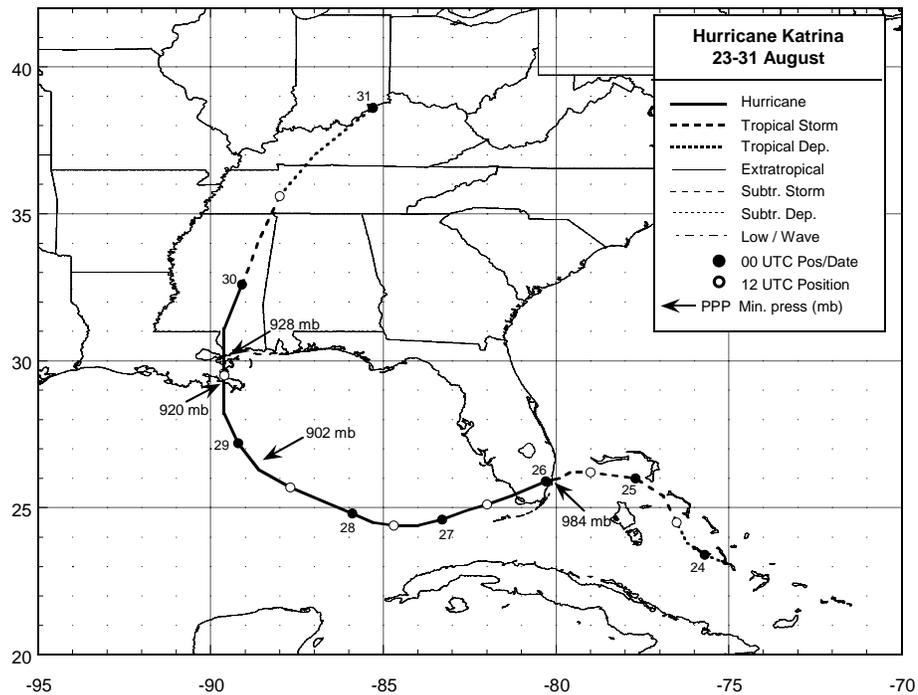


U. S. ARMY CORPS OF ENGINEERS RESPONSE TO HURRICANES KATRINA & RITA IN LOUISIANA ENVIRONMENTAL ASSESSMENT EA #433



Prepared by:
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New Orleans District Office
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INTRODUCTION

The U.S. Army Corps of Engineers (USACE), New Orleans District (CEMVN), has prepared this Environmental Assessment #433 (EA #433) to evaluate the potential impacts associated with the actions taken by the USACE as a result of Hurricanes Katrina and Rita in southern Louisiana. This assessment does not address those actions taken by the USACE that were tasked by the Federal Emergency Management Agency (FEMA) to complete typical disaster relief missions except as they relate to cumulative impacts. Typical FEMA missions, such as debris removal, temporary housing, and blue roof, are structured to complete environmental compliance as a part of the FEMA mission. EA #433 has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2. This document was prepared after the fact due to the emergency conditions that exist as a result of the destruction that occurred as a result of Hurricanes Katrina and Rita. Because some of the emergency work is still ongoing we expect that changes and additions to the scope of work will occur and as such a supplemental environmental assessment will be prepared and distributed for public review once all the work is completed. Please note that all elevations referenced in this report are based upon the North American Vertical Datum 1988 (NAVD) standard, unless stated otherwise.

PURPOSE AND NEED FOR THE ACTION

The purpose of the actions taken by the USACE after Hurricanes Katrina and Rita made landfall on August 29, 2005 and September 24, 2005, respectively, was to protect lives and property in the impacted areas of Louisiana. Immediately following Hurricane Katrina's landfall, it became apparent that quick actions were needed to unwater the metropolitan area of New Orleans, rebuild the storm protection system, and help state and local governments rehabilitate critical infrastructure. For the purposes of this report, the New Orleans Metropolitan Area is defined as the following four parishes: Orleans, St. Bernard, Jefferson, and Plaquemines. Hurricane Rita storm damage differed from Hurricane Katrina's because most of Hurricane Rita's damage resulted from storm surge and short-term flooding, creating a need for emergency Federal action in the form of breach repairs and temporary pumps in several of the coastal Louisiana parishes.

AUTHORITY FOR THE ACTION

The USACE's actions described in this EA were undertaken under the Flood Control and Coastal Emergencies Act (Public Law (PL) 84-99). This act authorizes the USACE Chief of Engineers to exercise his discretionary authority to provide emergency response and disaster assistance through the following activities:

- disaster preparedness,
- advance measures,
- emergency operations (disaster response and post flood response),
- rehabilitation of flood control works threatened or destroyed by flood,
- protection or repair of Federally authorized shore protection works threatened or

- destroyed by coastal storm,
- provision of emergency water due to drought or contaminated sources,
- emergency dredging, and
- flood-related rescue operations.

Section 917 of PL 99-662, the Water Resources Development Act of 1986, gives the USACE authority for emergency response assistance for up to 10 days following an emergency and before a presidential declaration. Activities authorized under this law are limited to actions to save lives and protect improved property (public facilities/services and residential or commercial developments).

On August 29, 2005, the President of the United States, George W. Bush, issued an emergency declaration letter (Appendix A) that authorized FEMA to begin Federal disaster operations as authorized by the Robert T. Stafford Disaster Relief and Emergencies Act (42 U.S.C. 5121 et seq) also known as PL 93-288 or The Stafford Act. The Stafford Act authorizes FEMA to direct the USACE to use its available personnel, supplies, facilities, and other resources to provide assistance in the event of a major disaster or emergency declaration by the President. In past disasters, this assistance has included activities such as clearing debris, restoring critical services, establishing temporary housing, providing technical assistance and damage assessment, etc. As stated above in the introduction, the actions taken by the USACE that fall under the FEMA umbrella of typical assistance are not discussed in this document because FEMA has an established NEPA process to ensure environmental compliance.

USACE REGULATIONS

ER 500-1-1, Civil Emergency Management Program, Engineering Regulation. This regulation prescribes policies for the Civil Emergency Management (CEM) Program of the USACE under the authorities of 33 U.S.C. 701n (commonly referred to as PL 84-99); The Stafford Act; AR 500-60, Disaster Relief; and Engineer Regulation (ER) 1130-2-530, Flood Control Operations and Maintenance Policies.

PUBLIC CONCERNS

Following Hurricane Katrina's landfall on August 29, 2005, there was an immediate concern at all levels of government and the public in general for the safety of the people trapped in the impacted areas. In addition to the concern for protecting citizen's lives, the public was also concerned about the loss of property that resulted from the flooding of the New Orleans Metropolitan Area.

EVENT TIMELINE

- August 25, 2005National Weather Service declares Tropical Storm Katrina a category 1 (Saffir – Simpson scale) hurricane.
- August 27, 2005New Orleans District Commander, Col. Richard Wagenaar, issues evacuation order for USACE personnel. (Emergency Declarations Appendix A)

August 28, 2005CEMVN Crisis Management Team and Crisis Action Team deploy to Vicksburg, MS. CEMVN Unwatering Team deploys to Memphis, TN.

August 28, 2005National Weather Service upgrades Hurricane Katrina to category 5.

August 29, 2005Hurricane Katrina, a strong category 3 storm, makes landfall at Buras, LA. Storm surge opens breaches at 17th Street Canal, London Avenue Canal, and Inner Harbor Navigation Canal (IHNC) and in St. Bernard and Plaquemines Parishes. Levee overtopping occurs in some areas. Floodwaters cover 22,000 acres of Orleans East Bank, 18,000 acres of Orleans East, 19,000 acres of St. Bernard parish, and 37,888 acres of Plaquemines Parish.

September 1, 2005Helicopters begin dropping sandbags into 17th Street Canal breach. Sheetpiling is driven across 17th Street Canal at Old Hammond Highway Bridge.

September 2, 2005USACE contractors begin building rock road down east side of 17th Street Canal to breach site.

September 3, 2005Operation of IHNC lock restored. Temporary pumps delivered to 17th Street Canal. Helicopters begin dropping sandbags at London Avenue Canal breaches. Sheetpile closure structure is completed across London Avenue Canal at Robert E. Lee Bridge. Pumping out of floodwaters begins in Orleans East Bank and Orleans East.

September 4, 2005Pumping out of floodwaters started in St. Bernard and Plaquemines Parishes.

September 7, 2005U.S Coast Guard begins deployment of booms at pumping station outflows.

September 8, 2005600-foot breach at IHNC is closed.

September 10, 2005 ...Pumps at London Avenue site begin operating.

September 9, 2005National Weather Service declares Tropical Storm Rita a category 1 hurricane.

September 17, 2005 ...First aerators are deployed at 17th Street Canal.

September 19, 2005 ...USACE contractor mobilized to Grand Isle to begin repairs to four breaches.

September 20, 2005 ...Orleans East Bank is officially declared dry.

September 21, 2005 ...Task Force Guardian is created.

September 22, 2005 ...Hurricane Rita storm surge reopens breaches in IHNC, reflooding portions of New Orleans Ninth Ward.

September 24, 2005 ...Hurricane Rita makes landfall near the Louisiana/Texas border. Helicopters drop sandbags into levee breaches caused by Hurricane Rita in Terrebonne Parish.

September 27, 2005 ...St. Bernard Parish is officially declared dry.

October 1, 2005.....USACE begins water quality sampling task at pump stations in metropolitan area.

October 5, 2005.....Pumping out of floodwaters (using portable pumps) begins in Terrebonne Parish.

October 9, 2005.....Ninth Ward is officially declared dry.

October 10, 2005.....Orleans East is officially declared dry.
October 24, 2005.....USACE begins sediment sampling task in Plaquemines Parish.
October 28, 2005.....Aerators are shut down and removed from all locations.
October 31, 2005.....USACE ends water quality sampling task at pump stations in metropolitan area.
November 1, 2005
and beyond.....TF Guardian and TF Unwatering continue to work on rehabilitation of numerous Federal and non-Federal levee systems and repair non-Federal pump stations.

USACE ASSETS PREPOSITIONED FOR HURRICANE KATRINA

CEMVN Command - New Orleans Bunker and District Office – New Orleans, Louisiana
CEMVN Crisis Action Team and CEMVN Crisis Management Team – Vicksburg, Mississippi
CEMVN Unwatering Team – Memphis, Tennessee
CEMVN Hired Labor Units – Port Allen, Louisiana

USACE ASSETS MOBILIZED POST-HURRICANE KATRINA

MVR – Command and Control Group mobilized to lead Task Force Unwatering
MVS – Command and Control Group mobilized to lead Task Force Guardian
MVM Grading and Snagging Hired Labor Units
SWL Hired Labor Units
Additional CEMVN personnel became engaged in the action as they returned to the District or to one of the Emergency Operations Centers (EOCs).

DESCRIPTION OF THE ACTION

UNWATERING

This section describes the actions taken by the USACE during the unwatering of the New Orleans Metropolitan Area. On August 29, 2005, Hurricane Katrina's storm surge opened seven major breaches in the metropolitan area levee network, flooding 80% of the area (Figures 1 and 2) protected by those levee sections. Major breaches opened on the 17th Street Canal (one on the east side of the canal approximately 500 feet south of Hammond Highway), the London Avenue Canal (one on the west side of the canal south of Robert E. Lee Boulevard and one on the east side of the canal north of Mirabeau Avenue), and the IHNC (one on the west side of the channel at France Road, one on the west side of the channel south of France Road, and two on the east side of the channel along the Ninth Ward levee). The breaches at the 17th Street Canal, London Avenue Canal, and west side of the IHNC resulted in the flooding of the Orleans East Bank area of Orleans Parish. The overtopping of the Federal levee system along Lake Pontchartrain and the Gulf Intracoastal Waterway (GIWW) resulted in the flooding of the Orleans East area of Orleans Parish. The breaches along the east side of the IHNC and the overtopping of the St. Bernard Back Levee resulted in the flooding of Orleans Parish's Lower Ninth Ward and St. Bernard Parish. The overtopping of the Federal and non-Federal levees in Plaquemines Parish resulted in the flooding of the majority of the parish. Approximately 690,500 acre-feet (250 billion gallons) of floodwaters were pumped out of the New Orleans area as a result of the

flooding. Most of the water had been removed from the city by September 16, 2005 by pumping the floodwaters back into Lake Pontchartrain and other tidal waters using a variety of permanent and temporary pumps. The Hurricane Rita storm surge caused portions of the New Orleans Lower Ninth Ward to re-flood. Plaquemines Parish took longer to pump out due to the size of the area. The floodwaters from Plaquemines Parish were pumped into the Mississippi River and tidal waters adjacent to the levee system. It took several days to weeks to completely pump out the isolated low-lying areas of the metropolitan area.

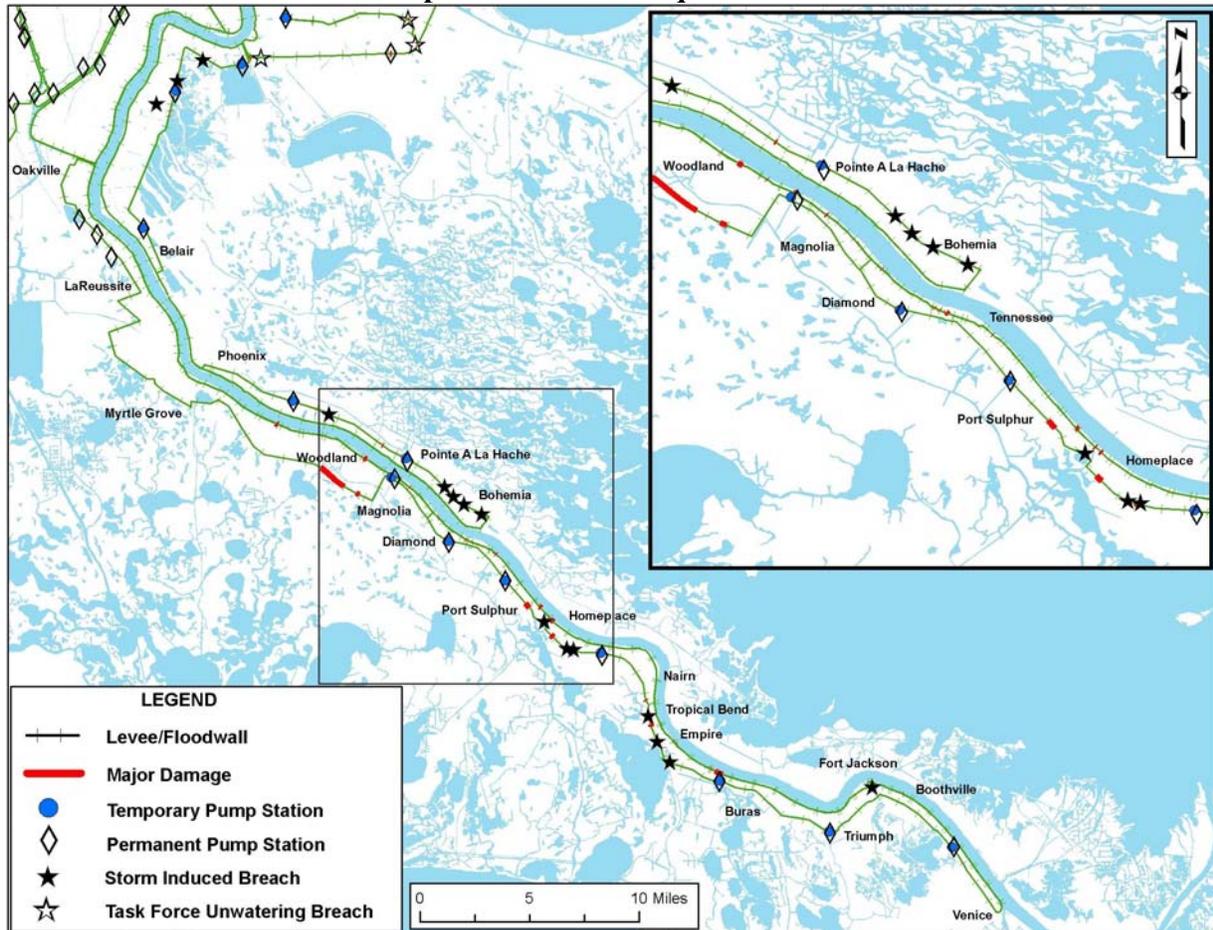
Figure 1
Location Map Showing Breaches, Storm Damaged Levees, Pump Stations, and Temporary Pump Locations in Orleans and St. Bernard Parishes



During the unwatering of the metropolitan area, the USACE did not directly operate the pumps at the permanent pump stations. USACE's mission was to assist local governments with emergency repairs to the pump stations and to supply life support (fuel, water, food) to the pump stations where possible. USACE in-house assets, contractors, and foreign national assets from Germany and the Netherlands under USACE direction did operate numerous temporary pumps throughout the metropolitan area during the unwatering mission. USACE did assume the lead role in closing the breaches in the levees using a variety of methods and materials. Because the

USACE was the lead Federal agency for the unwatering mission, the unwatering of the metropolitan area became a Federal action led by the USACE.

