the mouth of the 17th St. Canal and replacement with a canal bypass. The peninsula area is also within the maximum ROW discussed in IER 5. Removal of the existing peninsula at the mouth of the 17th St. Canal by excavation, and construction of the floodwall, flow training berm and erosion protection in the form of geotextile fabric and rip-rap in the harbor would directly impact waters of the US. The total new impacts to areas outside of the

maximum ROW discussed in IER 5 measure approximately .267 acres and the total impacted waters of the US acreage for the 17th Street Canal Permanent Pump Station is now 7.5 acres.

Indirect Impacts

Short-term, indirect impacts could occur from construction-related activities (such as excavation dredging, pile-driving and placement of geotextile and rip-rap) including disturbances to the lake and canal bottoms, erosion and runoff causing temporary increases in turbidity. Construction Best Management Practices (BMPs), including installation of a turbidity curtain around the project area, 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 surrounding waters of the United States from construction activities would be temporary and localized.

Cumulative Impacts

Cumulative impacts to waters of the United States would occur around the project area when considered with other HSDRRS projects. The total acreage of impact to waters of the US as result of the permanent pump station project on all three canals would be approximately 15.32 acres. Construction of HSDRRS permanent pump stations at the mouths of the outfall canals and construction along the Lake Pontchartrain shoreline associated with HSDRRS projects in the area would impact riverine and estuarine wetlands. The use of construction BMPs and SWPPPs for this project and others would minimize the incremental impacts of each project.

4.2 FISHERIES/AQUATIC SPECIES

No Action Alternative

Direct, Indirect and Cumulative Impacts

Direct, indirect, and cumulative impacts to fish populations and fish habitats resulting from construction of the actions discussed in IER 5 would be similar to those occurring under other HSDRRS projects that alter estuarine habitats during construction activities.

Proposed Action Alternative

Direct Impacts

The construction of the t-wall and rip rap placement would have no direct impacts to fish populations in Lake Pontchartrain. Implementation of a SWPPP would minimize temporary indirect impacts to fish populations and fish habitats resulting from potential soil erosion and consequent degradation of water quality. Construction of the T-wall and placement of the rip rap would have permanent impacts to the lake bottom, primarily through dredging and stockpiling activities. These activities would permanently fill approximately .267 acres of lakebed in the project area causing loss of aquatic habitat.

Indirect Impacts

The indirect impacts of disturbed soils and sediments in the project area would be temporary and controlled through the use of best management practices, and would not permanently impact Lake Pontchartrain fish populations.

Cumulative Impacts

Short-term cumulative impacts to fisheries would occur from other HSDRRS projects that alter estuarine habitats during construction activities, such as dredging of Lake Pontchartrain for foreshore protection and filling of wetlands for expansion of levee footprints. However, in the long-term, providing the 100-year level of risk reduction for the Metropolitan New Orleans Area reduces the risk of overtopping and urban flooding, which could result in temporary water quality impacts from pumping of floodwaters into adjacent estuaries.

4.3 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

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, including the proposed new ROW, 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.

Type III Turbidity curtains would be installed at the northern end of the project site. Although this would help reduce turbidity within the Lake and thus minimize and avoid impacts to dolphins, the actual installment of the curtain could cause an impact. BMPs were developed in coordination with NMFS in order to avoid entrapment of the species during containment activities such as this. Impacts to the bottlenose dolphin would not be anticipated with the utilization of these BMPs which can be found in Appendix E.

Cumulative Impacts

Cumulative impacts would occur along the southern shoreline of Lake Pontchartrain, particularly those areas encompassed by the proposed action, and discussed in Individual Environmental Reports (IERs) #3, #4, #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.

4.4 THREATENED AND ENDANGERED SPECIES

4.4.1 Gulf Sturgeon

No Action Alternative

Direct, Indirect, and Cumulative 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 or their critical habitat would occur. As such there would be no increase to currently occurring cumulative impacts to threatened and endangered species or their critical habitat in the basin.

Proposed Action Alternative

Direct and Indirect Impacts

Gulf sturgeon could pass through or forage in the portion of Lake Pontchartrain adjacent to outfall canals, principally during the three to four coolest, winter months. However, the area along the south shore of Lake Pontchartrain is unlikely to be used as a migratory route by Gulf sturgeon as they move between marine environments (Lake Borgne and the Mississippi Sound) and the rivers that drain into Lake Pontchartrain they utilize during the summer, since these rivers are located along the north shore of the lake. In addition, although Gulf sturgeon critical habitat has been established for the portion of the lake that the outfall canals discharge into, the substrates in this portion of the lake are not high in sand (>80%) as preferred by Gulf sturgeon when foraging. Benthic habitat in the canals has been highly disturbed by past dredging activities and effluent discharge from existing pump station operations and is not high quality foraging habitat for Gulf sturgeon. Although any Gulf sturgeon utilizing Lake Pontchartrain could enter the mouth of any of the Outfall Canals, no confirmed sightings have occurred nor is there documentation of their presence in the canals. The presence of construction-related activity, machinery, and noise would be expected to cause the Gulf sturgeon to avoid the project area during the construction period. Construction of the proposed action does not occur in critical habitat. Any turbidity from construction of the proposed action would be completely contained within the outfall canals by Type III turbidity curtains that would be continuously monitored and maintained. In addition, turbidity monitoring would be conducted to ensure that turbidity control measures are effective, and turbidity controls would be adjusted as needed. Three readings would be taken per work day with a turbidity meter within 500 feet lakeside from the point of discharge to ensure that at no point in time a 50 NTU in difference is exceeded. As such the CEMVN

believes there would be No Effect on Gulf sturgeon or their adjacent critical habitat from construction of the proposed action.

Cumulative Impacts

Construction of the proposed action is not anticipated to add to the cumulative impacts on threatened and endangered species and their critical habitat already being experienced in the basin.

4.4.2 Sea Turtles

Direct and Indirect Impacts

Kemp's ridley, loggerhead, and green sea turtles have the potential to forage or swim in the portion of Lake Pontchartrain adjacent to the outfall canals, however use of the outfall canals by these species is not anticipated as these are highly disturbed areas that do not provide high quality foraging habitat for sea turtles such as is found within Lake Pontchartrain. Additionally, the presence of construction-related activity, machinery, and noise would be expected to cause these species to avoid the project area during the construction period. Turbidity from construction related activities would be contained wholly within the outfall canals. As such the CEMVN believes there would be No Effect on sea turtles from construction of the proposed action.

Cumulative Impacts

Construction of the proposed action is not anticipated to add to the cumulative impacts on threatened and endangered species already being experienced in the basin.

4.4.3 West Indian Manatee

Direct and Indirect Impacts

The West Indian Manatee has the potential to occur in the portion of Lake Pontchartrain adjacent to the outfall canals, however use of the outfall canals by this species is not anticipated as these are highly disturbed areas that do not provide high quality foraging habitat for manatees such as is found within Lake Pontchartrain and its tributaries. Additionally, the presence of construction-related activity, machinery, and noise would be expected to cause these species to avoid the project area during the construction period. Turbidity from construction related activities would be contained wholly within the outfall canals. However, in order to minimize the potential for dredging activities under the proposed action to cause adverse impacts to manatees during the construction period, the standard manatee protection measures found in appendix E would be implemented. As such the CEMVN believes there would be No Effect on the West Indian Manatee from construction of the proposed action.

Cumulative Impacts

Construction of the proposed action is not anticipated to add to the cumulative impacts on threatened and endangered species already being experienced in the basin.