Figure 2
Location Map Showing Breaches, Storm Damaged Levees, Pump Stations, and Temporary Pump Locations in Plaquemines Parish



Because the unwatering activities were classified as a Federal action, the Environmental Protection Agency (EPA) issued a letter on August 30, 2005, (Appendix A) granting the USACE the right to remove the floodwaters from the affected areas without first obtaining a National Pollutant Discharge Elimination System (NPDES) permit from the EPA as specified in the Clean Water Act, 33 U.S.C. 1251. The letter directed that, to the extent practicable, the USACE should take all reasonable steps to minimize potential impacts of floodwater discharges on the quality of the waters of the United States. An EPA memorandum followed this letter on September 7, 2005 (Appendix A) that stated the USACE did not need to be issued an NPDES permit because the USACE was working in cooperation with the EPA On-Scene Coordinator who was directing recovery operations per the National Contingency Plan. The Louisiana Department of Environmental Quality (LDEQ) issued a letter on September 5, 2005 (Appendix A) that waived the requirement that the USACE obtain a discharge permit from the state as set forth under Section 401 of the Clean Water Act.

The first CEMVN Environmental staff person became engaged in the emergency action after arriving at the CEMVN EOC in Vicksburg, Mississippi on September 2, 2005. By September 4, 2005, CEMVN environmental staff had established contact and coordination with the EPA On-Scene Commander and the emergency liaison staff with the United States Fish and Wildlife Service (USFWS), U. S. Coast Guard (USCG), U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) and the LDEQ. In consultation with EPA and LDEQ staff, a course of action was chosen regarding how best to provide reasonable care of the waters of the United States when pumping out the floodwaters. On September 7, 2005, additional CEMVN environmental staff was brought on line, a second biologist was assigned to the Vicksburg EOC, a biologist was embedded with the EPA and LDEQ with the Unified Incident Management Team in Baton Rouge, and a biologist was placed in the New Orleans District Office. The biologist at the District Office provided real time information to the environmental team and worked directly with on-scene staff from the USACE, the Center For Disease Control, the USCG, the EPA, and a USACE contractor (Shaw). Over time, other environmental staff was added to the team (a second person on the Unified Incident Command and an MVD Forward Liaison person) to facilitate better communications. By mid-September, additional environmental staff was placed at the District Office to augment the on-scene capabilities of the team. By the end of September, the District Environmental Office was approximately 75% staffed and was handling many of the day-to-day tasks associated with the event.

Within days of Hurricane Katrina flooding the city, the EPA and the LDEQ began conducting water quality testing of the floodwaters. Because the EPA and LDEQ will issue reports concerning these tests, this EA does not include a discussion of those results. Per an unwatering plan worked out with the EPA On-Scene Commander in late September, the USACE completed water quality tests of the waters pumped out of the city during normal rain events that occurred between October 1, 2005 and October 31, 2005. A summary of the results of the tests can be found as an appendix to the USFWS Coordination Act Report.

The USACE completed a series of sediment samples in Plaquemines Parish between October 24, 2005 and November 22, 2005 after it was observed that some of the canals had turned red. A USACE contractor collected water samples twice a week from 18 sites in the parish near existing pump stations. Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls, target analyte list metals, total petroleum hydrocarbons (gasoline (THP-G), diesel (TPH-D), and oil (TPH-O)) ranges, total suspended solids (TSS), total organic carbon, ammonia, biological oxygen demand (BOD), chemical oxygen demand (COD), oil and grease, and pH. Please refer to Water Quality Section and Appendix B for more detailed information on this matter.

The USACE, EPA, and LDEQ unwatering plan also called for the placement of aerators and oil sorbent booms at the outfalls sites where pumping was to take place. Plans were developed and implemented with the USCG to have USCG contractors deploy oil absorbent booms and debris screens at the outfall canals as pumps were brought on line. The USCG and its contractors placed the booms quickly and efficiently to prevent the spread of pollutants. Aerators and absorbent booms were placed in the outflows canals at the 17th Street Canal,

Orleans Avenue Canal, London Avenue Canal, Jahnke Canal, St. Charles Canal, and Citrus Canal.

On September 17, 2005, the first of 27 aerators was placed into the 17th Street Canal to help maintain dissolved oxygen levels in an acceptable range. Over the next several weeks, additional aerators were placed in the Orleans Avenue Canal, London Avenue Canal, Jahnke Canal, St. Charles Canal, and Citrus Canal. The aerators were operated until October 28, 2005, when they were removed because discharge responsibilities were returned to the New Orleans Sewerage and Water Board. Please refer to Water Quality Section for more in depth write-up about the aerators. See Appendix C for the deployment dates and the locations of the aerators.

Before Hurricane Katrina struck the area on August 29, 2005, CEMVN Hired Labor Units staged at the Port Allen Lock and prepared to mobilize after the storm passed. Immediately after the storm passed, the Hired Labor Units were tasked to provide life support (fuel, water, food, etc.) to the New Orleans District Office, IHNC Lock, Harvey Canal Lock, and Algiers Lock. After life support had been established, the crews were tasked with cleaning out debris from the New Orleans pump stations intake structures. Debris from those structures was piled up near the pump stations. FEMA-tasks missions are addressing the removal and disposition of those materials.

ORLEANS PARISH

17th Street Canal

As stated above, a single breach opened on the east side of the 17th Street Canal below the Hammond Highway Bridge. Several ideas were discussed regarding how best to close the breach, but only a few were found to be practicable with the resources available. An attempt was made to use concrete Jersey barriers to plug the gap in the 17th Street Canal. After one barrier was dumped into the water and floated away because it had a Styrofoam core, that alternative was abandoned. The team's next course of action was to drop sandbags of various sizes into the breach using military helicopters. After a trial and error period, it was decided that 12,000-pound sandbags offered the best hope of closing the breach. Efforts quickly moved ahead to place nearly 30 bags per hour in the breach utilizing U.S. Army Chinook helicopters. A staging area for filling the sandbags was established at the nearby Coast Guard station. Sand for the bags was purchased from local commercial sources that supplied sand pumped from the Mississippi River.

A USACE contractor was directed to construct a gravel road along the east side of the canal from Hammond Highway south to the breach. The road was completed on September 3, 2005, and the contractor began dumping rock and gravel (riprap) into the breach. The rock and gravel used to fill the breaches was purchased from a local commercial source that used materials from quarries in Illinois and Kentucky. Materials from these quarries have been used previously by the USACE. On September 5, 2005, a sheetpile wall was completed on the lake side of the Hammond Highway Bridge to seal off the canal from Lake Pontchartrain. As pumping capacity was restored in the area, a gap was created in the sheetpile to allow floodwaters to be pumped out. Two 42-inch pumps were set up on Hammond Highway to pump water over the sheetpile wall. Numerous pumps of various sizes were set up at the breach location to pump water out of

the Orleans East Bank area. Outflows increased daily as temporary repairs were made to Orleans Parish pump stations.

In cooperation with a USCG contractor, absorbent booms and silt barriers were placed north of the Hammond Highway Bridge on September 5, 2005. On September 17, 2005, the first of six aerators was placed into the canal. Aerators were operated until October 28, 2005, when they were removed because discharge responsibilities were returned to the New Orleans Sewerage and Water Board. The majority of the Orleans East Bank area was unwatered by September 15, 2005, and the area was declared officially dry on September 20, 2005 after the small, isolated flooded areas were unwatered. On September 21, 2005, with Hurricane Rita looming in the Gulf of Mexico, the sheetpile wall on the Hammond Highway Bridge was closed to control water levels in the 17th Street Canal during the event. Immediately following Hurricane Rita, the gap was reopened to allow for stormwater pumping. No flooding occurred in this area during the Hurricane Rita event.

London Avenue Canal

In order to reach the breaches on London Avenue Canal, contractors constructed three temporary gravel roads through the floodwaters. The first gravel road was built from the 17th Street Canal/Hammond Highway area, north along the eastern floodwall of the canal. The road was linked with Lake Marina Avenue that runs east just behind the Orleans floodwall from the 17th Street Canal. From there, crews were able to navigate along Lakeshore Boulevard to the London Avenue Canal. A second temporary gravel road was then constructed along the west side of London Avenue Canal between the floodwall and Pratt Drive from Lakeshore Drive south to the breach just south of Robert E. Lee Boulevard on the west side of the canal. Using riprap and sandbags, this breach was closed on September 05, 2005. The contractor then constructed a road south to Mirabeau Avenue. Crews crossed the canal on the Mirabeau Bridge and constructed a temporary rock road north along the east London Avenue Canal floodwall to reach the Mirabeau Avenue breach. Again, a combination of 12,000-pound sandbags (dropped by helicopter) and riprap (dumped by the contractor) was used to close the breach. The Mirabeau Avenue breach was closed on September 9, 2005. Absorbent booms were placed in the canal on the lake side of the Robert E. Lee Bridge on September 7, 2005, and aerators were placed in the area on September 19, 2005.

At London Avenue Canal, CEMVN contractors tore out the concrete guardrail on the south side of the Lakeshore Drive Bridge in order to dump riprap into the canal to slow the flow of floodwaters. Riprap was obtained from road construction materials located nearby and from local commercial sources.

A sheetpile wall was constructed on the lake side of the Robert E. Lee Bridge at the London Avenue Canal on September 19, 2005. A gap was left in the sheetpile wall to allow for drainage out of the canal. On September 21, 2005, the gap was closed in preparation for Hurricane Rita. Immediately following Hurricane Rita, the gap was reopened to allow for stormwater pumping.

New Orleans East

Flooding occurred in the New Orleans East drainage area as a result of the storm surge overtopping the Federal and non-federal levees, including severe overtopping along the GIWW. A major section of the GIWW levee in the southeast corner of the levee protection system was

severely damaged or destroyed. In the southeast area, a breach occurred at the Air Products and Chemicals facility east of the Michoud Canal, and the floodwall located at Pump Station 15 was damaged. Approximately 2,900 linear feet of floodwall located in the southwest section of the levee system along the GIWW at the Citrus Back Levee was overtopped and severely damaged. The levee system suffered overtopping along Lake Pontchartrain from the Lakefront Airport at the western end of the system to Paris Road.

At the Air Products and Chemicals facility located on Intracoastal Drive, efforts were made to stop the flooding and pump out the area as quickly as possible. Because this facility supplies a wide range of products (medical quality oxygen, etc.) too much of the United States, an extended period of interrupted production posed a potential for shortages of critical products to the medical and industrial sector. Temporary pumps were set up along the GIWW near Pump Station 15 to remove floodwaters from the Air Products facility. Rock and stone were used to dam up the Maxent Canal at the railroad crossing to reduce the size of the flood basin that needed to be pumped out at the Air Products facility. Concurrent with the action at the Air Products facility, the floodwaters in the western end of the Orleans East area were pumped out into Lake Pontchartrain by utilizing three existing pump stations (Jahnke, Citrus, and St. Charles) and several temporary pumps. Once the Air Products facility and western Orleans East were dry, efforts turned to draining the Six Flags/Michoud subdivision area. The area is normally drained via Pump Station 15 to the GIWW. It was decided that the most expedient way to drain the waters was to breach the old hurricane protection levee located on the western side of the Six Flags Amusement Park. By breaching the old levee, the trapped water in the Six Flags/Michoud subdivision would be diverted into the major drainage basin for New Orleans East and pumped into Lake Pontchartrain via the three main pump stations already in use (Jahnke, Citrus, and St. Charles). The breach caused street flooding in some areas of New Orleans East, but no homes were reflooded. The dam in the Maxent Canal was also removed, allowing Pump Station 15 to help unwater this area. The entire New Orleans East area was declared dry on October 10, 2005.

IHNC

Four breaches occurred along the IHNC as a result of the Hurricane Katrina storm surge. Along the west side of the IHNC north of France Road Parkway, a 150-foot breach opened; to the south of France Road Parkway, a 100-foot breach opened. Additionally, the Orleans Levee District sandbagged W30 railroad gate failed. The waters flowed into the Orleans East Bank area of the city through these breaches, joining with floodwaters coming in through the 17th Street Canal and London Avenue Canal breaches. On the east side of the IHNC, two breaches opened up south of Florida Avenue, flooding the Lower Ninth Ward of Orleans Parish and parts of St. Bernard Parish. Additionally, a breach opened in the western end of the St. Bernard Back Levee (Orleans Parish), allowing floodwaters into the Ninth Ward. Floodwater also came over the St. Bernard Back Levee, flooding the Lower Ninth Ward and St. Bernard Parish from the northeast

Emergency work centered on completing repairs to the two IHNC breaches on the east side of the canal. Both breaches were closed using 200-pound riprap, 12,000-pound sandbags (dropped by helicopter), and a cap of smaller aggregate stone. Levees were constructed to an

elevation of eight feet prior to Hurricane Rita. Southwest Division (SWL) Hired Labor Units and the German and Dutch crews that had flown in to help unwater the city set up temporary pumps in the Ninth Ward area. The Lower Ninth Ward was declared dry on October 9, 2005.

ST. BERNARD PARISH

In St. Bernard Parish, the Hurricane Katrina storm surge water overtopped and heavily scoured the Mississippi River Gulf Outlet (MRGO) Federal levee along the south bank of the channel. The storm surge destroyed approximately 8,000 linear feet of levee. Emergency repairs to this levee section are being made as a part of the TF Guardian mission. After overtopping the MRGO levee, the storm surge crossed the Central Marsh and overtopped the non-Federal St. Bernard Back Levee, causing flooding in St. Bernard Parish. Most of the back levee was scoured and damaged by the storm surge and is being rehabilitated under a CEMVN contract. One breach occurred along the back levee.

Of the six parish pump stations in St. Bernard parish, only three were operational after the storm: Pump Stations 4, 7, and 8. Pump Station 5 was heavily damaged, and Pump Stations 2 and 3 were destroyed. USACE assets were initially used in St. Bernard Parish to get life support (fuel, water, and food) to the parish staff operating the pump station. USACE hired labor crews were mobilized to remove debris from the back levee and to provide relief for parish pump station crews. A contractor was hired to close the breach in the back levee before Hurricane Rita made landfall. Borrow material to close the breach and to fill in some of the scour areas was obtained from a location near the Meraux Food Store and from along the Eikes Canal spoil bank. St. Bernard Parish was declared dry on September 27, 2005.