4.5 CULTURAL RESOURCES

No Action Alternative

Direct and Indirect Impacts

Under the No Action Alternative, no activities would be performed therefore, direct or indirect impacts to 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

17th Street Canal

Direct Impacts

The proposed action for the 17th Street Outfall Canal would have no direct impact on cultural resources. Research indicates that the northern portion of the project area is built land associated with the construction of the USCG Station and the Southern Yacht Club. Prior to land-filling during the construction of these facilities, the Lake Pontchartrain shoreline once extended east-west across the project area possibly north of the Hammond Highway. One previously recorded archaeological site (Site 16JE40) is reportedly located on this buried shoreline in or near the USCG Station facility. Limited Phase 1 field investigations in this area did not identify any intact shoreline deposits or remnants of Site 16JE40 (Heller et al. 2012). 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 proposed expanded ROW areas and work areas do not overlap potential significant historic remains. One NRHP listed property - the Metairie Cemetery, and one eligible National Register of Historic Places (NRHP) property – SWBNO PS #6, are located outside of the project area and would 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 protection to known and unknown cultural resources located outside of the project area by reducing the 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.

Orleans Avenue Canal

Direct Impacts

Implementation of the proposed action for the Orleans Avenue Canal would have no direct impact on cultural resources. The northern portion of project area contains built land that was constructed in the late 1920s. The likelihood for the presence of archaeological sites is very minimal. Researchers determined that no existing or potential NRHP historic districts lie within the immediate area and no historic structures or features are present in the project area (Heller et al. 2012). SWBNO PS #7, which is eligible for listing on the NRHP, is located adjacent to the southern end of the project area at Taylor Avenue and would not be impacted by proposed construction. City Park facilities, located outside of the project area, contain many Works Progress Administration components and one property already listed on the NRHP: New Orleans City Park Carousel and Pavilion. These City Park facilities would not be impacted by proposed construction. No previously recorded archaeological sites or shipwrecks are located within 1000 feet of the project area.

Indirect and Cumulative Impacts

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

London Avenue Canal

Direct Impacts

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

Indirect and Cumulative Impacts

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

4.6 RECREATIONAL RESOURCES

No Action Alternative

Direct, Indirect, & Cumulative Impacts to Recreation Resources

The recreational resources section in IER 5 is herein incorporated.

Proposed Action Alternative

17th Street Canal

Direct Impacts to Recreation Resources

The recreational resources section in IER 5 is herein incorporated; however, there are the following additional direct impacts:

- a) Staging and movement of barges could delay recreational boats at Bucktown Marina. The impact would be temporary and would only occur during construction.
- b) The peninsula at 17th Street would no longer be available for people to walk and/or bank fish as a result of excavation of it. The site is not a developed recreation area and there are other locations that people may walk and/or bank fish such as Breakwater Park, West End Park and Lake Shore Drive.
- c) Recreational users of Bucktown Marian and West End Park may be impacted by noise; however the impact would be temporary and only occur during construction.

Indirect and Cumulative Impacts to Recreation Resources

The recreational resources section in IER 5 is herein incorporated; however, there is the one additional indirect impact: The peninsula at 17th Street would no longer be available for people to walk and/or bank fish as a result of excavation of it.

Orleans Avenue Canal

Direct, Indirect and Cumulative Impacts to Recreation Resources

The recreational resources section in IER 5 is herein incorporated.

London Avenue Canal

Direct, Indirect and Cumulative Impacts to Recreation Resources

The recreational resources section in IER 5 is herein incorporated.

4.7 AESTHETICS (VISUAL RESOURCES)

No Action Alternative

Direct Impacts and Indirect Impacts

Under the no action alternative, there would no direct or indirect impacts to visual resources within the individual study areas. 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. Cumulative impacts would be the incremental direct and indirect impacts of not implementing the proposed action and the continued loss of wetland and habitats due to human development and conversion of existing forested wetlands and swamp habitats to marsh and open water. Any future changes or alterations to the study area would evolve in a natural process

over the course of time, or by local land use patterns and maintenance practices. These incremental direct and indirect impacts would be in addition to the direct and indirect impacts of visual resources in the region, Louisiana and the Nation.

Proposed Action Alternative

17th Street Canal

Direct Impacts and Indirect Impacts

Under the future with project conditions, direct impacts to visual resources would be minimal. Increase of ROW would not impact visual resources at the site. The existing pump station already has temporary ROW where construction materials are stored, maintenance access can be had, and future construction efforts can be made. The landscape and its design would see no significant change. There are no public or institutionally significant resources in the area.

The removal of the peninsula would be a significant undertaking; however, the majority of the land in question is well out of the public view shed, has no public or institutional value, and adds no real aesthetic quality to the area. Removal of the peninsula would result in minimal to negligible impacts to visual resources of the area. The additional dredging and riprap would also present minimal impacts to visual resources for similar reasons.

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 would abate and conditions 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 be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of 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, Louisiana and the Nation.

Orleans Canal

Direct Impacts and Indirect Impacts

Under the future with project conditions, direct impacts to visual resources would be minimal. Increase of ROW would not impact visual resources at the site. The existing pump station already has temporary ROW where construction materials are stored, maintenance access can be had, and future construction efforts can be made. The landscape and its design would 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. The green space adjacent to the canal would also be impacted by the introduction of power lines to the new station south of the

site. These temporary impacts would abate and conditions 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 be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of 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, Louisiana and the Nation.

London Canal

Direct Impacts and Indirect Impacts

Under the future with project conditions, direct impacts to visual resources would be minimal. Increase of ROW would not impact visual resources at the site. The existing pump station already has temporary ROW where construction materials are stored, maintenance access can be had, and future construction efforts can be made. The landscape and its design would 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 would abate and conditions 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 be the incremental direct and indirect impacts of implementing the proposed action combined with the continued activities of 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, Louisiana and the Nation.

4.8 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 construction activities in the new ROW such as pile driving and vehicles; however, along selected areas of the project area, they would continue to experience ambient noise disturbances exceeding 65 dBA from the activities discussed in IER 5, 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 would be expected. Effects would be confined to those areas around the new ROW. Generally, noise effects would be as described in IER #5. However, areas affected by construction noise would be expanded due to the new ROW designated for the utility corridors along the Orleans and London Avenue canals.

Construction associated with the new ROW would include the installation of the new water, sewer and electrical utilities in some of those areas and the construction of new access roads. At the 17th St. Canal site, an existing peninsula would be removed, a T-wall and training berm would be constructed and rip-rap would be placed next to the T-wall. Additionally, the staging of materials and equipment within those project areas would also involve the operation of heavy equipment. 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 7: 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 in the Jefferson Parish noise ordinance (75 dBA daytime and 55 dBA at night). Special variances to the local noise ordinance or mitigation measures would be required. These activities are exempt from the New Orleans ordinance between 7:00 A.M. and 6:00 P.M. (11:00 P.M. for areas other than residential). The following BMPs would be employed to reduce the noise:

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

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

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

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

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

Cumulative Impacts

Upon completion of the work described in IER 5 and in the proposed action there would be no cumulative impacts on the existing noise environment due to the construction of the permanent pump stations. However, other ongoing work within the project area combined with noise from other HSDRRS projects in the area would have cumulative effects, but these impacts would be temporary and expected to end upon completion of these projects.

4.9 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 areas 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 construction activities would have short-term effects on air quality. Primary emission sources would be from heavy construction equipment and concrete delivery trucks. Emissions would not exceed 100 tpy of any criteria pollutant, would not exceed the Council on Environmental Quality Green House Gas presumptive effects threshold, and would not contribute to a violation of air regulations. Effects to air quality due to construction within the proposed expanded ROW are not anticipated to materially differ from the effects discussed in IER #5.

As discussed in IER #5, construction emissions for the permanent pump station projects 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 construction of the permanent pump stations would be below the *de minimis* thresholds. Table 9

Table 8: Annual Air Emissions Compared to Applicability Thresholds

Activity	Emissions (tons/year)						De minimis Threshold	Would Emissions Equal/Exceed De minimus Levels?
	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 emissions would be no greater than those shown herein. Small changes in the ultimate design, and moderate changes in the quantity and types of equipment used would not have a substantial influence on the emission estimates and would not change the level of effects under NEPA.

BMPs/mitigation measures 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 Louisiana Administrative Code 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 through watering
- Limiting or restricting open burning activities
- Appropriate use of portable fuel containers
- Meeting new engine standards for nonroad vehicles
- Using low VOC architectural, industrial, and maintenance coatings

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

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 below *de minimis* levels. Therefore, the proposed action would not contribute significantly to adverse cumulative effects to air quality.

4.10 WATER QUALITY

No Action Alternative

Direct and Indirect Impacts

Without implementation of the proposed action, no additional direct and indirect impacts to water quality would be expected from wastewater and storm water runoff from construction and staging on the new ROW during storm events. There would be no additional turbidity impacts from activities within the new ROW in the harbor adjacent to the 17th Street Canal or Lake Pontchartrain.

Cumulative Impacts

Other past, present, and future projects are not expected to have a significant impact on the large scale water quality conditions in the project area. However, localized water quality degradation could occur during construction of these projects. Concurrent construction of HSDRRS projects could cause short-term impacts to water quality that could exceed the LDEQ's water quality standards. The cumulative construction of IERs #3, #4, #5, #11, #27 and #27.a could impact water quality. A temporary increase in concentration of fine sediments within the water column due to upland erosion or sediment disturbance in waterways, would be additive to similar impacts caused by other HSDRRS projects. This could lead to increased turbidity and possible reductions in dissolved oxygen (DO) levels in the vicinity and downstream of construction activities. These sediments could also act as a source of nutrients within the water column. These impacts would generally be localized to areas where construction would occur and would be expected to be temporary.

Continued industrial activities, urban wastewater discharges, and construction activities could 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.

Proposed Action Alternative

Direct and Indirect Impacts

Some construction associated with the proposed expanded 0.267 acres of ROW would occur directly in the harbor adjacent to the 17th Street Canal, and to some extent indirectly in Lake Pontchartrain because they are connected water bodies. Implementation of the proposed action alternative would result in direct impacts in the form of reduced water quality resulting from sediments disturbed during construction and specifically during the placement of the geotextile fabric and rip-rap. This increase in rip-rap and sediment could cause temporary 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. Overall impacts to water quality would be as described in IER #5.

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 and operation of these permanent pump station 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 impacts of the projects evaluated in IERs #3, #4, #5, #11, #27 and #27.a could impact water quality. A temporary increase in concentration of fine sediments within the water column due to upland erosion or sediment disturbance in waterways, would be additive to similar impacts caused by other levee improvement projects. This would lead to increased turbidity and possible reductions in DO levels in the vicinity and downstream of construction activities. These sediments would also act as a source of nutrients within the water column. These impacts would generally be localized to areas where construction would occur and would be expected to be temporary. Implementing BMPs and SWPPPs would decrease cumulative impacts from construction.

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

4.11 HYDROLOGY

No Action Alternative

Direct and Indirect Impacts to Hydrology

Hydrology would continue to be influenced by the existing internal drainage features, including existing SWBNO pump stations, ICS, and canals and the permanent pump stations on the outfall canals as described in IER #5.

Cumulative Impacts to Hydrology

Under the no action alternative, the project area would be provided 100 year storm damage risk reduction provided by the permanent pump stations at the mouths of the outfall canals. There would also be cumulative impacts associated with other HSDRRS projects in the area such as the levees and floodgate structures along the shoreline of Lake Pontchartrain and the Borgne Barrier. The no action alternative in combination with other HSDRRS projects could impact flows and water levels when added to other actions in the study area. The effect on erosion and disturbed sediments during construction would be negligible and would be addressed through BMPs and SWPPPs.

Proposed Action

Direct and Indirect Impacts to Hydrology

The direct and indirect impacts to hydrology would be as described in IER #5 for the 17th Street, Orleans Avenue, and London Avenue Canals. The design builder completed a hydraulic analysis associated with removal of the peninsula on the 17th Street Canal as it relates to the harbor adjacent to the canal and marina. The refined design utilizing the flow training berm funnels the flow from the permanent pump station and bypass gates away from the entrance to the harbor. The hydraulic analyses looked at the existing flow conditions in and around the entrance to adjacent harbor and the 17th Street Canal and the results were used to design a system that would have no negative impacts to the area. Wave modeling was then performed to show the flow training berm would have no negative impacts to the area. Three dimensional hydraulic modeling was also conducted to show the discharge from the pump station and bypass gate would not influence the entrance to the harbor entrance. The final reports for these studies are anticipated to be complete in the near future.

As described in IER #5, short-term impacts during construction would affect water flow within the canal because of temporary construction features, but the canal would continue to function as a conduit to evacuate storm water in conjunction with SWBNO Pump Stations #3,#4, #6, and #7. Long-term impacts to hydrology would not be expected. During periods when storm surge is anticipated, storm water would continue to be evacuated to Lake Pontchartrain via the new permanent pumps. The new pumps and closure structure would keep storm surge from entering the canal system and would evacuate drainage from the internal or upstream pump stations; this action could cause turbulence in the vicinity of the structure increasing the potential for erosion. There could also be increased deposition of sediment in the vicinity of the new structure after large storm events. This would result in a short-term impact, but the canal would continue to function as a conduit to evacuate storm water.

Cumulative Impacts to Hydrology

The incremental impact of the proposed action on the 17th Street, Orleans Avenue, and London Avenue Canals as well as the completed HSDRRS in the project area would permanently reduce the effect of surges from extreme events up to the 100-year storm, further enhancing the overall benefits of the entire proposed 100-year hurricane protection system throughout the area.

4.12 SOCIO ECONOMICS

Business and Economic Conditions

Future Conditions - No Action

Without the additional ROW for construction of the permanent pump stations at the three outfall canals, achieving long-term and more sustainable 100-year levels of protection and flood risk reduction associated with the permanent pump stations could be delayed to the extent that less efficient means of construction may have to be utilized. Prolonging the construction of the flood risk management structures could affect local business decision making and in a competitive market, competing communities could convince businesses to relocate out of the area which would have a detrimental effect to the local economy.

Future Conditions - Proposed Action

The proposed actions would ensure the 100-year level of protection for businesses located within the study area as well as neighboring areas and would be completed in the most efficient manner thereby preventing any harmful delay impacts to the local business community.

Housing

Future Conditions - No Action

Without the additional ROW for construction of the permanent pump stations at the three outfall canals, achieving long-term and more sustainable 100-year levels of protection and flood risk reduction associated with the permanent pump stations could be delayed to the extent that less efficient means of construction may have to be utilized. Prolonging the construction of the flood risk management structures could therefore have a harmful effect on local housing values.

Future Conditions - Proposed Action

The proposed actions would ensure the level of protection for the housing units located within the study area as well as neighboring areas would be completed in the most efficient manner thereby preventing any harmful delay impacts to the local housing market.

Transportation

No Action Alternative

Without the additional ROW for construction of the permanent pump stations at the three outfall canals, achieving long-term and more sustainable 100-year levels of protection and flood risk reduction associated with the permanent pump stations could be delayed to the extent that less efficient means of construction may have to be utilized. Prolonging the construction of the flood risk management structures could therefore possibly extend the duration on any traffic congestion associated with the construction of the permanent pump stations.

Proposed Action Alternative

Land excavation and canal dredging would be required for construction of features such as the new channel leading to the 17th St. Canal gate structure (which would be constructed by removing the existing peninsula on the western side of the mouth of the canal), the construction of each of the pump stations and the intakes to all pump stations. These activities would result in soil removal from the sites. Several dredging activities would occur throughout the construction period for distinct features of work, such as dredging within the pump station cofferdams, dredging for the intake and discharge of the pump stations, and dredging for canal bypass around the pump station cofferdams. These dredging activities would be conducted to varying depths within the canal and on land, and various amounts of dredged or excavated material which would be disposed of offsite.

It is currently estimated that approximately 450,000 cubic yards of material (approximately 56,000 truckloads) would be removed from all three outfall canals and adjacent lands. Approximately 30 separate excavation or dredging events, 10 at each project site, are expected to occur within the construction period for this project.

Roads could be temporarily closed during transportation of construction materials. These temporary closures would result in increased congestion of those roads in the vicinity not directly impacted by construction activities. The impacts would be considered temporary, lasting only as long as the time frame necessary to complete the construction activity. After construction has been completed, the local road network would be expected to return to its normal condition.