An oil spill at the Murphy Oil Corporation refinery in St. Bernard Parish occurred during the storm. Approximately 25,110 barrels of mixed crude oil was released into the city of Chalmette. On September 9, 2005, the Coast Guard contacted the USACE and requested that Pump Station 4 be shut down because there was a concern that the Murphy Oil spill material was being moved farther out into the city as a result of the pump station flows. At the request of the Chalmette Fire Chief, the pumps were not turned off. The Chief believed that people still trapped in the flooded area of Chalmette could be rescued once floodwaters had receded. This information was coordinated with Coast Guard staff, which then arranged for additional equipment to be brought in to aid in the clean-up. A small amount of the Murphy Oil spill material may have been pumped into the Central Marsh via Pump Station 4. Sediment samples collected by the EPA on November 10, 2005 showed elevated levels of total petroleum hydrocarbons; however, natural attenuation of the hydrocarbons is expected, and it is unlikely that long-term significant impacts will result from the unwatering activities.

The storm surge from Hurricane Rita overtopped the temporary repaired IHNC levees and opened two new breaches in the western end of the St. Bernard Back Levee on September 22, 2005, reflooding the Lower Ninth Ward and a small portion of west St. Bernard Parish. Again, repairs were made to the two IHNC breaches using rock. Temporary pumps were utilized to pump out the area. The Lower Ninth Ward area was declared dry on September 26, 2005.

PLAQUEMINES PARISH

The Hurricane Katrina storm surge caused the overtopping of many of the Federal (FLS) and non-Federal levees (NFLS) in Plaquemines Parish, Louisiana. On the east bank, the NFLS extends from Braithwaite to White Ditch. On the west bank, the NFLS is located between Oakville and City Price in the area commonly referred to as Citrus Lands. In the southern area of the parish, the storm waters overtopped the eastern levee system, crossed over the Mississippi River, overtopped the west bank of the Mississippi River Levee, flooded the west bank area, and then overtopped the back levee system. Floodwaters became trapped between the Mississippi River Levee and the back levee and flooded approximately 37,888.5 acres of the parish.

To help dewater Plaquemines Parish, parish workers and a USACE Hired Labor unit cut several breaches to allow drainage from the protected areas in the FLS. The East Bank Back Levee was breached at Gravolet Canal and in Bohemia. A CEMVN Hired Labor Unit created a breach at Bohemia on September 5, 2005 and then closed it two days later when floodwaters had receded. The breach at Gravolet Canal grew rapidly, eventually scouring a 200-foot wide breach that was 25 feet deep and extended to Highway 39. This breach was closed by the USACE on September 20, 2005. Further repairs using sheetpile were required to ensure the breach stayed closed.

On the west bank, the parish cut three breaches between the towns of Diamond and Happy Jack. These breaches were minimal in depth and were re-cut and backfilled several times as the tide changed. The parish repaired these three breaches once the floodwaters receded.

By September 12, 2005, parish staff had already made some levee repairs in cooperation with the Natural Resources Conservation Service (NRCS). The NRCS repairs were to the NFLS in the parish only. USACE Task Force Unwatering issued 20 levee repair contracts and 10 pumping contracts. Of the 10 pumping contracts, only five involved the installation of temporary pumps; the remaining five contracts were for support and/or repair functions. Emergency levee repairs were completed in the vicinity of the Sunrise Pump Station, Nairn, Homeplace, Pointe a la Hache, Scarsdale, and Braithwaite. Using trucked-in materials, USACE contractors completed the majority of the emergency repairs. The breach at Braithwaite was closed using sandbags dropped by helicopters. As Hurricane Rita approached the Louisiana coast, the levee near the Sunrise Pump Station was reinforced using sandbags. Additionally, emergency repairs were completed to the Empire floodgate.

A combination of pump stations and temporary pumps began evacuating the floodwaters from the parish on September 4, 2005. Temporary pumps were set up in the following locations: Pointe a la Hache, Nairn, Port Sulphur, Fort Jackson, Braithwaite, and Citrus Lands. Pumps ranged in size from 12 to 30 inches and were operated as needed until the area in the vicinity of the pump was dry. Plaquemines Parish was declared dry on October 19, 2005.

On September 18, 2005, the Coast Guard contacted the USACE and requested that the pump station in East Pointe a la Hache be shut down because there was a concern that the North Bass spill material (crude oil) was being moved further away from the pipeline break as a result of the pump station flow. The USACE staff coordinating the unwatering of Plaquemines Parish

declined to shut down the pump station. The Coast Guard was able to deploy additional assets and contain the spill.

TASK FORCE GUARDIAN

After the floodwaters of Hurricane Katrina were pumped out of the New Orleans Metropolitan Area, the USACE mission shifted to the need to provide the area with hurricane protection levels equal to previously constructed levels of protection that existed prior to Hurricane Katrina. The District Commander established a mission deadline of June 1, 2006 (the start of the 2006 hurricane season) as the date to have the levee rehabilitation completed. Federal laws allow the USACE and other Federal agencies to restore damaged infrastructure to the levels that existed pre-storm; any improvements (betterments) must be paid for by a local sponsor or be authorized by the United States Congress and the President of the United States. To accomplish the new mission of rehabilitating the damaged hurricane protection system prior to the next hurricane season, the USACE needed an innovative, focused, goal-oriented, multidisciplinary team and a technical support team. As a result of this need, Task Force (TF) Guardian was created on September 21, 2005. The TF Guardian mission is to repair the Greater New Orleans Federal hurricane and flood protection system damages resulting from Hurricane Katrina; restoring the system to pre-storm conditions by 1 June 2006. Repair damages to the Mississippi River flood protection levees by mid-January 2006. TF Guardian will assess damages to the publicly owned hurricane and flood protection systems, including pumping stations, and consider/ provide recommended repairs by mid-January 2006.

For the purposes of this assessment, all of the TF Guardian actions are being discussed in order to provide clarity as to the actions taken by the USACE to rehabilitate the Federal levees in the impacted parishes. It has been determined by USACE Environmental staff and approved by the CEMVN District Commander that NEPA compliance for TF Guardian work on the Federal levees is in compliance under the categorical exclusion provision of ER200-2-2 paragraph 9.a. and that no further environmental clearances were required for this work to proceed. It was further determined that the TF Guardian work in regards to new borrow sources, work on non-Federal levees, and the non-Federal pump stations were not categorically excluded, and as such the work would need to be documented as a part of this document. The following is a summary of the rehabilitation activities being undertaken by TF Guardian. Please see Appendix D for a more detailed description of the actions taken by TF Guardian staff.

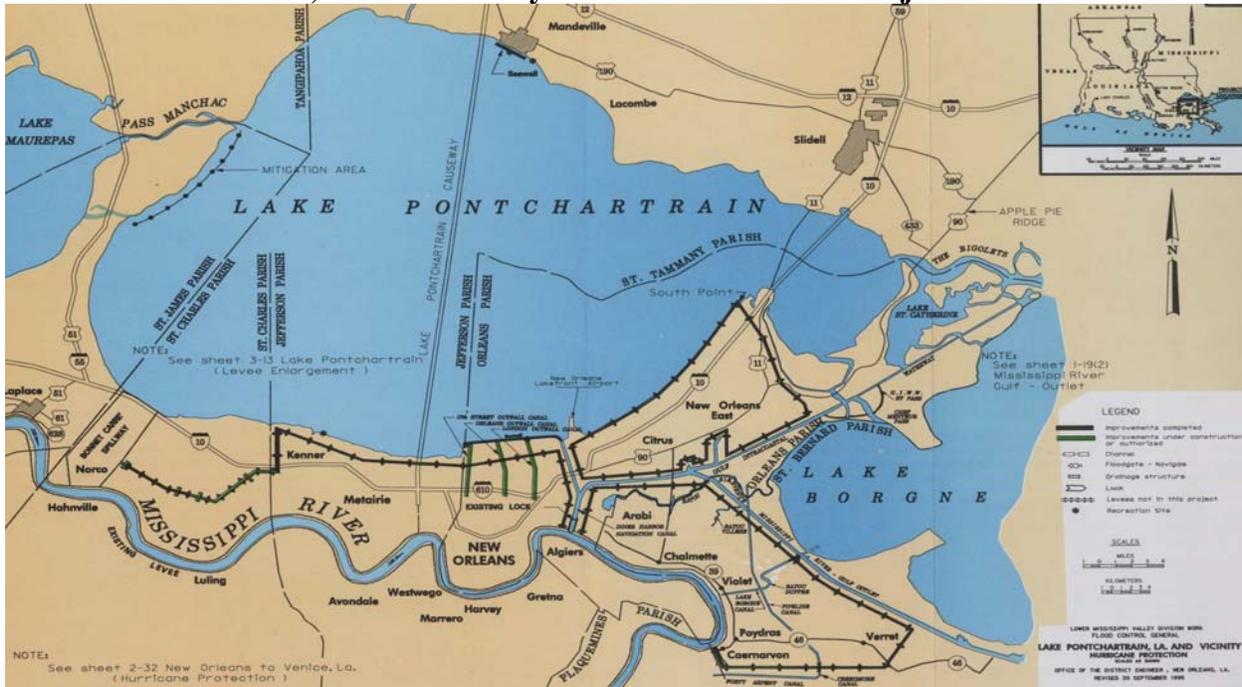
FIVE GEOGRAPHIC AREAS

New Orleans East Bank

The Orleans East Bank work is authorized under the Lake Pontchartrain, LA and Vicinity Hurricane Protection Project and includes the 17th Street, London Avenue, and Orleans Avenue outfall canals (Figure 3). This portion of the Lake Pontchartrain, LA and Vicinity Hurricane Protection Project protects 28,300 acres of urban and industrial land in the city of New Orleans via a combination of earthen levees and floodwalls.

Figure 3

Lake Pontchartrain, LA and Vicinity Hurricane Protection Project Authorized Levees



The repairs in this area have been broken into two major components, Phase I and Phase II floodwall repairs. Phase I floodwall repairs consist of temporary hurricane protection at the 17th Street Canal breach and the two London Avenue breaches using steel sheetpiling up to an elevation of +14 feet NGVD. Phase II floodwall repairs consist of returning the project to its pre-storm height plus overbuild. The Phase II floodwall repairs at the three breach sites consist of constructing pile-founded, reinforced concrete T-wall monoliths on the same alignment as the original I-walls. The 600-foot length of I-wall that rotated on the east side of London Avenue, south of the Robert E. Lee Bridge is being replaced with pile-founded T-wall monoliths. The 1,400 feet of damaged I-wall along the IHNC west levee is being replaced with a buttressed I-wall section along the same alignment. Areas scoured and eroded due to overtopping along the IHNC west levee and lakefront levee are being backfilled with compacted clay material. Woody material in the form of trees and shrubs is being removed from the levee Right of Way (ROW). Additional woody material may be removed from areas near (within 100 feet of) the toe of the levee system if it is deemed a structural problem.

Additionally, three temporary gated structures with some pumping capacity are being installed at the lake side end of the 17th Street Canal, Orleans Canal, and London Avenue Canal. The gated structures will be closed when storms approach or lake water levels rise to a pre-established height. Gates have been designed to hold back waters up to 16 feet NAVD. The purpose of the gates is to relieve stress on the existing I-wall found along both sides of these three canals. As a part of this temporary work, pumps are being installed at 17th Street canal, Orleans Avenue Canal, and London Avenue canal that will initially (June 1, 2006) have the capacity to handle ten (17th Street) to 50 percent (Orleans Avenue) of the floodwater from the canals. Plans are that by July 1, 2006 pumping capacity will be increased so that 30 percent of the volume of the 17th Street Canal and 100 percent of the volume of the Orleans Canal and London Avenue Canals can be pumped out during a major storm event. Gates will only be kept

in a closed position during major storm events or high water events in the lake. There is a proposal to construct a more permanent gate and pumping system at these locations in the future. Environmental analysis of the permanent structures will be done under a separate report once funds are appropriated and plans are authorized. Some dredging of the canals was required during the installation of the temporary structures. The storm-damaged pedestrian bridge at the mouth of the 17th Street Canal was removed during construction. The pedestrian bridge will not be replaced as a part of this project.

New Orleans East

The New Orleans East section of the Lake Pontchartrain, LA and Vicinity Hurricane Protection Project is located in Orleans Parish, east of downtown New Orleans, and is bordered by Lake Pontchartrain, the IHNC, and the GIWW. Levees in this area protect 44,700 acres of residential, urban, commercial, and industrial land.

Repairs to the project have been broken into three major components. The first involves reconstruction of the portion of the hurricane protection system along the GIWW/MRGO (approximately 33,000 feet of earthen levee and floodwalls) along the alignment of its original construction. Levee and floodwall elevations are being built within the authorized footprint and to design elevations. The second component replaces I-wall segments with T-walls at Pump Station 15, which ties the pump station to its adjacent levee segments. The third component is constructing a sheet-pile floodwall parallel to the alignment of the remaining sheet-pile segments. Six additional contracts have been released to repair areas scoured throughout the remainder of the New Orleans East hurricane protection system and to repair damaged closure structures. Woody material in the form of trees and shrubs is being removed from the levee ROW. Additional woody material may be removed from areas near (within 100 feet of) the toe of the levee system if it is deemed a structural problem.

St. Bernard Parish/New Orleans Parish

The St. Bernard Parish/New Orleans Parish section of the Lake Pontchartrain, LA and Vicinity Hurricane Protection Project is located in St. Bernard and Orleans Parishes, east of downtown New Orleans, and is bordered by the Mississippi River, the IHNC, and the MRGO. The project includes the towns of Violet and Chalmette and protects 75 square miles of urban and industrial land in St. Bernard Parish and a small section of eastern Orleans Parish known as the Lower Ninth Ward.

Repairs consist of six major components. The first is to reconstruct the hurricane protection levee along the MRGO with the same general alignment and design as was originally constructed. Sheetpile floodwall sections are being replaced with earthen levee embankments. The second component is the repair of two control structures and the I-wall floodwalls that tie these control structures into the adjacent levee segments. The third component is replacing the damaged and failed I-walls along the IHNC with new T-walls. The fourth component is repairing the foundation of the four road closure structures that were overtopped by backfilling each site. The fifth component is repairing the Creedmore Drainage Structure by clearing the debris in the gate well and replacing the sluice gate hoists and stems. The sixth component is repairing the minor scour on the crown and backside of the levee running from Verret to Caernarvon. Woody material in the form of trees and shrubs is being removed from the levee

ROW. Additional woody material may be removed from areas near (within 100 feet of) the toe of the levee system if it is deemed a structural problem.

Jefferson Parish East Bank

The East Jefferson Parish portion of the Lake Pontchartrain, LA and Vicinity Hurricane Protection Project includes the area from the south shore of Lake Pontchartrain to the east bank of the Mississippi River between the St. Charles and Orleans Parish lines. It protects 28,300 acres of urban and industrial land in Jefferson Parish.

Repairs along the west side of the 17th Street outfall canal consist of repairing foreshore protection on the floodside, along floodwalls and bulkheads. The riprap at the base of the I-walls and the crushed stone adjacent to floodwalls will be replaced. The bulk of the damage to the protection system along Lake Pontchartrain is erosion and scour at the base of the floodwalls and displacement of lakeside foreshore protection. The foreshore protection and damaged concrete slope paving is being replaced. Also, the base of floodwalls is being backfilled to prevent further scouring. Woody material in the form of trees and shrubs is being removed from the levee ROW.