Roads directly impacted by the proposed action at the 17th Street Outfall Canal could include Hammond Highway, Pontchartrain Boulevard, West End Boulevard, Lakeshore Parkway, Amethyst Street, Canal Blvd, and I-10/I-610. Roads directly impacted by the proposed action at the Orleans Avenue Outfall Canal could include Lakeshore Drive, Robert E. Lee Boulevard, Canal Street, Marconi Drive, Lakeshore Parkway, Amethyst Street, Canal Blvd, and I-10/I-610. Roads directly impacted by the proposed action at the London Avenue Outfall Canal could include Lakeshore Drive, Paris Avenue, Elysian Fields Avenue, and I-10/I-610.

4.13 HAZARDOUS, TOXIC AND REDIOACTIVE WASTE

The USACE is obligated under Engineer Regulation (ER) 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within the vicinity of proposed actions. ER 1165-2-132 identifies that HTRW policy is to avoid the use of project funds for HTRW removal and remediation activities. An ASTM E 1527-05 Phase 1 Environmental Site Assessments (ESAs), HTRW 13-14, dated 09 December 2013, HTRW 13-15 dated 12 December 2013, and HTRW 13-16 dated 18 December 2013 have been completed for the project area. A copy of Phase 1 ESAs will be maintained on file at the U.S. Army Corps of Engineers, New Orleans District Headquarters. The probability of encountering HTRW for the proposed action is low based on the initial site assessments. If no recognized environmental conditions are identified in relation to the project sites, the probability of encountering HTRW for this project would 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. In cases where HTRW or otherwise regulated material cannot be avoided, such material would be handled and disposed of according to Louisiana Administrative Code (LAC) 33: VII, Subpart 1. .Solid Waste Regulations and LAC 30:I Chapter 13 Section 2.3 Risk Evaluation/Corrective Action Program (RECAP) Regulation.

4.13.1 November 2006 Phase I ESA Reports

An American Society for Testing and Materials (ASTM) E 1527-05 Phase I Environmental Site Assessment (ESA) was completed for each of the three outfall canals in November 2006 (GEC 2006b, 2006c, 2006d). A copy of the Phase I ESAs is maintained on file at the CEMVN. The Phase I ESA evaluated sites of concern (SOCs) within one-eighth mile (660 ft) of the centerline of the 17th Street, Orleans Avenue, and London Avenue Canals and identified the findings of the previous certified industrial hygienist (CIH) Investigation as the Recognized Environmental Concerns (RECs) for the canals. If a REC cannot be avoided, because of the necessity of construction requirements, the CEMVN may further investigate the REC; to confirm presence or absence of contaminants, to identify actions to avoid possible contaminants, and if in the event that local, state or Federal coordination is required. Because the CEMVN plans to avoid RECs, the probability of encountering HTRW in the project area is low. Copies of the CIH Report and the Phase I Reports are available at www.nolaenvironmental.gov.

4.13.2 Phase I ESA Update Reports

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

4.13.2.1 Phase I ESA Update Report – 17th Street Canal

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

4.13.3 March 2009 Limited Phase II ESA Reports

An American Society for Testing and Materials (ASTM) E 1903-97 Phase II ESA was completed for each of the three permanent pump station locations on the outfall canals in March 2009 (SPA-MMG 2009). A copy of the Phase II ESAs is maintained on file at the CEMVN. This

Limited Phase II Assessment included sediment sampling of the proposed permanent pump station locations for each of the three outfall canals.

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

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

4.13.4 Addendum to the Phase I ESA Reports

The three outfall canals were inspected to assess current conditions and to determine if any changes have occurred since the November 2006 Phase I ESAs. The following Phase I ESA Addendums were prepared following inspection of the canals on 14 April 2009. The inspections included visual inspection and review of environmental data. Relevant and significant findings and recommendations are summarized below. Changes since the 2006 ESA include the completion of construction of a canal closure structure at the outlet of the canal into Lake Pontchartrain. Four ASTs, of 20,000 gallons each, are located at the temporary pump station. The March 2009 sediment sampling report provided by SPAMMG indicated that sediments in the canal outlet, in the area the where permanent pump station would be constructed, contain low concentrations of lead, polycyclic aromatic hydrocarbons, and petroleum. No contaminants were detected above the limiting RECAP screening standard(s). +

4.13.4.1 Phase I ESA Report Addendum – 17th Street Canal

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

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

are available by requesting them from the CEMVN, or accessing them at www.nolaenvironmental.gov.

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

However, a portion of the peninsula is known to contain a creosote timber piling tie-back system associated with a remnant bulkhead. As the peninsula is excavated and these piles are encountered, any excavated material containing creosote timber would be separated from uncontaminated material and disposed of in dumpsters that would be hauled to an appropriately permitted landfill (e.g., River Birch landfill in Jefferson Parish).

4.14 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.

Short-term localized impacts to water quality in Lake Pontchartrain could occur during construction of the permanent pump stations and other 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 the permanent pump stations and other HSDRRS features.

Temporary impacts to the local traffic and transportation network in the project area would be expected during construction of the HSDRRS projects. Impacts would include increased traffic due to construction vehicles and temporary detours and road closures. The impacts would be expected to be temporary and the traffic and transportation network would return to normal operation after constructing this and other 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 the permanent pump stations, including activities within the new ROW, and other 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 and other 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.

Impacts associated with this IERS would not contribute additional cumulative impacts to wetlands and bottomland hardwoods to those addressed in previous HSDRRS IERS.

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 Prior Reports Section, above.

Overall, the proposed action, in comparison to past, present, and reasonably foreseeable future actions, would not incrementally contribute adversely to the general project area. The construction of the permanent pump stations is part of an overall comprehensive plan for the HSDRRS. The proposed action alternative would assist in accomplishing flood risk reduction objectives, which are of great importance in the Greater New Orleans metropolitan area. Providing expanded ROW at the 17th Street, London Avenue and Orleans Avenue Outfall Canals would aid in the timely and efficient completion of the permanent pump stations which in turn would aid in the reduction of risk of flood damage to the natural and human environment on the protected side of the levee. The net cumulative impacts of the proposed action are expected to be beneficial to the human environment.

5 COORDINATION

Preparation of this IERS and Decision Record 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 Individual Environmental Report Supplement 5.a:

- 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 and no compensatory mitigation for impacts on the expanded ROW would be required. The compensatory mitigation requirements 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 IERS 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 IERS. The Decision Record will not be signed until the Federal action achieves environmental compliance with applicable laws and regulations, as described above.

Per USFWS email dated 14 December 2013, a draft Coordination Act Report from the USFWS is not needed “because 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 (i.e., we have 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.” (Appendix D)

The USFWS reviewed the proposed action to see if it would affect any threatened and endangered species under its jurisdiction, or their critical habitats. The USFWS concurred with the CEMVN in an email dated 18 December 2013 that the proposed action would have no effect on T&E species under its jurisdiction. (Appendix D)

CEMVN has concluded that there would be no effect on any threatened or endangered species under the jurisdiction of the National Marine Fisheries Service (NMFS) due to this proposed action. Consequently, consultation with the NMFS is not necessary. NMFS has previously determined that work in the project area is not likely to adversely affect any T&E species under its jurisdiction.

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 (LASHPO) 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 Louisiana State Historic Preservation Officer (SHPO) and federally-recognized Tribes has taken place as part of the HSDRRS process and is documented in IER #5. The SHPO and federally-recognized

Tribes will be given an opportunity to comment on the proposed expanded ROW during the public comment period.

8 CONCLUSION

The proposed action includes expansion of the existing ROW at the 17th Street, Orleans Avenue and London Avenue Outfall Canals in Jefferson and Orleans Parishes, Louisiana, excavation of a portion of the peninsula and construction of a T-Wall at the 17th Street Canal and bank and other excavation at the London Avenue Canal. The expanded ROW is necessary to ensure the completion of the permanent pump stations at the mouths of the outfall canals as part of the HSDRRS. The excavation of the 17th Street Canal peninsula is required in order to allow flow to pass from the existing canal, around the new pump station and through the new adjacent gate system. The T-wall would provide additional protection to the pump station from high water events and, along with a flow training berm, would help ensure that flow velocities in the harbor would not affect U.S. Coast Guard ingress and egress. Rip-rap at the base of the T-wall would provide stability for the T-wall. Increased velocities within the London Avenue Canal during construction require the placement of rip-rap to help reduce channel scour. Excavation is needed to place rip-rap and a temporary breakwater to reduce wave action during construction of the pump station.

9 PREPARED BY

IERS 5.a was 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), Ms Elizabeth Behrens (Threatened and Endangered Species), Mr. Kelly McCaffrey (Aesthetics), Ms. Laura Lee Wilkinson (Waters of the US, Water Quality, Hydrology), Ms. Debra Wright (Recreation). 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.

10 LITERATURE

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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
mi² - 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

(To be completed after the public comment period has ended)

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



ATTENTION OF:

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

Environmental Planning Branch
 Regional Planning and
 Environment Division - South

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

December 20, 2013

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.

[Signature] 23 Dec 2013
 Acting Supervisor Date
 Louisiana Field Office
 U.S. Fish and Wildlife Service

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

Subject: Endangered Species Concurrence Request for Environmental Assessment #497 (EA #497) Proposed Additional Rights of Way for Construction of Permanent Pumps Stations at 17th Street, London Avenue and Orleans Avenue Outfall Canals, Orleans and Jefferson Parish

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, (CEMVD) 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 4496 will be forwarded to you upon completion.

PROJECT DESCRIPTION

The purpose of this EA is to assess potential environmental impacts that could result from expansion of the existing temporary and permanent Right of Way (ROW) at the London Avenue, Orleans Avenue and 17th Street Outfall Canals. The combined additional ROW for all three outfall canals measures approximately 14.79 acres and would be used by the contractor for the unloading and staging of construction equipment, employee parking, onsite office trailers and future access to the permanent pumps stations.

Proposed Action

The proposed action consists of acquiring additional permanent and temporary ROW to be utilized during the construction of the permanent pump stations at the 17th Street, London Avenue and Orleans Avenue Outfall Canals. The combined additional ROW for all three outfall canals measures approximately 14.22 acres and would be used by the contractor for the unloading and staging of construction equipment, employee parking, onsite office trailers and future access to the permanent pumps stations.

BOBBY JINDAL
GOVERNOR



PEGGY M. HATCH
SECRETARY

State of Louisiana
DEPARTMENT OF ENVIRONMENTAL QUALITY
ENVIRONMENTAL SERVICES

DEC 11 2013

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

Attention: Patricia Leoux

RE: Water Quality Certification (WQC 081110-01/A1 161807/CE/R 20130001)
Individual Environmental Report #5 (IER #5) revision
Jefferson & Orleans Parishes

Dear Ms. Leoux:

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 L.A.C. 53: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,

A handwritten signature in blue ink, appearing to read "Scott Williams".

Scott Williams
Administrator
Water Permits Division

SG:jjp

BOBBY JINDAL
GOVERNOR



STEPHEN CRUSTZ
ATTORNEY GENERAL

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL MANAGEMENT

January 17, 2014

Patricia Lemux
Corps of Engineers, New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

RE: **C20080112 mod 04, Coastal Zone Consistency**
New Orleans District, Corps of Engineers
Direct Federal Action
Perform remediation work at 17th Street Canal and expand temporary right of way at 17th Street, London Avenue and Orleans Avenue Canals for equipment, construction staging and asphalt roads
Orleans and Jefferson Parishes

Dear Ms. Lemux:

The above referenced project has been reviewed for consistency with the Louisiana Coastal Resources Program in accordance with Section 307 (c) of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in this application, is consistent with the LCRP.

If you have any questions concerning this determination please contact Carol Crapanzano of the Consistency Section at (225) 342-9425 or 1-800-267-4019.

Sincerely,

A handwritten signature in blue ink, appearing to read "Don Haydel".

Don Haydel
Acting Administrator
Interagency Affairs/Field Services Division

DHJDDH/emc

cc: David Butler, LDWF
Ren Harper, Orleans Parish
Frank Colz, OCM FI

Post Office Box 44487 • Baton Rouge, Louisiana 70804-4487
607 North Third Street • 10th Floor • Suite 1078 • Baton Rouge, Louisiana 70802
(225) 342-7591 • Fax (225) 342-9439 • <http://www.dnr.louisiana.gov>
An Equal Opportunity Employer

Leroux, Patricia S MVN

From: Walther, David [david_walther@fws.gov]
Sent: Tuesday, January 14, 2014 1:37 PM
To: Leroux, Patricia S MVN
Subject: Re: [EXTERNAL] Re: Request for USFWS Coordination (UNCLASSIFIED)

Patricia,

No, because 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., we have 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.

Please let me know if you need any additional information.

On Tue, Jan 14, 2014 at 10:57 AM, Leroux, Patricia S MVN <patricia.leroux@usace.army.mil> wrote:

Classification: UNCLASSIFIED
Caveats: NONE

Good morning Dave!

I have a quick question. Do I need a draft CAR from you for proposed actions? Just finalizing my document for public release.

Thank you so much!

Trish Leroux
PDM-CEP
Ext 1544

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

From: Walther, David [mailto:david_walther@fws.gov]
Sent: Monday, January 06, 2014 2:23 PM
To: Leroux, Patricia S MVN
Subject: Re: [EXTERNAL] Re: Request for USFWS Coordination (UNCLASSIFIED)

Sorry, I though I had them attached!

On Mon, Jan 6, 2014 at 1:51 PM, Leroux, Patricia S MVN <patricia.leroux@usace.army.mil> wrote:

Classification: UNCLASSIFIED
Caveats: NONE

Dave -

I never received a stamped letter back. Did you send one?

APPENDIX E: BEST MANAGEMENT PRACTICES

Protected Marine Species Entrapment Prevention Measures

Bottlenose dolphins, sea turtles and Gulf sturgeon (hereinafter referred to as “protected species”) are known to inhabit coastal Louisiana waters. Bottlenose dolphins are protected under the Marine Mammal Protection Act of 1972 (MMPA) and sea turtles and Gulf sturgeons are protected under the Endangered Species Act (ESA). Because of the potential for these protected species to become entrapped within construction sites in coastal Louisiana waters, projects that utilize shallow open water areas for the construction of enclosed facilities and wetland creation shall utilize the following measures to minimize and/or prevent the potential for such entrapment:

1. Prior to construction, the Corps of Engineers (COE) Technical Manager, the Contracting Officer Representative (COR) and the Contractors should conduct a site visit and meeting to develop a mutual understanding relative to compliance with the MMPA and the ESA.
2. Contractors shall instruct all personnel associated with the project of the potential presence of protected species in the area, and the need to prevent entrapment of these protected species. All construction personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing these protected species. The Contractor shall be held responsible for any protected species harassed or killed as a result of construction activities not conducted in accordance with these specifications.
3. Contractor shall observe the area to be enclosed for protected species at least 24 hours prior to and during closure of any levee, dike or structure. This is best accomplished by small vessel or aerial surveys, with an adequate number of experienced marine observers for the size of the site, scanning for protected species.
4. If any protected species are sighted within the area to be enclosed all appropriate precautions shall be implemented by the Contractor to ensure protection of the animal. These precautions shall include avoiding direct contact with and not feeding the protected species.
5. Any sightings of protected species within an enclosed project site shall be reported immediately to the COE. The point of contact within the COE will be Tammy Gilmore, (504) 862-1002 or email at tammy.h.gilmore@usace.army.mil. Coordination by the COE personnel with the National Marine Fisheries Service (NMFS) Marine Mammal Health and Stranding Response (MMHSRP) and the Louisiana State Coordinator for the Sea Turtle Stranding and Salvage Network (STSSN) will be conducted, as applicable, to determine what further actions may be required.
6. During enclosure construction, the Contractor will leave or construct at least one escape route or gap in retention structures to allow any protected species to exit shallow open water areas during construction activities. Escape routes or gaps in retention structures would be constructed so as to lead directly to open water outside the disposal site with a

minimum width of 100 feet and have a depth as deep as the deepest natural entrance into the disposal site.