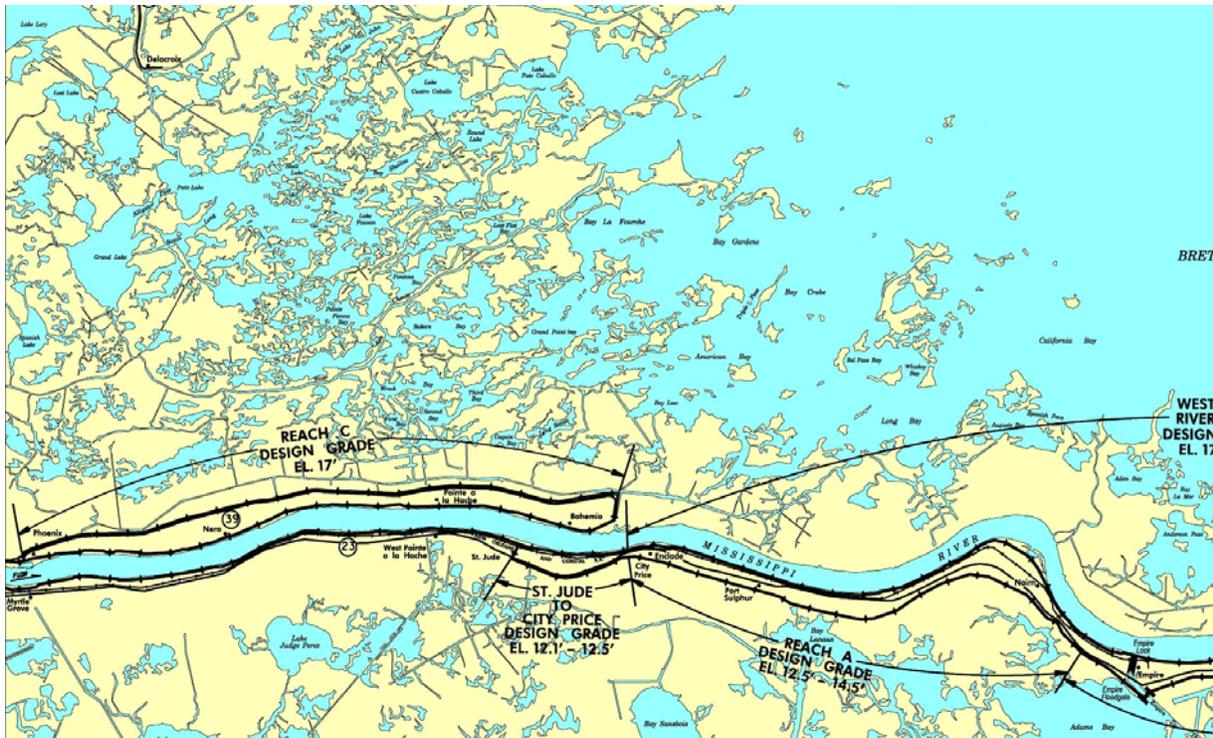
Additional woody material may be removed from areas near (within 100 feet of) the toe of the levee system if it is deemed a structural problem.

The Kenner Return Levee runs perpendicular to Lake Pontchartrain along the Jefferson/St. Charles Parish line for approximately 3.5 miles. The damage in this reach consists primarily of settlement and rotation along a 1,600-foot reach of the I-wall portion of the floodwall. An interim measure to provide the necessary protection for the upcoming hurricane season consists of installing a temporary sheetpile wall parallel to the existing I-wall. A stability berm is being constructed by placing additional fill on the protected side with concrete mats placed on top to provide erosion protection. Woody material in the form of trees and shrubs is being removed from the levee ROW. Additional woody material may be removed from areas near (within 100 feet of) the toe of the levee system if it is deemed a structural problem.

Plaquemines Parish

The New Orleans to Venice, LA Hurricane Protection Project (NOV) straddles the Mississippi River in Plaquemines Parish, Louisiana between approximate river miles 10 and 59 (Figure 4). On the West Bank, the levee extends 37 miles from St. Jude to Venice. Its back levees are divided into 4 reaches: Reaches A, B-1 (including a marine floodgate at Empire), B-2, and St. Jude to City Price. The NOV's West Bank reach also includes 34 miles of enlarged West Bank Mississippi River Levees (MRLs). On the East Bank, the project extends from Phoenix to Bohemia and consists of 16 miles of enlarged back levees (Reach C). In total, the NOV protects approximately 15,600 acres of land, 75 percent of the population, and 75 percent of the improved lands in the project area.

Figure 4
New Orleans to Venice, LA Hurricane Protection Project Authorized Levees



The NOV does not include the MRL flood protection in Plaquemines Parish, which was constructed as part of the Mississippi River and Tributaries (MR&T). There are approximately 109 miles of MRL in Plaquemines Parish, of which 34 miles on the West Bank are a part of the NOV West Bank River Levee System.

The repair of the damage to the West Bank Levee includes the replacement of the I-wall at the Gainard Woods Pump, in the vicinity of the Homeplace Marina, and at the Freeport facility. Damaged T-wall/I-wall joints at the Diamond Pump Station will be repaired. The crews are replacing damaged floodwalls on the lower west bank network with earthen landside enlargements between Port Sulphur and Buras. The floodwalls will be replaced with an earthen levee section that consists of a 1V:4H riverside slope, a 10-foot wide crown at an elevation of 17 feet, and a 1V:3H landside slope. The MRL is intact, and the floodside toe will not be moved. Only the configuration of the NOV protection will change in relationship to the MRL. The NOV levee centerline would be moved landward from its pre-Katrina location to maintain the authorized 1.3 factor of safety against failure into the river. The parish has commandeered a total of 59 acres of land for levee landside enlargement in order to complete this repair. Work is also progressing on the repair of scour areas along much of the network. Areas of the NOV that were breached will be paved above the water line and riprapped below the water line to prevent future scour. Crushed stone is being placed as needed along the crown of the levee to allow vehicles access. In some areas where NOV floodwalls were damaged, levee embankment material is being spread and compacted on the berm of the existing levee to create a 45-foot wide wave berm, a 10-foot wide crown, and a 1V:3H landside slope.

BORROW

An integral part of the TF Guardian process is the acquisition of clay borrow materials for the levee repairs. USACE engineers estimated that 7,500,000 cubic yards of clay is required to rehabilitate the Federal levees to pre-Hurricane Katrina design specifications. A four-person project delivery team comprised of personnel from the CEMVN Engineering and Environmental Branch was established within the TF Guardian organization. This team worked closely with other CEMVN resources (Real Estate, Engineering, Environmental, and Regulatory Functions) to accomplish their mission. This team's sole purpose was to locate and procure high quality clay borrow sources in such a way as to be least damaging to both the natural and cultural resources within the construction area.

A total of 63 potential sites were investigated by the borrow team (Table 1). Of this total, 10 were commercial or contractor-furnished borrow pits of which most were located in Mississippi. The team investigated and completed environmental coordination on 37 sites. Of the 37 sites, 18 are currently being used. An additional 19 sites have been investigated and are ready to be used if needed. An additional 16 sites have been identified for potential use if the need arises, fifteen are in St. Bernard Parish and the final one is in St. Tammany parish.

The team had a multi-faceted approach to identifying potential borrow sites. Real estate personnel and the geologist on the team identified potential sites in the vicinity of the area where the material was to be placed. The geologist would study the geological make-up of areas in the vicinity of the levee to identify areas that had the potential to contain clays. The biologist would then do an in-office survey of aerial photos of the area to see if the potential site appeared to be wetlands, if using the site would raise Coastal Zone Management (CZM) issues based on location, or if there were other obvious environmental issues that could be detected from photography. A USACE archeologist would then complete a preliminary, in-office survey of mapped cultural resource sites to detect any obvious cultural resource problems. USACE botanists from the Regulatory Branch researched their records of existing and upcoming permit activity in the area of a potential site and completed an in-office vegetation analysis using the most recent aerial photography (2004).

Once the team had identified a potential site, a site visit was conducted. The field team typically consisted of an engineer/borrow team leader, a biologist, a geologist, a botanist, an archeologist, and a hazardous, toxic, and radioactive waste (HTRW) investigator. The engineer/borrow team leader would evaluate the logistics needed to prepare the site. The biologist would prepare an environmental report (Appendix E) for the area and coordinate with the appropriate Federal and state resource agencies. The team geologist would take preliminary hand cores and provide logistics for mechanized soil borings and interpretation of the soil analysis. The botanist would make wetland and jurisdictional determinations for the site, which were used to determine the application of certain environmental regulations [404(b) (1) and Section 10]. The archeologist would examine the site for signs of cultural resources, and the HTRW investigator would assess the site for HTRW concerns.

**Table 1
Active TF Guardian Borrow Pit Summary**

Borrow Site	Total Acres Available	Total Acres Used	Wetland Acres Used	Cu Yds Excavated	Coordination			
					USFWS T&E	SHPO	Prime/Unique Farmlands (acres)	Mitigation Required (acres)
Bienvenue/Dupre (Along MRGO)	127	127	0	3,366K	Complete		0	0
Bohemia	206	8	0	212K	Complete	Complete	17	0
Bonnet Carre'	?	?	?	750K	Complete	Complete	0	0
Buras	17	17	0	451K	Complete	Complete	17	0
Creedmore Farm	6.5	6.5	0	172K	Complete	Complete	6.5	0
Fort Jackson	15	15		398K	Complete	Complete (200 ft buffer required)	47.6	0
Homeplace	53	9	0	239K	Complete	Complete	55	0
Myrtle Grove	45	45	0	1,193K	Complete	Complete	45	0
New Orleans East North of Chef Hwy (Site 3)	72	55	55	1,458K	Complete	Complete	0	10.0 Fresh Swamp 45.0 BLH
Port Sulphur	96	16	0	424K	Complete	Complete	86	0
Triumph East	232	59.3	0	1,572K	Complete	Complete	223	0
Verret/Dupre (Along MRGO)	103	103	0	2,730K	Complete	Complete	0	0
Walker Road (Existing)	83.5	30	0	795K	Complete	Complete	118.3	0
Walker Road Extension	34.8 (2.5 Wet)	32	2.5		Complete	Complete	0	2.5 Wet Pasture
Whisperwood	20	5	0	133K	Complete	Complete	0	0
Citrus Lands Alternate borrow	25	25	1.4	663K	Complete		25	1.4 Wet Pasture
2938 Bayou Rd	17.3(11 acres wet)	6.3	0	167K	Complete	Complete	17.3	0
Florissant	6.3	3.5	3.5	93K	Complete	Complete	6.3	0
Total	1,159	563	62.4					

Notes:

LP&V EIS = Lake Pontchartrain and Vicinity, Environmental Impact Statement

NOV EIS = New Orleans to Venice, Environmental Impact Statement

WB EIS = West Bank and Vicinity, Environmental Impact Statement

Normally, local sponsors, parishes, and cities do not have or maintain lands for borrow. However, Plaquemines Parish did have two existing borrow sites, one near Belle Chasse and one near Fort Jackson that were evaluated by the team. Contractor-furnished borrow sites were initially evaluated by reviewing the contractor-provided information packet required for requesting alternative borrow. If the contractor-furnished pit was previously permitted by the USACE, the pit was immediately usable; otherwise, further investigations were required.

While the engineering properties of the borrow material were recognized as a first priority, environmental sensitivity was also a part of the consideration for site selection. The established protocol for land acquisition combined the environmental sensitivity of the site with the required engineering factors to aid in site evaluation and selection. The protocol prioritized site selection to utilize existing commercial pits first where possible, then upland sources, then previously disturbed or manipulated wetland sources, then low quality wetlands inside the levee system, and, as a last resort, low quality wetlands outside of the levee system.

Of the 1,712 acres identified in Orleans, Plaquemines, and St. Bernard Parishes as potential borrow sites, only 266 acres are wetlands. As a result of the established protocol and the environmental awareness of the team, only 95.7 acres of these wetland acres are slated for use, and those 95.7 acres are primarily low quality wetland; thus, only six percent of the entire borrow required for the hurricane protection rehabilitation is coming from wetland sources. Low quality wetlands are typically wetlands that have been previously impacted by natural or man made forces. I.e. forested wetlands that have been logged at some point in the past.

PUMP STATIONS

Most of the developed areas in coastal Louisiana are protected from river flooding, storm surge, and tidal inflows by a network of levees. Although the levees provide protection to developed areas from external forces, they unfortunately also leave these same areas vulnerable to flooding from accumulated rainfall. Therefore, numerous canals and subsurface drainage features are employed within most levied systems to collect and deliver storm water runoff to pump stations that discharge these waters, primarily into adjacent water bodies such as Lake Pontchartrain, the Mississippi River, and, in some cases, wetlands. CEMVN was tasked with completing evaluations of 68 non-Federal pump stations damaged by Hurricane Katrina in the four parishes in the New Orleans Metropolitan Area. Repairs were made to restore the capabilities of some of the pump stations to pre-Hurricane Katrina standards as funds became available. Table 2 provides a list of the pump stations that were evaluated and a summary breakdown of the type of repairs being completed. For a more complete description of the repairs, please refer to Appendix D.

**Table 2
CEMVN Pump Station Summary**

Pump Stations	Repairs				Replacement			
	Building	Mechanical	Electrical	Equipment	Civil Works	Building	Heavy Equipment	Fencing
Orleans Parish								
Orleans Pump Station #1	Y	Y		Y				
Orleans Pump Station #2	Y	Y						
Orleans Pump Station #3	Y	Y						Y
Orleans Pump Station #4								Y
Orleans Pump Station #5	Y	Y		Y				
Orleans Pump Station #6	Y	Y	Y					Y
Orleans Pump Station #7	Y							Y
Orleans Pump Station #12		Y						
Orleans Pump Station #17D	Y	Y						
Oleander	Y							
Pritchard Place	Y	Y	Y					
I-10 Underpass	Y							Y
Carrollton		Y	Y					
Orleans Pump Station #10	Y	Y						Y
Orleans Pump Station #11		Y						
Orleans Pump Station # 13	Y	Y	Y					
Orleans Pump Station #14	Y	Y	Y					Y
Orleans Pump Station #15	Y	Y						Y
St. Charles PS #16	Y	Y	Y					Y
Maxent PS #18	Y							
Orleans Pump Station #19	Y	Y						Y
Amid PS #20	Y	Y	Y					Y
Elaine		Y			Y			