7. Escape routes and/or gaps in retention structures would remain open until visual inspections of the enclosure have determined that no protected species are present within the structure.
8. If observers note the animals are not leaving the area, but are visually disturbed, stressed, or their health is compromised then COE may require any pumping activity to cease until the animals either leave on their own or are moved under the direction of NMFS.
 - a. In coordination with the local stranding networks and other experts, NMFS will conduct an initial assessment to determine the number of animals, their size, age (in the case of dolphins), body condition, behavior, habitat, environmental parameters, prey availability and overall risk.
 - b. If the animal(s) is/are not in imminent danger they will need to be monitored by the Stranding Network for any significant changes in the above variable.
 - c. The contractor may not attempt to scare, herd, disturb, or harass the protected species to encourage them to leave the area. Coordination by the COE with the NMFS SER Stranding Coordinator may result in authorization for these actions.
 - d. NMFS may intervene (catch and release and/or rehabilitate) if the protected species are in a situation that is life threatening and evidence suggests the animal is unlikely to survive in its immediate surroundings.
9. Any protected species observed dead must immediately be reported to the COE (Tammy Gilmore 504-862-1002) who will then report to NMFS and/or STSSN coordinator.

West Indian Manatee Protection Measures

All contract personnel associated with the project would be informed of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel would be responsible for observing water-related activities for the presence of manatees. Temporary signs would be posted prior to and during all construction/dredging activities to remind personnel to be observant for manatees during active construction/dredging operations or within vessel movement zones (i.e., the work area), and at least one sign would be placed where it is visible to the vessel operator. Siltation barriers, if used, would be made of material in which manatees could not become entangled and would be properly secured and monitored. If a manatee is sighted within 100 yards of the active work zone, special operating conditions would be implemented, including: moving equipment would not operate within 50 ft of a manatee; all vessels would operate at no wake/idle speeds within 100 yards of the work area; and siltation barriers, if used, would be re-secured and monitored. Once the manatee has left the 100-yard buffer zone around the work area of its own accord, special operating conditions would no longer be necessary, but careful observations would be resumed. Any manatee sighting would be immediately reported to the U.S. Fish and Wildlife Service (337/291-3100) and the Louisiana Department of Wildlife and Fisheries (LDWF), Natural Heritage Program (225/765-2821).

APPENDIX F: DESIGN DETAIL FOR PUMP STATIONS

The evaluation of impacts based on the conceptual designs contained in IER 5 generally remains accurate even in light of the updated design details.

17th Street Canal Pump Station:

The new permanent pump station at the 17th Street Canal will be approximately 450 feet (ft) long by 150 ft wide and will include inlet and outlet works, trash screens, a pump station building housing pumps, motors, and the gate structure. (Figures F1 and F2) The pump station will be located across the existing 17th Street Canal and the adjacent peninsula located to the immediate west of the mouth of the canal. The new gate structure, which will be adjacent to and west of the pump station, will consist of gates, gate guides, hoisting equipment, and an enclosure to protect the hoisting equipment. The pump station will be located approximately 1000 ft north of the Hammond Highway Bridge, and approximately 500 ft from the existing Interim Control Structures.

A generator building and fuel storage tank farm complex will be constructed on the east bank of the canal in support of the new pump station. This complex will include parking, general staging and storage space. The pump station will transition into an auxiliary/control building directly adjacent to the generator building, which will then transition into a T-wall which will tie-back into the existing HSDRRS system to the east. A primary access road will provide access from W. Roadway Street through the new T-wall to the pump station complex. The majority of the existing floodwall running from W. Roadway Street to the canal will likely remain in place to serve as a visual barrier between Mariners Cove N/Lake Marina Ave. and the site complex.

The new gate system to the west will transition into T-wall with a top of wall at approximately El +18 (NAVD88) which will run south, roughly parallel to the existing peninsula, eventually tying in to the existing HSDRSS levee with either a levee or T-wall.

Orleans Avenue Canal Pump Station:

The new permanent pump station at the Orleans Avenue Canal will be approximately 165 ft long by 140 ft wide and will include inlet and outlet works, trash screens, and a pump station building housing pumps, motors, and the gate structure. (Figures F3 and F4) The new gate structure will consist of gates, gate guides, hoisting equipment, and an enclosure to protect the hoisting equipment. The new pump station and gates will be located in the existing canal, approximately 215 ft south of Lakeshore Drive and will tie-in to the existing HSDRRS levee to the east and west with T-walls, with the tops of these walls at approximately El. +18 ft (NAVD88).

A generator building and fuel storage tank farm complex will be constructed in support of the new pump station on the west bank of the canal. This complex will include parking, general staging and storage space. The pump station will transition into an auxiliary/control building directly adjacent to the generator building. A primary access road will provide access from Lakeshore Drive through the new T-wall to the pump station complex. A flood protection levee of approximate El. +15 ft (NAVD88) will be constructed along the southeastern edge of the site

complex, which will remain in place once the permanent flood protection system is in place to serve as a permanent visual barrier between Crystal Street and the site complex. Secondary access on the protected side of the HSDRRS will be required, to be used during tropical events if the primary access road cannot be used.

London Avenue Canal Pump Station:

The new permanent pump station at the London Avenue Canal will be approximately 325 ft long by 150 ft wide and will include inlet and outlet works, trash screens, and a pump station building housing pumps, motors, and the gate structure. (Figures 5 and 6) The new gate structure will consist of gates, gate guides, hoisting equipment, and an enclosure to protect the hoisting equipment. The gate structure will be located within the existing canal, and the pump station will be located to the east of the gate structure, partially within the existing canal and partially on the west bank of the canal. The new pump station and gate structure would tie-in to the existing HSDRRS levee to the east and west with T-wall, with the tops of these walls at approximately El. 18 ft (NAVD88).

A generator building and fuel storage tank farm complex will be constructed on the east bank of the canal in support of the new pump station. In addition to the generator building and fuel storage tanks, this complex will include parking, general staging and storage space. The pump station will transition into an auxiliary/control building directly adjacent to the generator building. The floodwall constructed along the eastern perimeter of the site complex will serve as a visual screen between the University of New Orleans and the site complex. The existing levee on the west side of the canal will serve as a visual screen between Pratt Drive and the eastern portion of the project site.

Features Common to all three sites

Channel transitions in the form of retaining walls will be required north and south of the new pump stations and gates on both sides of the canal banks. Rip rap protection would be placed along the bottom of the canals, immediately north and south of the new pump stations and gate structures. Construction and dredging would occur in the harbor adjacent to the 17th St. Canal. Land excavation and canal dredging would be required for construction of features such as the new channel leading to the 17th St. Canal gate structure, as well for the construction of each pump station and for the intakes to all of the pump stations. These activities would result in soil removal from the site. In cases where HTRW or otherwise regulated material cannot be avoided, such material will be handled and disposed of according to Louisiana Administrative Code (LAC) 33: VII, Subpart 1. .Solid Waste Regulations and LAC 30:I Chapter 13 Section 2.3 Risk Evaluation/Corrective Action Program (RECAP) Regulations.

Pre-construction surveys (limited to above-ground structures) have been completed on the trees and roadways in the project vicinity. They have also been conducted on homes within 500 ft of the construction site. Post construction surveys will take place in the same locations. Residents were informed of these surveys by certified mail and neighborhood canvassing. All residents in these areas have been encouraged to participate.

The map below (Figure F7) identifies the approved construction haul routes to be used during the project construction. The blue indicates the primary truck route to the construction sites from Interstate-10, and the red indicates the primary truck route from the construction sites to Interstate-10. The yellow indicates the secondary haul routes that will be used intermittently throughout construction. The green line indicates a limited haul throughout the construction period. From time to time Lakeshore drive and other streets will need to be closed on a temporary basis for the safety of the public and the workers on the project. Any such closures will be permitted by the local permitting agency and communicated to the public in advance of the closure.

Best Management Practices (BMPs) would be utilized at the construction entrances and around the sites. BMPs may consist of, but not be limited to silt fencing, fiber rolls, drain inlet protection, and stabilized construction entrances. Turbidity curtains will also be used for in-water construction and excavation to minimize turbidity impacts in adjacent waters. Except for trees that may need to be removed to install the utility corridor along the Orleans Avenue Canal, trees which are not to be directly impacted by the construction footprint would be protected as per the project's tree protection program, which may include protection of the drip line and critical root zone with orange barrier fencing supported by t-posts. 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 Louisiana Department of Transportation and Development (LADOTD) and followed per the approved MOT plan.

Although major construction at all three pump stations is scheduled to be complete in 2016, the contractual completion date is January 17, 2017.

PCCP Dredging/Excavation and Disposal Plan

Background

Land excavation and canal dredging in all three canals is required for construction of features such as the new channel leading to the 17th St. Canal gate structure (which will be constructed by removing the existing peninsula on the western side of the mouth of the canal), the construction of each of the pump stations and the intakes to all pump stations. These activities will result in soil removal from the sites. Several dredging activities will occur throughout the construction period for distinct features of work, such as dredging within the pump station cofferdams, dredging for the intake and discharge of the pump stations, and dredging for canal bypass around the pump station cofferdams. These dredging activities will be conducted to varying depths within the canal and on land, and various amounts of dredged or excavated material which will be disposed of offsite.

Quantities

Exact depths and material quantities are not known at this time, but it is currently estimated that approximately 450,000 cubic yards of material (approximately 56,000 truckloads) will be removed from the canals and adjacent lands. Approximately 50% of this quantity will be excavated/dredged from the 17th St. Canal site. Approximately 35% of this quantity will be

excavated/dredged from the London Avenue Canal site. Approximately 15% of this quantity will be excavated/dredged from the Orleans Avenue Canal site.

Frequency

Approximately 30 separate excavation or dredging events, approximately 10 at each project site, are expected to occur within the construction period for this project.

Methods and Disposal

The material could be excavated by a bucket dredge, barge mounted excavator or backhoe, or land-based excavator or backhoe. Material dredged from the canal would likely be excavated and loaded on to a barge within the canal. Once the barge is full, it would be temporarily unloaded into a stockpile area on or adjacent to the canal bank if space permits within ROW, or loaded directly into a dumptruck. If the construction schedule allows, some material may temporarily remain within the ROW for several days or weeks in order to reduce the moisture content of the material before hauling to an offsite disposal site. Best Management Practices will be used to prevent runoff into the canals. The material would then be mechanically loaded into trucks and hauled to the appropriate disposal facility. Alternatively, dredged material could be barged to a disposal site.

Appropriate sediment testing will be used to determine whether any material dredged or excavated is considered contaminated according to Louisiana Administrative Code (LAC) 33:VII, Subpart 1. Solid Waste Regulations and LAC 30:I Chapter 13 Section 2.3 Risk Evaluation/Corrective Action Program (RECAP) Regulations. Dredged or excavated sediments will be either trucked or barged via Lake Pontchartrain, the Industrial Canal and/or the Mississippi River to an offsite disposal site. Depending upon the disposal site used, the material may be unloaded directly off of the barge to the disposal site, or may be unloaded into trucks and transported to the disposal site. If the sediment testing shows that the material does not exceed the lowest limiting screening standard under LAC 30:I Chapter 13 Section 2.3 Risk Evaluation/Corrective Action Program (RECAP) Regulations, the material will be transported to an existing disposal facility which accepts uncontaminated material. If sediment testing shows that any contaminant exceeds the lowest limiting soil screening standard, the material would be disposed of at a facility licensed or permitted to accept such contaminated wastes, such as a Type I landfill.

Minimal increased traffic on area roads would be expected due to the truck transport of the dredge material to appropriate disposal facilities.