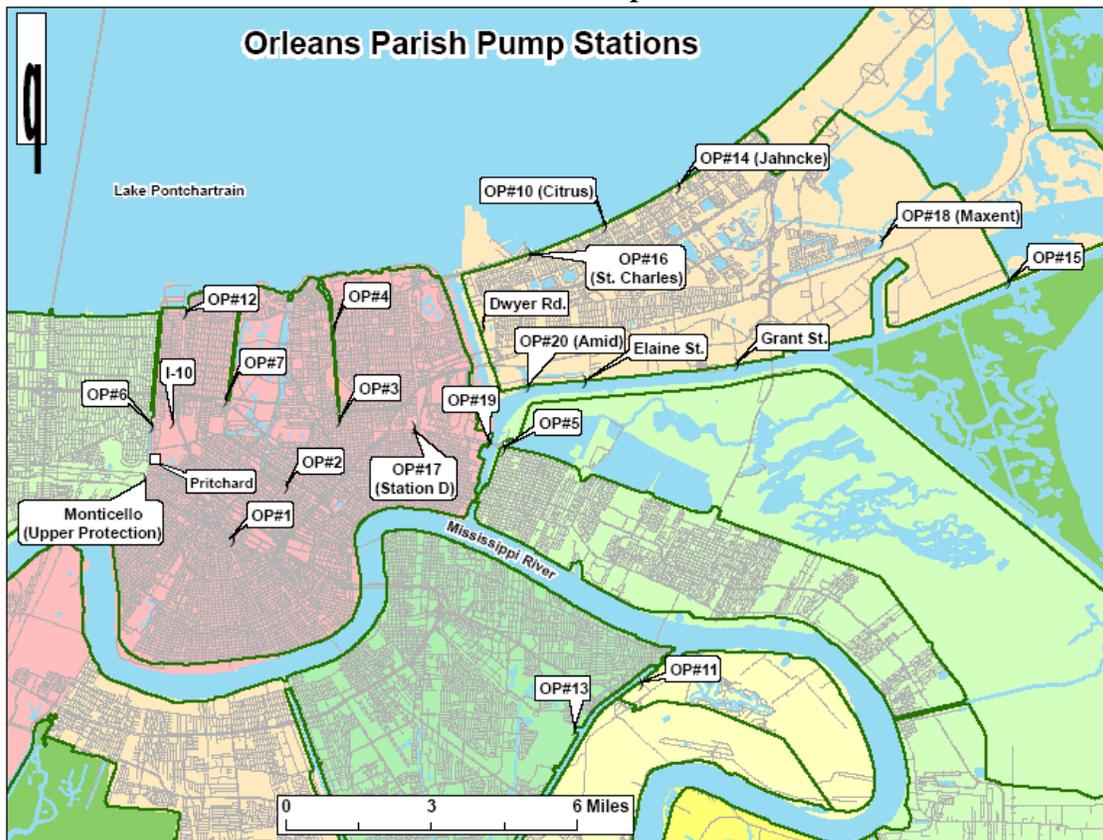
Pump Stations	Repairs				Replacement			
	Building	Mechanical	Electrical	Equipment	Civil Works	Building	Heavy Equipment	Fencing
Grant	Y	Y	Y		Y			
Jefferson Parish								
Bonnable	Y	Y						
Suburban		Y	Y					
Elmwood	Y	Y	Y					
Ducan	Y	Y	Y					
Ames		Y	Y					
Bayou Segnette No. 1	Y							
Bayou Segnette No. 2	Y							
Cousins No. 1	Y							
Cousins No. 2	Y	Y	Y					
Estelle	Y	Y	Y					
Harvey	Y							
Hero	Y		Y					
Planters	Y							
Lake Cataouatche No. 2	Y							
Whitney Barataria	Y		Y					Y
Westwego No. 1	Y							
Westwego No. 2	Y							
Plaquemines Parish								
Braithwaite		Y	Y	Y				
Belair	Y	Y	Y	Y	Y	Y		
Scarsdale	Y	Y	Y					Y
Bellevue		Y	Y					
East Point a la Hache	Y	Y	Y					Y
Barrier Road								

Pump Stations	Repairs				Replacement			
	Building	Mechanical	Electrical	Equipment	Civil Works	Building	Heavy Equipment	Fencing
Belle Chase No. 1	Y							
Belle Chase No. 2	Y							
Ollie								Y
Diamond		Y	Y					Y
West Point a la Hache	Y	Y	Y					Y
Hayes	Y	Y	Y					Y
Gainard Woods		Y	Y					
Sunrise	Y	Y	Y					
Grand Laird/Triumph	Y	Y	Y					
Duvic			Y					Y
Pointe Celeste		Y						
Wilkinson		Y						
St. Bernard Parish								
Pump Station 1-Fortification	Y	Y	Y				Y	
Pump Station 2-Guichard	Y	Y	Y			Y		
Pump Station 3- Bayou Villere			Y			Y		
Pump Station 4- Meraux	Y	Y						
Pump Station 5- E J Gore	Y	Y	Y					
Pump Station 6- Jean Lafitte	Y							
Pump Station 7- Bayou Ducros		Y		Y			Y	
Pump Station 8- St. Mary	Y	Y	Y				Y	

ORLEANS PARISH PUMP STATIONS

A total of 24 pump stations in Orleans Parish may be repaired as a result of Hurricane Katrina damage (Figure 5). Repairs may consist of cleaning the area; repairing damaged pumps; repairing electrical motors; replacing damaged wiring, control centers, and switchgears; replacing sump pumps and grinder pumps; completing roof repairs to pump stations and other structures at the station; replacing roll-up doors; replacing damaged lighting fixtures; replacing flooring and paneling that was submerged; replacing broken windows and collapsed or damaged walls; replacing damaged fencing and gates; repairing electrical generators; and replacing sidewalks and driveways as needed. At the Claiborne Avenue Pump Station, the 48-inch discharge line was damaged and is need of repair. The Carrollton Frequency Changer facility flooded, damaging some of the electrical equipment. The four frequency changers' motors will require full rewiring, as do the conductors in the pits. The battery rack and drip pans must also be replaced. Additionally, the outdoor electrical equipment requires cleaning and repairs.

Figure 5
Orleans Parish Pump Stations



JEFFERSON PARISH PUMP STATIONS

A total of 17 pump stations in Jefferson Parish may be repaired as a result of Hurricane Katrina damage (Figure 6). Because the majority of the damage to pump stations in Jefferson Parish is related to wind damage to the buildings, the damage to pump stations in this area is

much less severe than in Orleans Parish. Repairs may consist of replacing damaged wiring and cable trays, repairing lightning protection systems, completing roof repairs, replacing damaged lighting fixtures, and replacing broken windows.

Figure 6
Jefferson Parish Pump Stations



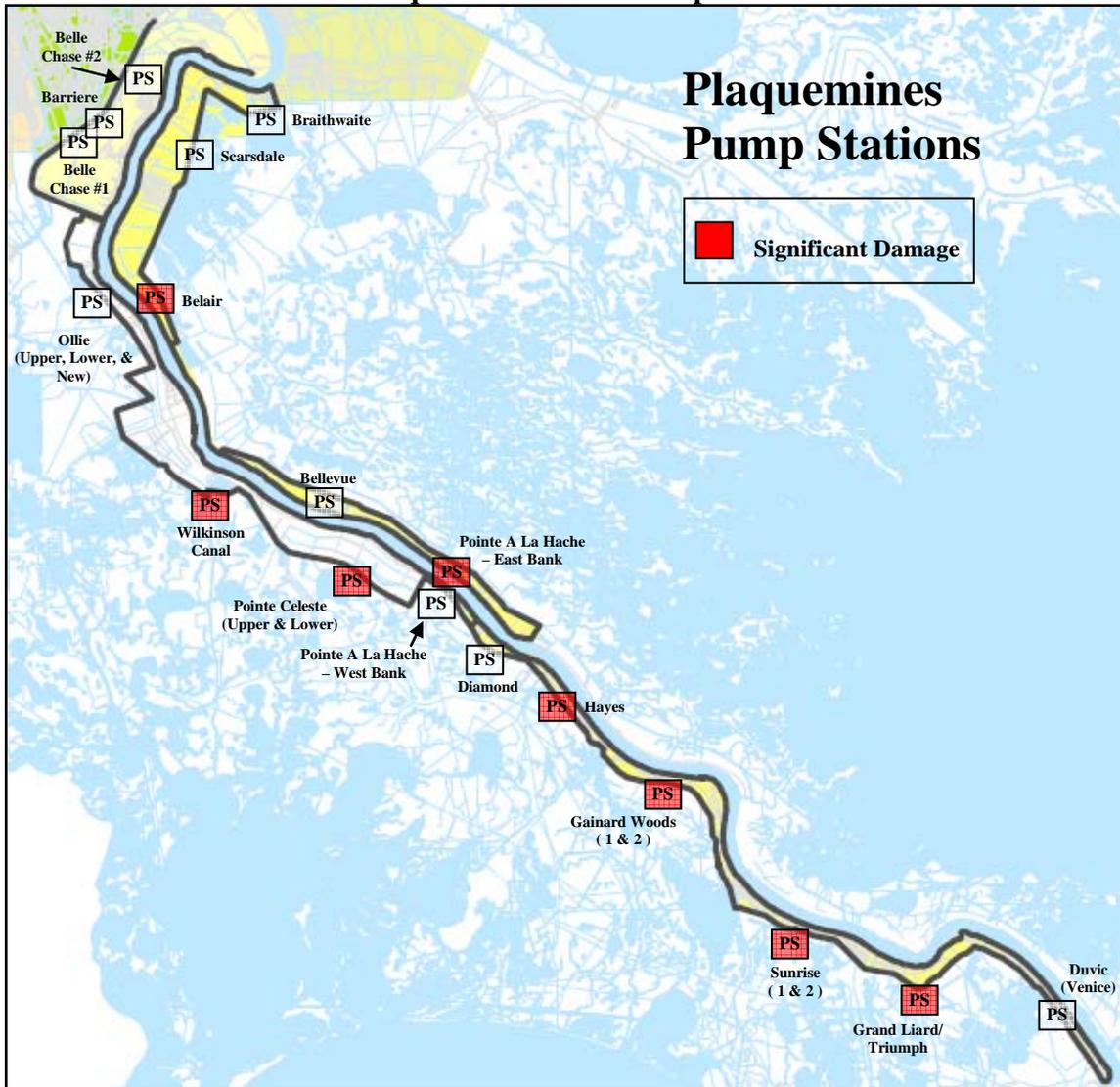
PLAQUEMINES PARISH PUMP STATIONS

A total of 18 pump stations in Plaquemines Parish were evaluated to determine the level of repairs needed as a result of Hurricane Katrina damage (Figure 7). Five pump stations are located on the east bank of the Mississippi River, and 13 pump stations are on the west bank of the Mississippi River. Of the 13 pump stations evaluated on the west bank that are need repairs, two are owned and operated by a private interest, Citrus Lands Corporation. After the evaluation was complete Citrus Lands Corporation declined to have their pumps repaired under this program. In addition to the 18 pump stations, one existing pump station (Belair) was heavily damaged and may be replaced entirely.

In addition to the above pump station repair mission, FEMA tasked the USACE to repair the roofs of the Plaquemines Parish pump stations under Mission Assignment Number 21, Critical Facilities Program (JFO-973 Tasker). The repair work began in November 2005 and was

completed in December 2005. This work is not addressed in this assessment since it was a tasked FEMA mission.

Figure 7
Plaquemines Parish Pump Stations



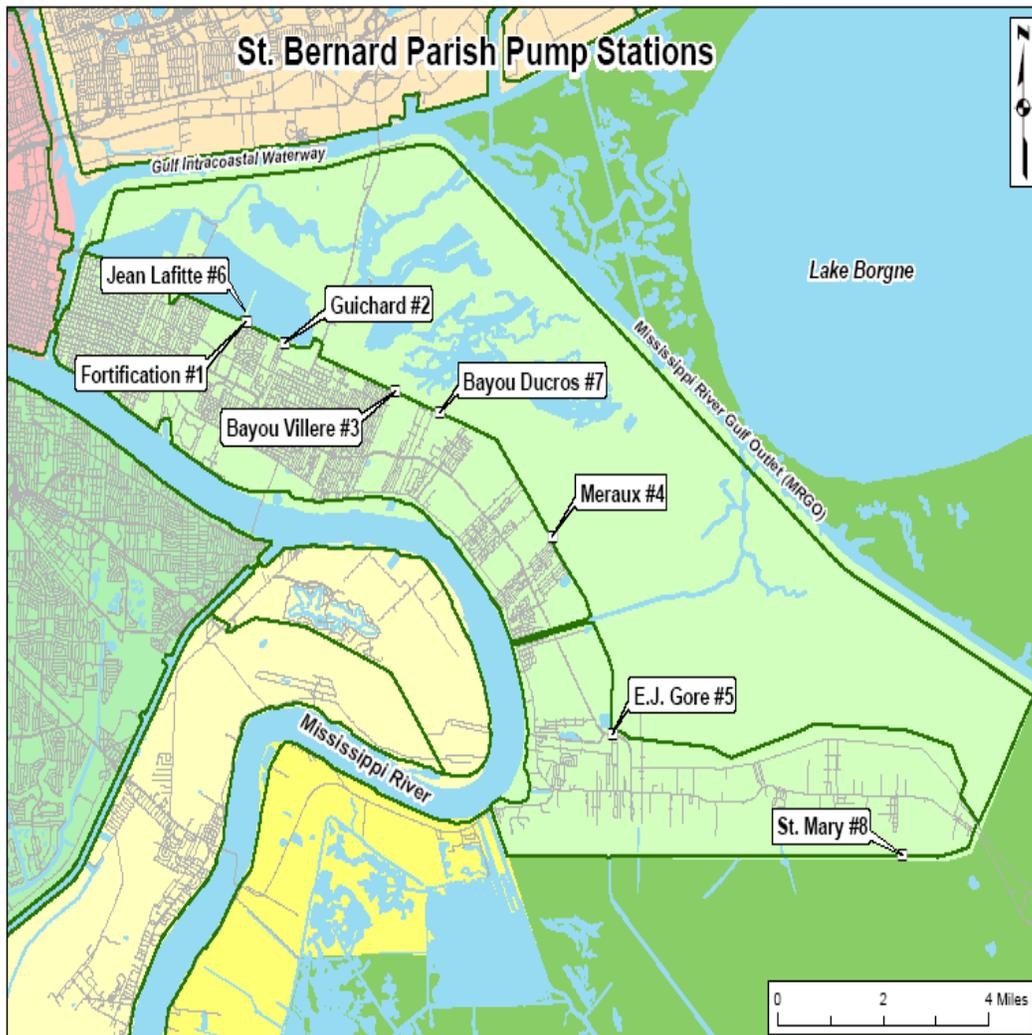
Repairs consist of cleaning the area; elevating diesel engines up to seven feet above existing location; repairing damaged pumps, screw drives, and electrical motors; replacing damaged wiring; repairing fuel tanks and lines; replacing sump pumps; replacing doors and windows; replacing damaged lighting fixtures; and replacing damaged fencing and gates. The parish uses a backhoe to remove debris from the trash racks. This backhoe is used at multiple stations. During the storm event, the backhoe was flooded with salt water. If possible, the backhoe will be repaired. If the repairs are not possible, new equipment will be purchased, and the government will salvage the damaged equipment.

The Belair Pump Station on the east bank was heavily damaged during the event and cannot be repaired. A new pump house may be constructed adjacent to the existing station using a prefabricated metal building on a concrete slab. The new station would be elevated to match the elevation of the crown of the back levee. The pumping system may be converted to a hydraulic pump system, allowing the use of the existing pump and intake and discharge piping.

ST. BERNARD PARISH PUMP STATIONS

A total of eight pump stations in St. Bernard Parish may be repaired as a result of Hurricane Katrina damage (Figure 8). Five of the eight pump stations were only partially affected by flooding from the storm event because the operating floors of these stations were elevated approximately 12 feet above the ground. Repairs to these five plants may include the repair of pumps, motors, gear boxes, trash rack systems, lighting systems, siding, and roofs. Additionally, two Bobcats and one front end loader may be replaced at three of the stations.

Figure 8
St. Bernard Parish Pump Stations



Three stations (Guichard, Bayou Villere, and E. J. Gore) were constructed at the ground level on the protected side of the levee and were completely inundated. These three stations provide approximately 20 percent of the system's drainage capacity for the St. Bernard area. The Guichard and Bayou Villere stations may be replaced with new structures at the existing locations. The diesel engines at the E.J. Gore pump station may be elevated.

OTHER FEDERAL WORK

Grand Isle Emergency Breach Repairs, Jefferson Parish

The gulf-side sand dune on the Grand Isle Levee breached in four locations after water flowed over the backside of the island as Hurricane Katrina passed through the area to the east on August 29, 2005. Soon after the storm passed, USACE personnel visited the island and completed a damage assessment and developed a plan in cooperation with the Town of Grand Isle to complete repairs to the dune system. On September 19, 2005, a USACE contractor mobilized to the site and began work to close the four breaches. A USACE biologist determined that the emergency work outlined in the plan was excluded from additional NEPA review because the work fit the category of normal operation and maintenance (O&M) (33 C.F.R. 230.9(b)) and (ER 200 2-2, para 9e). By October 4, 2005, the contractor had placed 8,260 cubic yards of sand and 253 sandbags in the breaches, bringing the level of protection up to the Federally authorized design standards. The area will be planted in early spring of 2006 to reestablish vegetation on the dune in accordance with the existing O&M plan. Additional O&M of the entire dune system may be completed if funds are authorized by the U.S. Congress and the President of the United States.

Baptiste Collette Emergency Channel Dredging

Hurricane Katrina's passage resulted in the temporary closure of the GIWW in the vicinity of the IHNC. For the commercial vessels that normally use the GIWW, Baptiste Collette Bayou became the most viable alternate waterway for vessel traffic passing by the New Orleans area. Baptiste Collette Bayou is located along the east bank of the Mississippi River in lower Plaquemines Parish. Vessels coming from the west were able to navigate down the river to Baptiste Collette Bayou and transit across the bayou to the MRGO, where they navigated up the MRGO channel to the GIWW. This added a substantial amount of travel time to the vessels moving through the impacted area.

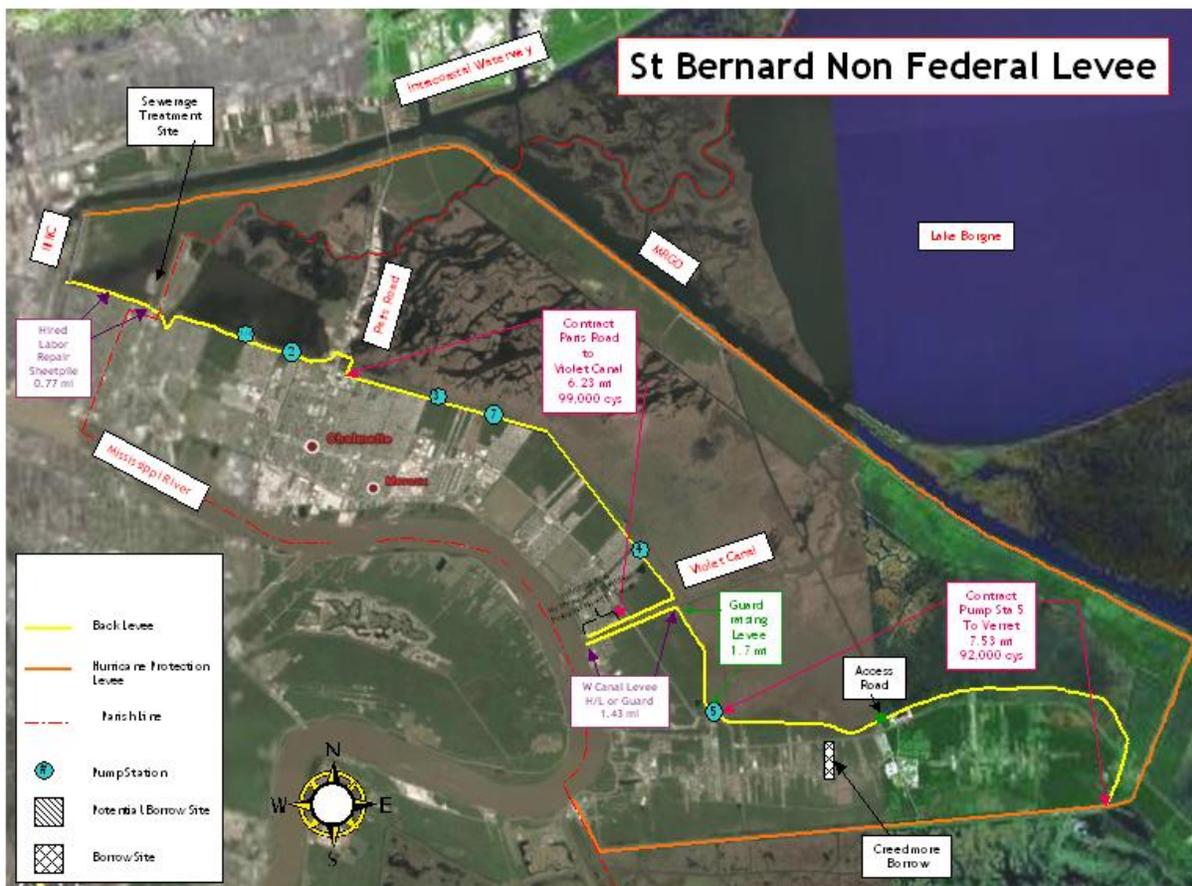
A dustpan dredge was used to remove about 121,399 cubic yards of shoal material from the Baptiste Collette Bayou bar channel reach from September 2 to September 5, 2005. All dredged material was discharged unconfined into the adjacent shallow open water on either side of the navigational channel. In the jetties' reach, the dredged material was placed in the shallow open water between the existing rock jetties and the navigational channel. This material will likely return to the channel as a result of wave/tidal action and will require additional maintenance dredging and placement into designated disposal areas to maintain the channel at its authorized dimensions.

NON-FEDERAL WORK

St. Bernard Parish Back Levee

As described previously, USACE crews closed the breaches on the St. Bernard Back Levee and helped the parish pump the area out. In September 2005, plans were developed to rehabilitate the back levee to the design standard elevation of ten feet NAVD using federal funds (Figure 9). Prior to Hurricane Katrina, the elevation of this levee was approximately six feet NAVD. It was determined that the 0.8 miles of sheetpile wall at the western end of the reach in Orleans Parish had been weakened by the storm surge. The sheetpile was reset back into a vertical position, and a ground level berm ten feet wide was built along the floodside of the wall to strengthen the foundation. Permanent repairs may be needed in the future and will be addressed in future environmental documents prior to any Federal work being completed. A total of 16.9 miles of earthen levee is being rehabilitated to the design elevation of ten feet NAVD. Crews are clearing and grubbing the levee, re-sloping the sides, and raising the elevation to meet the design standards. Borrow for this work came from several borrow sites approved as a part of the TF Guardian work.

Figure 9
Location Map for the St. Bernard Parish Back Levee Project

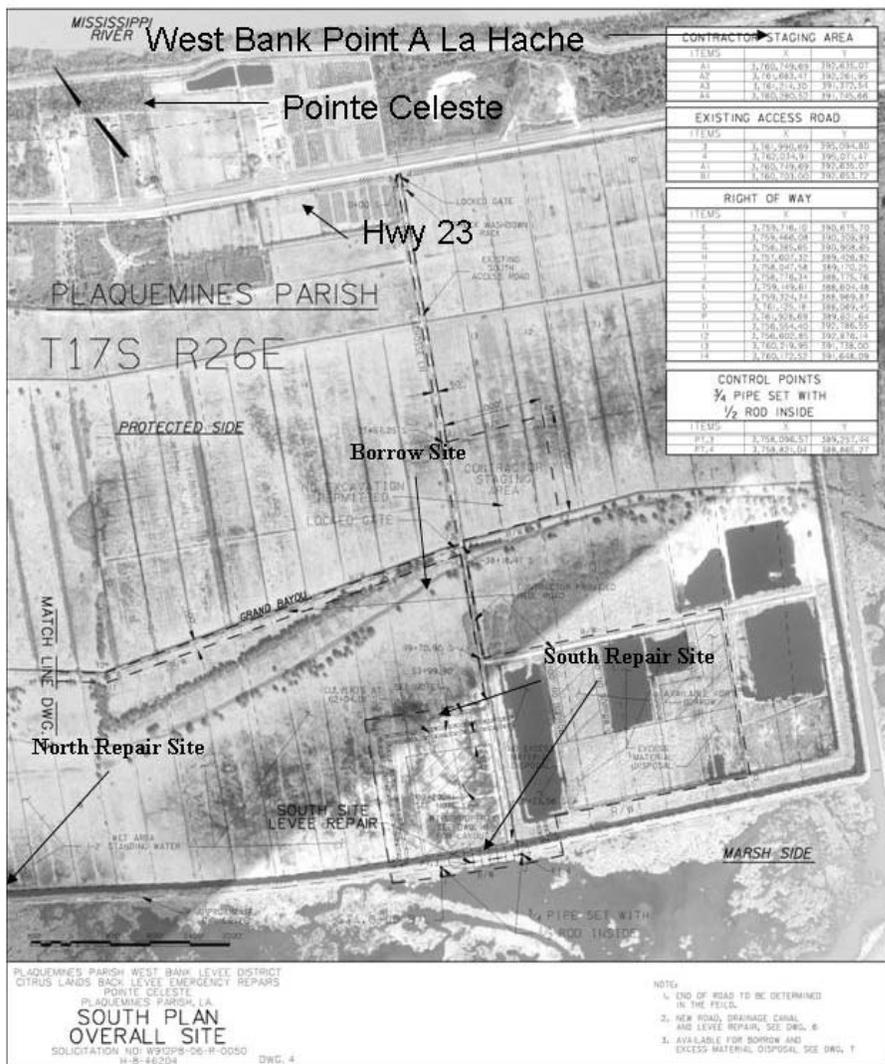


Citrus Lands Levee, Plaquemines Parish

The Citrus Lands Levee on the west side of the Mississippi River in Plaquemines Parish breached in two locations as Hurricane Katrina passed through the area (Figure 10). Flooding

occurred along Highway 23 and in residences and businesses in the West Pointe a la Hache area. Emergency repairs were completed by air dropping sandbags into the breaches. After sandbags had sealed off most of the flows, a contractor placed rock into the breaches to stop seepage. More permanent repairs are being completed using clay from a local borrow source. As a result of the permanent repairs at the northern breach site, 2,000 feet of the interior drainage canal is being moved to allow for a larger levee footprint. The proximity of a radio tower near the southern breach required that designers reroute the interior drainage canal around the tower pads, adding approximately 4,200 feet to the length of the canal. Much of the new canal work along with the contractor furnished borrow source is being done in an area determined to be wet pasture, and as such mitigation is required. The contractor is constructing a new access road into the tower property and establishing haul roads as needed.

Figure 10
Location Map for the Citrus Lands Levee Repair Project



Braithwaite Breach Repair

As a result of Hurricane Katrina, two breaches occurred in northern stretch of the non-Federal Plaquemines Parish East Bank Back Levee in the vicinity of the towns of Braithwaite and Scarsdale (Figure 11). Emergency work to close the breaches was completed by the Louisiana National Guard and Plaquemines Parish staff. USACE engineers determined that, because of the extent of the damage done to the foundations of the levees in the vicinity of the breaches, the levees could not be rebuilt to hurricane standards without expanding the levee footprint. Plans were made to rebuild approximately 4,000 feet of the levee by placing fill material on the floodside of the existing levee. Figure 12 shows the new cross section for the levee. This work impacts 21.3 acres of fresh intermediate wetlands and will require mitigation. A site visit with USFWS and NMFS staff was conducted on February 22, 2006 to determine the direct impacts this emergency work would have on the environment so that the proper amount and type of mitigation could be determined.

Figure 11
Location Map for the Non-Federal Braithwaite and Scarsdale Levee Repair Project

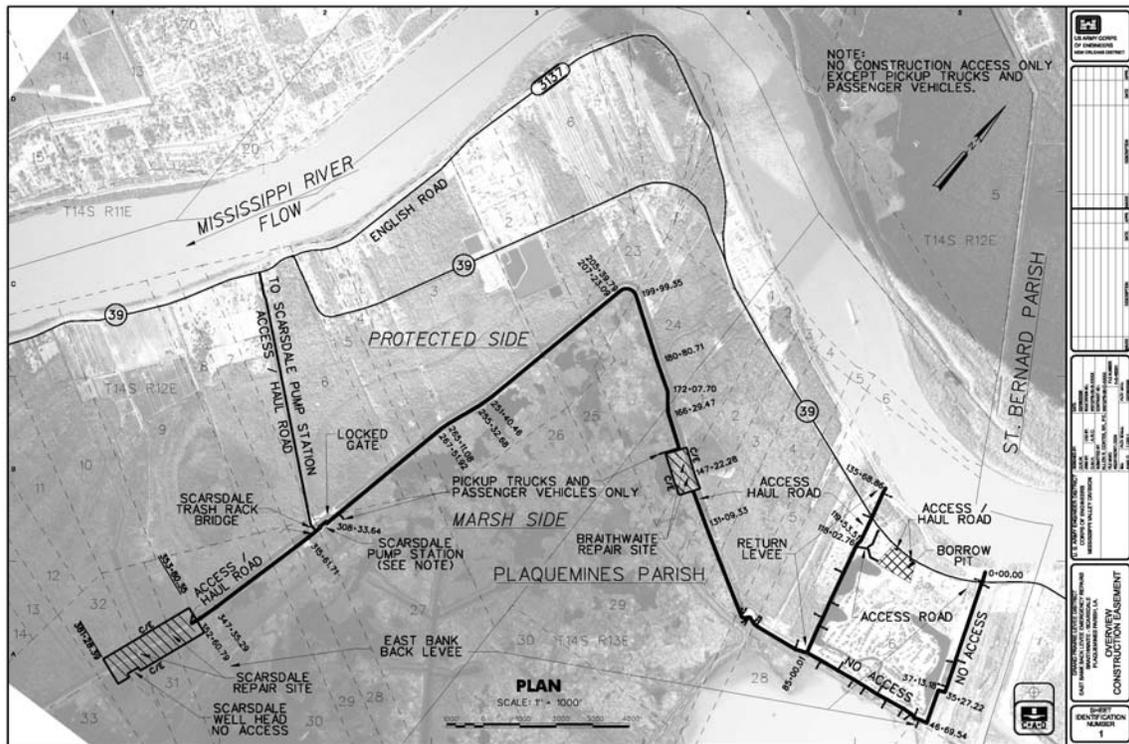
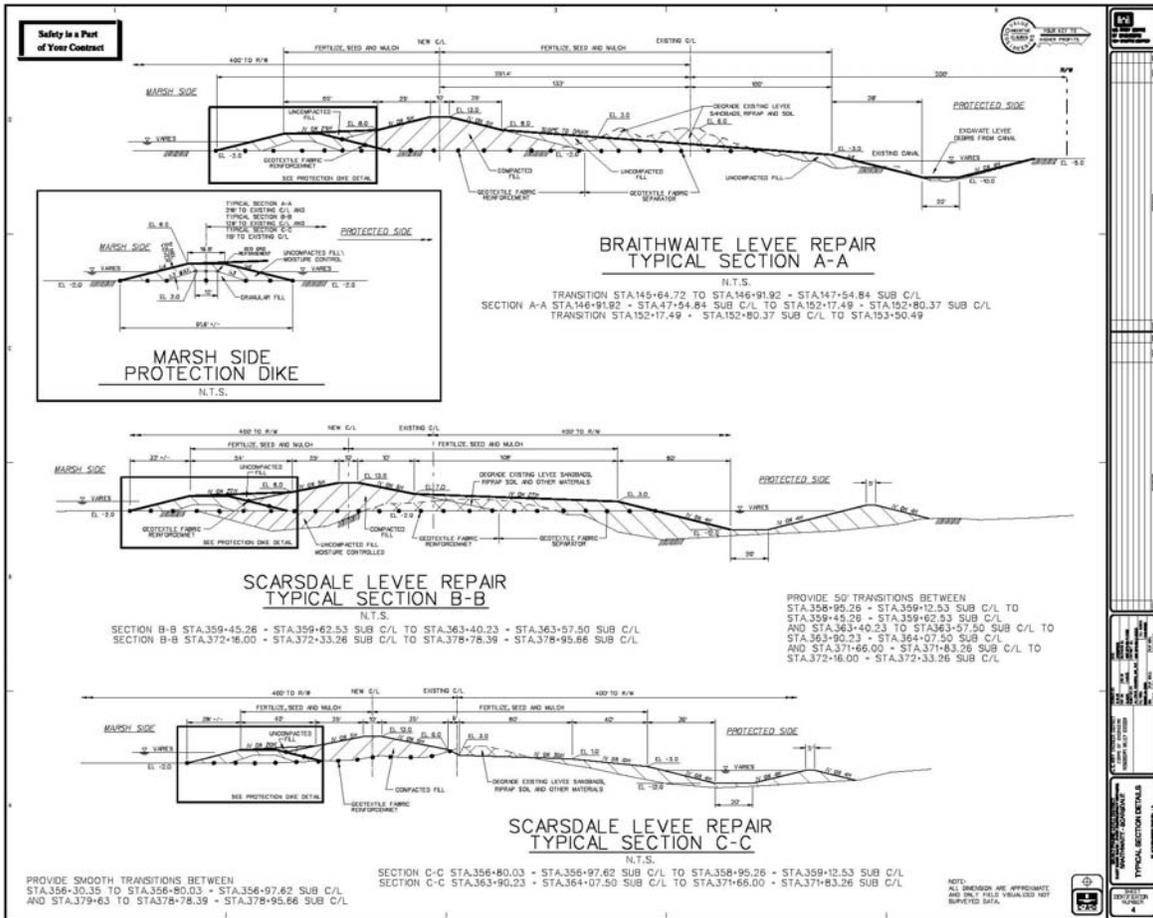