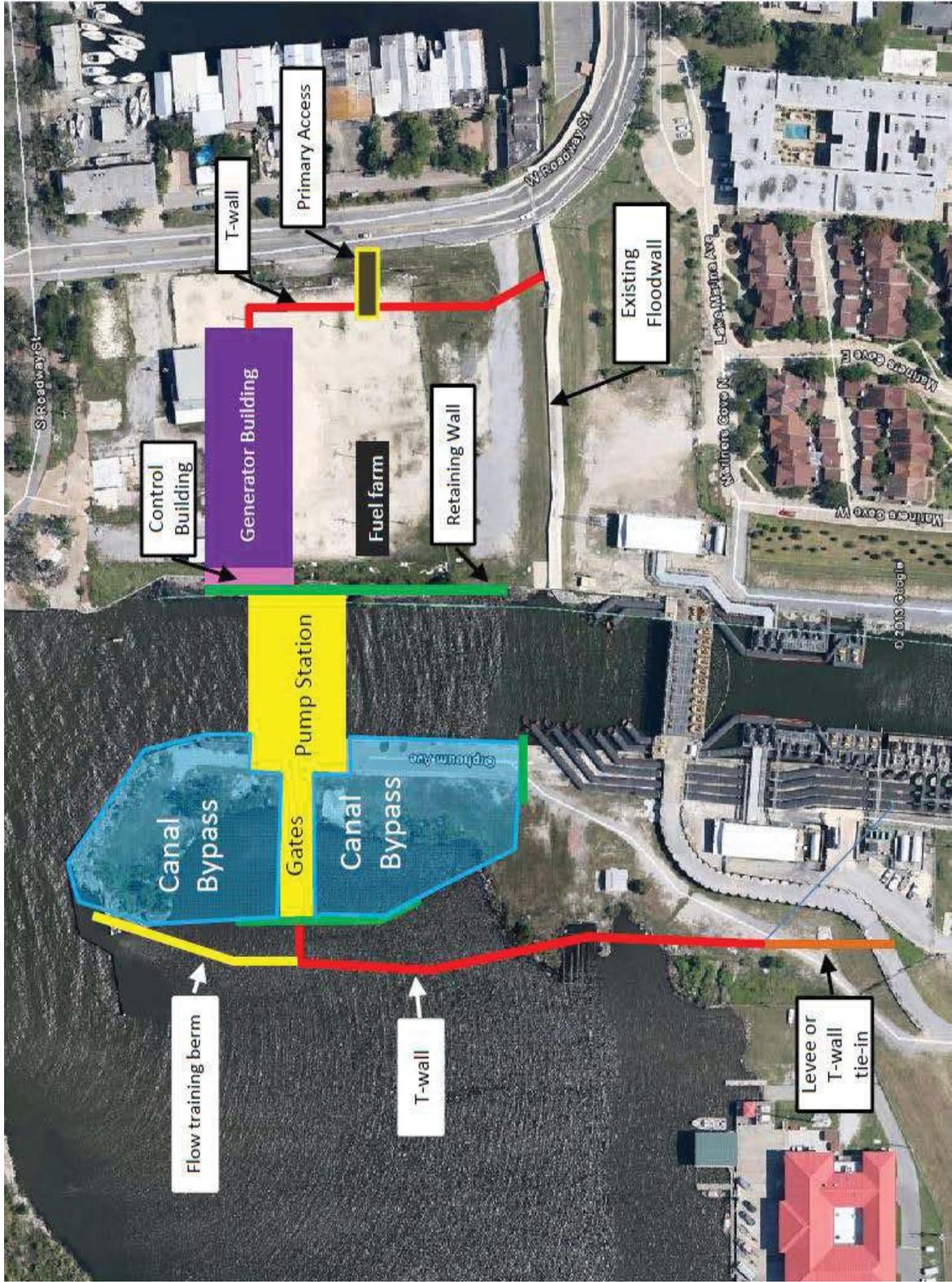


Figure F- 1: 17th Street Pump Station Design Layout



Figure F- 2: Conceptual Design for the 17th Street Pumps Station

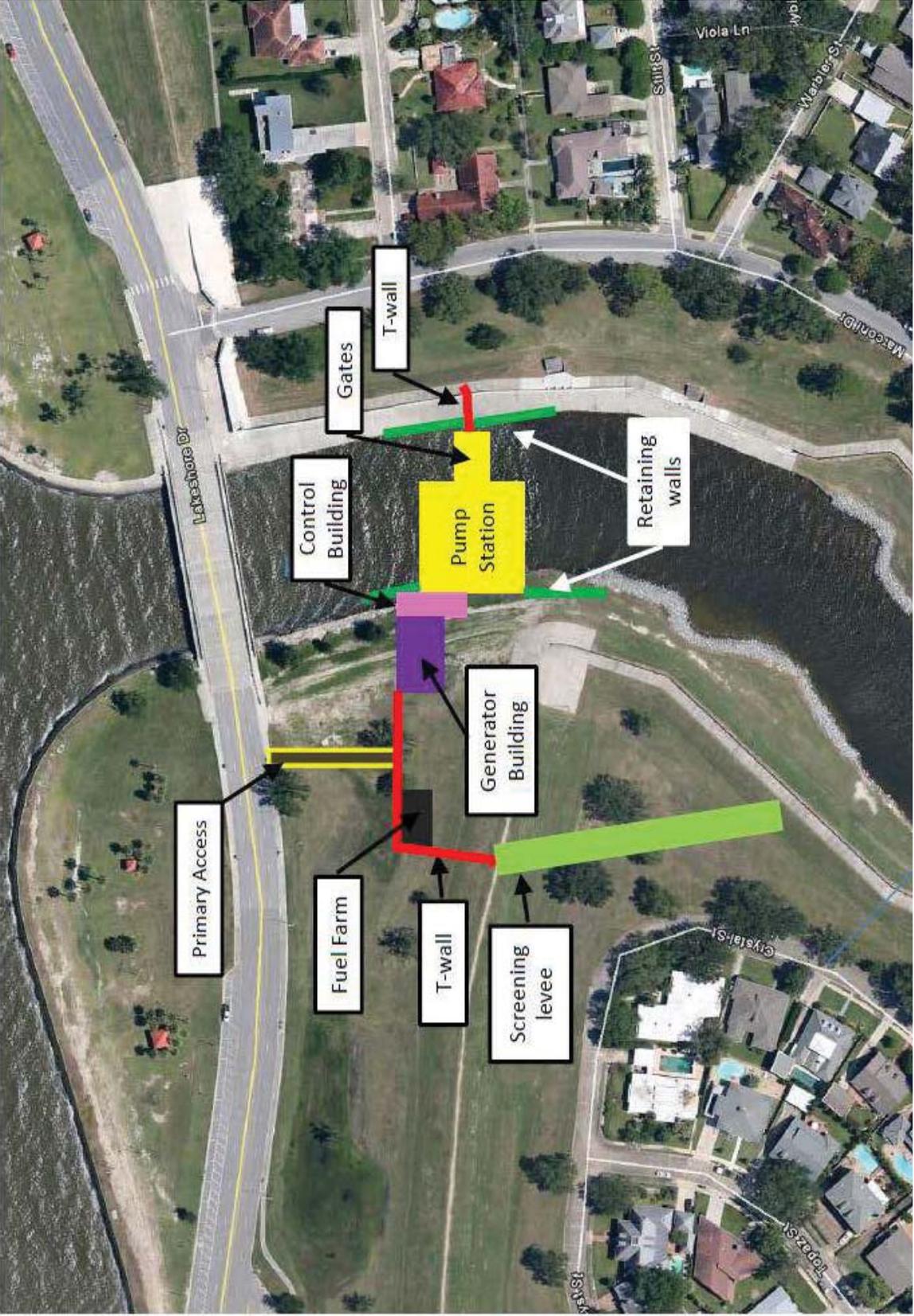


Figure F- 3: Orleans Avenue Pump Station Design Layout



Figure F- 4: Conceptual Design for Orleans Avenue Pump Station

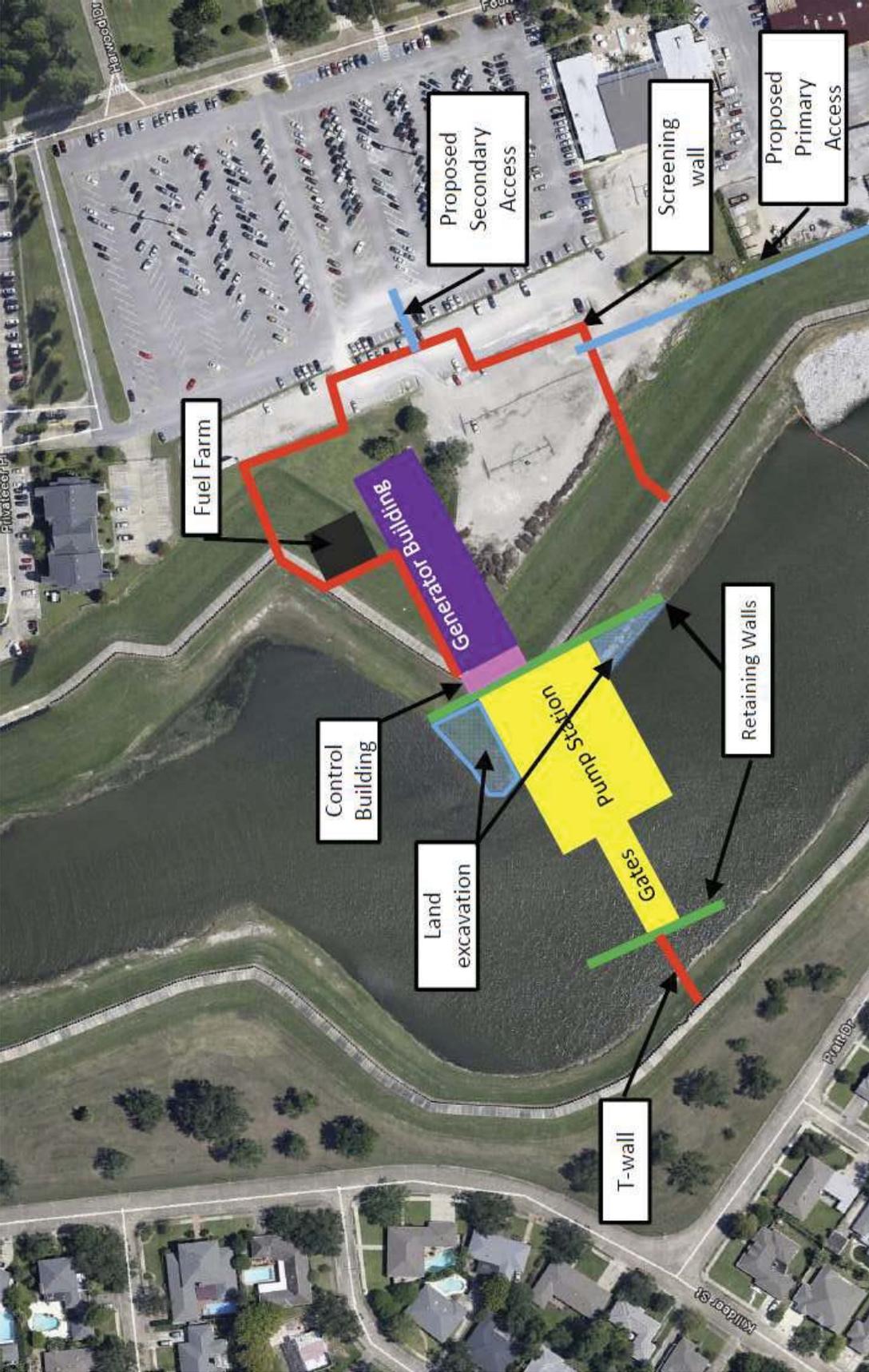


Figure F- 5: London Avenue Pump Station Design Layout



Figure F- 6: Conceptual Design for London Avenue Pump Station



Figure F-7: Proposed Action Construction Haul Routes