Figure 12
Non-Federal Braithwaite and Scarsdale Levee Repair Project Cross Section



HURRICANE RITA

After Hurricane Rita passed through South Louisiana on September 22, 2005, CEMVN Hired Labor Units were mobilized to five locks (Catfish Bayou, Leland Bowman, Freshwater Bayou, Schooner Bayou, and Calcasieu) to help manually open the gates, place temporary generators, replace electric motors, and complete temporary repairs to buildings on the facilities.

Breaches in levees in Terrebonne Parish and flooding as a result of the Hurricane Rita storm surge required immediate USACE action as explained below. Engineering staff completed site inspections of the levee network in the Hurricane Rita impacted parishes to determine the extent of damages and to provide technical assistance where possible. It was determined that the Federally authorized Larose to Golden Meadow Levee was damaged and would require repair. It was also discovered that, due to overtopping of the Centerville Levee system in St. Mary's Parish, floodwaters had become trapped on the protected side of the levee. Breaches in the levee would be required to drain the waters from the area.

Larose to Golden Meadow Levee

The Hurricane Rita storm surge damaged the Federally authorized Larose to Golden Meadow levee in two areas. The floodside of the south levee and the mitigation levee at the Point Au Chein Wildlife Management Area experienced serious erosion along the berm due to storm surge. Two control structures along the mitigation levee also experienced erosion where the structures tie into the levees.

Repairs to the southern Larose to Golden Meadow levee consist of installing a small sheetpile bulkhead wall, located along the levee toe and fortified with riprap on both sides in the areas scoured by the storm. Repairs to the mitigation levee require reshaping approximately half of the levee and placing graded stone on top of the two control structures to replace materials washed away during the storm. All repairs are within the previously authorized footprint for the project.

Centerville Levee, St. Mary's Parish

After Hurricane Rita passed through the area, floodwaters that had overtopped the Centerville Levee were trapped on the protected side. In order to drain the water, the St. Mary's Parish staff opened up a series of 16 breaches along the levee. Once the water had drained out, the parish staff completed temporary repairs by replacing the material removed to create the breaches. USACE staff were contacted by the parish and provided technical oversight of the repairs. More permanent repairs will be required in the future and will be addressed in future environmental documents as needed.

Emergency Repairs Highway 55 and 56 Levee Terrebonne Parish

The Hurricane Rita storm surge caused 21 breaches in the western levee that parallels Highway 56 in south Terrebonne Parish in the Ward 7 (Chauvin) area. In addition to the breaches on the west side levee, the majority of the Ward 7 levee was severely scoured after being overtopped. On the eastern side of Highway 55 in the Montegut area, the storm surge caused the failure of a sheetpile floodwall. The larger breaches were filled with sandbags dropped by helicopters (civilian and military). Marsh buggies were hired by the parish and the local levee district to fill some of the smaller breaches.

ENVIRONMENTAL SETTING

GENERAL

Hurricanes Katrina and Rita damaged much of southern Louisiana. Much of the flood damage caused by Hurricane Katrina in Louisiana was along the east side of the state in Plaquemines, St. Bernard, Orleans, Jefferson, and St. Tammany Parishes. Due to the extent of flood and wind damage in the impacted area, there have been dramatic shifts in the populations of this area. Prior to Hurricane Katrina, the City of New Orleans had a population of 484,674. In March of 2006, that population was approximately 144,000. Much of the 4,190 square miles of the city is below sea level and is protected by an intricate levee and pump network that was severely impacted by Hurricanes Katrina and Rita. The Mississippi River bisects the city from north to south. A Federal levee system is in place along both sides of the river to protect the city from flooding during high water periods. To the north of the city is Lake Pontchartrain, a 630-square-mile, brackish lake that is an estuary of the Gulf of Mexico. The lake has an average

depth of 12 feet and is approximately 40 miles long (east to west) and 24 miles wide (north to south). The majority of the storm water outfalls for Orleans and Jefferson Parish run into Lake Pontchartrain. The city is bordered on three sides by an extensive marsh system that provides a barrier between the city and the Gulf of Mexico.

Hurricane Rita caused some reflooding in the Ninth Ward and the western section of St. Bernard Parish, but the more substantial damage occurred to western section of southern Louisiana. The USACE completed emergency work in the Hurricane Rita-impacted area as needed to prevent further loss of property and lives.

Louisiana's coastal plain remains the largest expanse of coastal wetlands in the contiguous United States. The coastal wetlands were built by the deltaic processes of the Mississippi River and contain an extraordinary diversity of estuarine habitats that range from narrow natural levee and beach ridges to expanses of forested swamps and fresh, brackish, and saline marshes. Prior to Hurricane Katrina, the U.S. Geological Service (USGS) estimated that the Louisiana coastal area was losing 25 to 35 square miles of habitat per year. The USGS recently estimated that an additional 118 square miles of habitat were lost due to Hurricane Katrina in the southern Louisiana area, east of the Atchafalaya River. This basin is estimated to be 9,742 square miles in size, which means that Hurricane Katrina caused approximately one percent of the habitat to shift from marsh to open water. The majority of the marsh lost was previously classified as fresh to intermediate marsh. Further study will be required to determine the long-term impacts to the coastal area of Louisiana as a result of Hurricanes Katrina and Rita.

The wetlands support various functions and values, including commercial fisheries; harvesting of furbearers and alligators; recreational fishing and hunting; ecotourism; critical migratory butterfly, songbird, and waterfowl habitat; endangered and threatened species habitat; water quality improvement; navigation and waterborne commerce; flood control; and buffering protection from storms.

Coastal Louisiana is important to the local and national economies because it is home to major oil and gas production, it is the busiest port complex in the nation, and it supports large international seafood and recreation industries. The infrastructure that supports these activities is interwoven with the unique ecosystem created by the Mississippi River in south Louisiana.

SIGNIFICANT RESOURCES

This section contains a description of significant resources and the impacts of the above described emergency action on these resources. The significant resources 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. Table 3 provides an overview of the USACE actions and the significant resources in the area of those actions.

**Table 3
Significant Resources**

Project	Parish	Water Quality			Wetlands	Fisheries	Wildlife	T&E	EFH	Air Quality	Non-Wet/ Uplands	Prime/ Unique Farmland
		Lake Pontchartrain	Mississippi River	Other								
Unwatering Orleans East Bank	Orleans	T	N/A	N/A	N/A	T	T	1, 2, 3, and 6	T	T	T	N/A
Unwatering Orleans East	Orleans	T	N/A	T	N/A	T	T	1, 2, 3, and 6	T	T	T	N/A
Unwatering IHNC/ Ninth Ward	Orleans	N/A	N/A	T	T	T	T	N/A	T	T	T	N/A
Unwatering St. Bernard Parish	St. Bernard	N/A	N/A	T	T	T	T	1 and 6	T	T	T	N/A
Unwatering Plaquemines Parish	Plaquemines	N/A	T	T	T	T	T	1, 4, and 6	T	T	T	N/A
TF Guardian Orleans East Bank	Orleans	N/A	N/A	N/A	N/A	N/A	T	1 and 6	N/A	T	T	N/A
TF Guardian Orleans East	Orleans	N/A	N/A	N/A	N/A	N/A	T	1 and 6	N/A	T	T	N/A
TF Guardian St. Bernard Parish	St. Bernard	T	N/A	N/A	N/A	N/A	T	1 and 6	N/A	T	T	N/A
TF Guardian IHNC	Orleans	N/A	N/A	N/A	N/A	N/A		1 and 6	N/A		T	N/A
TF Guardian Plaquemines Parish	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	1 and 6	N/A	T	T	N/A
TF Guardian Borrow Sites Bienvenue/Dupre	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	NO
TF Guardian Borrow Sites Bohemia	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites Bonnet Carre'	St. Charles	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	NO

Project	Parish	Water Quality			Wetlands	Fisheries	Wildlife	T&E	EFH	Air Quality	Non-Wet/ Uplands	Prime/ Unique Farmland
		Lake Pontchartrain	Mississippi River	Other								
TF Guardian Borrow Sites Buras	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites Creedmore Farm	ST. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites Fort Jackson	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites Homeplace	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites Myrtle Grove	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites New Orleans East Site 3	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	NO
TF Guardian Borrow Sites Port Sulphur	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites Triumph East	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES
TF Guardian Borrow Sites Verret/Dupre	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	NO
TF Guardian Borrow Sites Walker Road	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	YES

Project	Parish	Water Quality			Wetlands	Fisheries	Wildlife	T&E	EFH	Air Quality	Non-Wet/ Uplands	Prime/ Unique Farmland
		Lake Pontchartrain	Mississippi River	Other								
TF Guardian Borrow Sites Whisperwood	St. Tammany	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	YES	NO
TF Guardian Borrow Sites Creedmore Expansion	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Old Homeplace	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Homeplace West	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites IHNC Bypass Channel	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Maynard	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Michoud Adjacent	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Meraux	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites New Orleans East Site 1	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A

Project	Parish	Water Quality			Wetlands	Fisheries	Wildlife	T&E	EFH	Air Quality	Non-Wet/ Uplands	Prime/ Unique Farmland
		Lake Pontchartrain	Mississippi River	Other								
TF Guardian Borrow Sites New Orleans East Site 2	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites New Orleans East Site 4	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites East Paris Road Bridge	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Point A La Hache	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Port of St. Bernard	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Poydras	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Triumph	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Toca	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites Woodlands Plantation	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A

Project	Parish	Water Quality			Wetlands	Fisheries	Wildlife	T&E	EFH	Air Quality	Non-Wet/ Uplands	Prime/ Unique Farmland
		Lake Pontchartrain	Mississippi River	Other								
TF Guardian Borrow Sites Reggio	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	NO
TF Guardian Borrow Sites Ski Lake	St. Tammany	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site C	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site D	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site E	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site G	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Sites H&I	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site J	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site K	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site M	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A

Project	Parish	Water Quality			Wetlands	Fisheries	Wildlife	T&E	EFH	Air Quality	Non-Wet/ Uplands	Prime/ Unique Farmland
		Lake Pontchartrain	Mississippi River	Other								
TF Guardian Borrow Sites St. Bernard Site N	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site O	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site P	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Borrow Sites St. Bernard Site Q	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Pump Station Rehabilitation Orleans Parish	Orleans	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Pump Station Rehabilitation Jefferson Parish	Jefferson	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Pump Station Rehabilitation St. Bernard Parish	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
TF Guardian Pump Station Rehabilitation Plaquemines Parish	Plaquemines	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	N/A	N/A
Grand Isle Dune Rehabilitation	Jefferson	N/A	N/A	N/A	N/A	N/A	T	5 and 6	N/A	T	T	N/A
Larose to Golden Meadow	Lafourche	N/A	N/A	N/A	N/A	N/A	T	6	T	T	T	N/A

Project	Parish	Water Quality			Wetlands	Fisheries	Wildlife	T&E	EFH	Air Quality	Non-Wet/ Uplands	Prime/ Unique Farmland
		Lake Pontchartrain	Mississippi River	Other								
Non-Federal St. Bernard Back Levee	St. Bernard	N/A	N/A	N/A	N/A	N/A	T	1	N/A	T	N/A	N/A
Non-Federal Plaquemines Parish East Bank Back Levee	Plaquemines	N/A	N/A	T	T	T	T	6	T	T	T	N/A
Non-Federal Citrus Lands Levee	Plaquemines	N/A	N/A	N/A	T	N/A	T	6	T	T	N/A	YES
Hurricane Rita Federal Levee St. Mary's Parish	St. Mary	N/A	N/A	N/A	N/A	N/A	T	N/A	N/A	T	T	N/A
Hurricane Rita Dredging of Baptiste	Plaquemines	N/A	N/A	T	T	T	T	6	T	T	N/A	N/A
Hurricane Rita Terrebonne Parish Breach Repairs	Terrebonne	N/A	N/A	N/A	N/A	N/A	T	N/A	T	T	N/A	N/A

Items marked as N/A will not be addressed further in this report.

T - Temporary Impacts Only

N/A - Not Applicable

N/S - No Significant Impacts

M - Mitigation Required

1 T&E Bald Eagle

2 T&E Manatee

3. T&E Gulf of Mexico Sturgeon

4. T&E Pallid Sturgeon

5 T&E Piping Plover

6 T&E Brown Pelican

WATER QUALITY

Significance

Lake Pontchartrain and the Mississippi River are significant resources because they provide habitat for various species of wildlife, finfish, and shellfish. The Mississippi River is also a major source of commerce for the entire nation. The Mississippi River is a major source of potable water for the New Orleans Metropolitan area and other communities up and down stream. The Clean Water Act of 1977, as amended, governs much of the use of both of these resources.

Discussion of Impacts

During the unwatering of the New Orleans Metropolitan Area, the completion of levee rehabilitation work under TF Guardian, the completion of rehabilitation of non-Federal levees and pump stations, and the emergency dredging of Baptiste Collette, the water quality in the state of Louisiana was impacted. Impacts were temporary in nature. The lakes and river in the immediate vicinity of the New Orleans Metropolitan Area are Lake Pontchartrain and the Mississippi River. These two water bodies were the primary recipients of the floodwaters that were pumped out of the metropolitan area during the unwatering mission.

LAKE PONTCHARTRAIN

Discussion of Impacts

Unwatering

When the levees along the shoreline of Lake Pontchartrain were overcome, billions of gallons of water and tons of sediment flooded into the New Orleans Metropolitan Area. Unwatering the area required pumping approximately 690,500 acre-feet (250 billion gallons) of water and tons of sediment into the lake from multiple locations along the lakefront. Floodwaters had been in contact with sewage and hydrocarbon products including gasoline and oil, paints, cleaning products, and industrial chemicals. During the unwatering process, the EPA, U.S. Geological Survey (USGS) and the LDEQ conducted daily testing at 22 sites in the impacted area. Fecal-indicator bacteria (*Escherichia coli*, enterococci, and fecal coliform) were found in concentrations ranging from the detection limit to 36,000 colony-forming units per 100 milliliters. Since the majority of the floodwaters were pumped out into Lake Pontchartrain, bacteria levels in the lake increased. After just a few weeks, tests of the bacteria in the lake returned to pre Hurricane Katrina levels, and the state of Louisiana authorized the commercial harvesting of fish, shrimp, and other species of commercial importance.

As explained previously, both EPA and LDEQ issued written guidance/waivers to the USACE in regards to the unwatering mission. The USACE took reasonable actions to protect the waters of the United States by placing sorbent booms, hard debris booms, and aerators at the major outflow canals during the unwatering mission. The booms were placed by the USCG in cooperation with the USACE.

The USACE, EPA, and LDEQ unwatering plan also called for the placement of aerators and oil sorbent booms at the outfalls sites where pumping was to take place. Plans were developed and implemented with the USCG to have USCG contractors deploy oil absorbent booms and debris screens at the outfall canals as pumps were brought on line. The USCG and its

contractors placed the booms quickly and efficiently to prevent the spread of pollutants. Aerators and absorbent booms were placed in the outflows canals at the 17th Street Canal, Orleans Avenue Canal, London Avenue Canal, Jahnke Canal, St. Charles Canal, and Citrus Canal.

On September 17, 2005, the first of 27 aerators was placed into the 17th Street Canal to help maintain dissolved oxygen levels in an acceptable range. Over the next several weeks, additional aerators were placed in the Orleans Avenue Canal, London Avenue Canal, Jahnke Canal, St. Charles Canal, and Citrus Canal. The aerators were operated until October 28, 2005, when they were removed because discharge responsibilities were returned to the New Orleans Sewerage and Water Board. See Appendix C for the deployment dates and the locations of the aerators.

Based upon testing completed by the EPA initial dissolved oxygen (DO) concentrations in the canals confirmed the anoxic nature of Orleans Parish floodwaters. Due to the depths of the floodwaters in various locations throughout Orleans Parish and ambient air temperatures during September, there was limited re-aeration potential for the floodwaters. In some locations, DO concentrations were less than 1.0 mg/l before initial pumping operations began and prior to the deployment of the aerators in the canals. The physical pumping of floodwaters likely re-aerated the floodwaters for an appreciable distance downstream in the canals. Applicable Louisiana water quality criteria for estuarine aquatic habitats indicate that a concentration of 4.0 mg/l or greater is necessary to maintain the designated use of fish and wildlife propagation in Lake Pontchartrain. During the time the aerators were operated, only one sample collected from the Jahnke Canal outfall on October 20, 2005 was below the State of Louisiana's water quality criteria for the protection of fish and wildlife propagation.

The USACE, in coordination with the EPA, set up a water quality-sampling regime to investigate the waters being pumped out of the New Orleans area after the majority of the floodwaters were removed. A USACE report entitled *Summary Report on Water Quality Sampling and Analysis for Water Entering Lake Pontchartrain During Unwatering of New Orleans, Louisiana* was written in April 2006 (Appendix E). Between the dates of October 6 and October 31, 2005, a USACE contractor conducted water quality sampling at nine pump outfalls in the New Orleans Metropolitan Area. A total of 17 sample sites were setup and sampled daily. Samples were analyzed and quantified for five parameters: total organic carbon, chemical oxygen demand, pH, oil and grease, and total suspended solids. EPA proposed site- and event-specific guidelines for the parameters in the pumped floodwaters: a pH range of 6.0 to 9.0 Standard Units (SU); a Chemical Oxygen Demand (COD) concentration not to exceed 100 mg/l; a Total Organic Carbon (TOC) concentration not to exceed 50 mg/l; a range for Total Suspended Solids not to exceed 85 mg/l to 135 mg/l; and an oil and grease concentration not to exceed 15 mg/l. These proposed guidelines closely approximated existing stormwater permit limitations routinely imposed by the LDEQ.

Overall, chemical oxygen demand and total suspended solids were the only parameters that exceeded the EPA's proposed benchmarks during the 26-day sampling program, except for one occurrence of pH and one occurrence of oil and grease. There were six occurrences of chemical oxygen demand and six occurrences of total suspended solids exceeding their respective

benchmarks during the sampling cycle. Oil and grease were not detected in the majority of the samples (i.e., they were below the laboratory reporting limit of 5 mg/L) and exceeded the EPA benchmarks in one sample. There were no occurrences of total organic carbon exceeding the proposed benchmark during the sampling period.

Therefore, relative to the proposed EPA benchmarks, the data for the floodwater pumped into Lake Pontchartrain during the unwatering operation in October 2006 were acceptable and did not cause a reason for concern during the pumping operations. This data analysis and summary does not predict long-term effects; those analyses will be completed by the appropriate Federal and state agencies.

MISSISSIPPI RIVER

Discussion of Impacts

Unwatering

The storm surge from Hurricane Katrina caused a significant rise in the lower Mississippi River. In Plaquemines Parish, the levees along the Mississippi River were overtopped, and water and sediment flowed into much of the parish. During the unwatering of the area, floodwaters were pumped into the river from multiple temporary locations along the river. Floodwaters had been in contact with sewage and hydrocarbon products including gasoline and oil, paints, cleaning products, and industrial chemicals. Due to the high flow rate of the Mississippi River, dilution of any chemicals and bacteria in the floodwaters occurred very quickly. Temporary impacts to the water quality occurred as a result of the mixing of the floodwaters with the contaminants described previously. The EPA and LDEQ issued written guidance/waivers to the USACE in regards to the unwatering mission and the USACE took reasonable actions to protect the waters of the United States by placing sorbent booms and hard debris booms at pumping locations during the unwatering mission. The booms were placed by the USCG in cooperation with the USACE.

OTHER

Discussion of Impacts

Pumping out of the New Orleans Metropolitan Area occurred into the marsh lands adjacent to some of the levees in St. Bernard and Plaquemines Parishes. Temporary water quality impacts did occur as a result of the floodwaters being pumped out. Floodwaters had been in contact with sewage and hydrocarbon products including gasoline and oil, paints, cleaning products, and industrial chemicals. Dilution of any chemicals and bacteria in the floodwaters occurred quickly as the water in marsh systems was flushed during tidal interchanges. The EPA and LDEQ issued written guidance/waivers to the USACE in regards to the unwatering mission and the USACE took reasonable actions to protect the waters of the United States by placing sorbent booms and hard debris booms at pumping locations during the unwatering mission. The booms were placed by the USCG in cooperation with the USACE.

TF Guardian

St. Bernard Parish

Temporary impacts to water quality along the MRGO in St. Bernard parish occurred during the rehabilitation of the federal levee along the west bank of the channel. Impacts occurred as a

result of the off loading of borrow material from barges grounded on the west bank. Turbidity increases due to prop wash was the primary reason for the impacts. Once construction in the area was completed turbidity returned to normal levels.

On April 1, 2006, a USACE contractor working on the MRGO levee at Bayou Bienvenue ruptured a fuel tank on a vehicle. Approximately 100 gallons of diesel fuel was spilled into Bayou Bienvenue on an incoming tide. Contractor notified the USCG National Spill Hot Line and the USACE on-site inspector. Because of the velocity of the current at the time of the spill there was little that could be done in a timely manner to contain the fuel. A USACE HTRW Specialist inspected the area and determined that the impacts to the environment were minimal. The specialist further determined that because of the refined nature of the spilled material the material would volatilize and dissipate before any long term impacts to the environment occurred. The spill did cause temporary impacts to the environment and some fish and wildlife may have left the area until the material dissipated.

Plaquemines Parish

The USACE completed a series of sediment samples in Plaquemines Parish between October 24, 2005 and November 22, 2005 after it was observed that some of the canals had turned red. A USACE contractor collected water samples twice a week from 18 sites in the parish near existing pump stations. Samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls, target analyte list metals, total petroleum hydrocarbons (gasoline (THP-G), diesel (TPH-D), and oil (TPH-O)) ranges, total suspended solids (TSS), total organic carbon, ammonia, biological oxygen demand (BOD), chemical oxygen demand (COD), oil and grease, and pH.

The analytical results indicated that pesticides, herbicides, and TPH-G were not present in detectable quantities. Various VOCs and SVOCs were estimated at concentrations above their method detection limits but below their reporting limits. TPH-D was consistently present in low levels. TPH-O was detected at some locations, but typically only during the first sampling event. All analyzed metals were detected at some point with the exception of beryllium. Silver and zinc were the only metals detected with concentrations above the benchmarks, and cadmium was detected above the J-flagged concentrations level. Ammonia, COD, and cyanide were consistently above applicable Federal and state water quality criteria, and TSS, BOD, oil and grease, and pH were each detected above benchmarks at some point in the testing. Based upon these analytical results, it was concluded that there were no major concerns with the contaminants in the water and that pumping operations could continue with no treatment required. Please refer to Appendix B for more detailed information on this matter.

WETLANDS

Significance

Wetlands are a significant resource because they provide necessary habitat for various species of plants, fish, and wildlife; they serve as ground water recharge areas; they provide storage areas for storm and floodwaters; they serve as natural water filtration areas; they provide protection from wave action, erosion, and storm damage; and they provide various consumptive and non-consumptive recreational opportunities. Much of the use of this resource is governed by

the Clean Water Act of 1977, as amended; Executive Order 11990 of 1977, Protection of Wetlands; the Coastal Zone Management Act of 1972, as amended; and the Estuary Protection Act of 1968.

Discussion of Impacts

Unwatering

During the unwatering of the metropolitan area, water and sediment was pumped into the Central marsh in St. Bernard Parish and into some of the marsh areas adjacent to the east and west bank back levees of Plaquemines Parish. Temporary impacts to the marsh did occur as stated above in the water quality section. Because of the Murphy Oil spill in the Chalmette area, there were reports of a small amount of oil material being pumped in the Central marsh area via Pump Station 4. USACE biologists inspected the area of marsh directly floodside of the pump station and did not locate any oil material or signs of contamination.

TF Guardian

A total of 95.7 acres of wetlands have been impacted as a result of the emergency actions taken by TF Guardian. Unavoidable impacts have occurred to wetlands in St. Bernard and Plaquemines Parishes as a result of the construction of borrow pits. Impacts consisted of the loss of 58.0 acres of forested wetlands, 21.3 acres of marsh, and 16.4 acres of open wetlands (wet pastureland). The borrow team looked at a total of 63 borrow sites (1,712 acres) and were able to limit the wetland impacts to those listed above. Mitigation will be performed as appropriate for the unavoidable impacts that have occurred. See mitigation section for further information.

Non-Federal Plaquemines Parish East Bank Back Levee

The repairs of the two breaches along the Plaquemines Parish Back Levee directly impacted 21.3 acres of marsh when the foundation of the levees was shifted floodside. The impacted area was approximately 80% open water and 20% marsh. The marsh could be categorized as intermediate fresh water with small vegetative areas. Mitigation will be performed as appropriate for the unavoidable impacts that have occurred. See mitigation section for further information.

Coastal Zone Management

The CEMVN determined that the emergency activities described in this report were consistent with the Coastal Zone Management Act Of 1996 so long as mitigation for the unavoidable wetland impacts is completed as described in the mitigation section of this assessment. Extensive coordination with the Louisiana Department of Natural Resources, Coastal Management Division (CMD) occurred throughout the unwatering and levee rebuilding activities described in this assessment. A Coastal Zone Management Consistency Determination was submitted to the CMD on April 5, 2006. The CMD did not formally respond to this review, and as such, after a 60 day review period has expired concurrence is assumed.

FISHERIES

Significance

Fisheries are a significant resource 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 species are important commercial resources. The Fish and Wildlife

Coordination Act of 1958, as amended, and the Migratory Bird Treaty Act of 1918 govern the use of this resource.

Discussion of Impacts

Fish species associated with estuarine and saline habitats include bay anchovy, red drum, black drum, sea trout, sea catfish, gaff top sail catfish, Atlantic threadfin, striped mullet, menhaden, croaker, flounder, and spot. Shellfish associated with these habitats are blue crabs, brown and white shrimp, and oysters. Predominant freshwater fishes that might inhabit the project area during periods of suitable water quality include largemouth bass, white crappie, black crappie, bluegill, warmouth, yellow bass, channel catfish, blue catfish, flathead catfish, yellow bullhead, carp, gars, bowfin, freshwater drum, buffalo, gizzard shad, gars, carp, yellow bullhead, and bowfin.

Unwatering

Pumping floodwaters out of the metropolitan area temporary impacted the fish found in the immediate area of the outfalls. Floodwaters contained bacteria and a variety of chemical substances. Because of the high bacteria concentrations and decomposition of organic matter captured in the floodwaters, low dissolved oxygen levels were common. Aerators were set at six of the outflow areas to raise the oxygen levels as much as possible and to help volatilize any hydrocarbon (gasoline, oils, etc) that might be floating on the surface of the water. Floating sorbent booms were deployed at all of the major outflows to trap as much of the floating hydrocarbon as possible. Booms were maintained on a regular basis by the USCG and its contractors. Salinities in the area of the outfalls were affected during pumping operations. Based upon reports, there were only a few minor fish kills that were observed by on-scene personnel. Any fish in the outflow areas on Lake Pontchartrain, Mississippi River, and the wetlands areas in St. Bernard and Plaquemines parishes that received floodwaters would have moved out of the impact zone during the unwatering event. Impacts to the local fish populations would have been temporary in nature.

Baptiste Collette

The dredging of Baptiste Collette allowed vessels utilizing the GIWW an alternative travel route to circumnavigate the New Orleans area while the GIWW was closed to navigation in the vicinity of the IHNC. Fish in the area of the dredging would have experienced temporary impacts due to increase in turbidity and noise. Fish in the area would have temporarily left the impacted area during the dredging, but would be expected to return once work was complete.

WILDLIFE

Significance

Wildlife is a significant resource because it is a critical element of many valuable aquatic and terrestrial habitats; it is an indicator of the health of various aquatic and terrestrial habitats; and many species are important commercial resources. The Fish and Wildlife Coordination Act of 1958, as amended, and the Migratory Bird Treaty Act of 1918 govern the use of this resource.

Discussion of Impacts

Unwatering

Hurricane Katrina impacted the local indigenous wildlife populations by blowing many of the birds out of the area and drowning wildlife trapped in the floodwaters. Some wildlife was able to safely reach protected areas and ride out the storm. Because of this, little to no wildlife was seen during the unwatering of the metropolitan area. Packs of domestic dogs were observed in many parts of the city and at some of the work locations. Impacts to the local wildlife as a result of the unwatering of the area were temporary in nature.

TF Guardian, Grand Isle, Larose to Golden Meadow, and Non-Federal Work

Hurricane Katrina impacted the local indigenous wildlife populations by blowing many of the birds out of the area and drowning wildlife trapped in the floodwaters. Some wildlife was able to safely reach protected areas and ride out the storm. Because of this, smaller than expected populations of wildlife species have been seen during the completion of the rehabilitation work. It was expected that most wildlife in the area of the construction work, with the exception of the TF Guardian borrow areas, would temporarily leave the area. It is expected that, as construction is completed and vegetation returns to the construction sites, wildlife will re-colonize the areas.

Wildlife found in the new borrow areas have been permanently displaced from the area. Many of the areas will become open water pits once construction has been completed. At that time, some aquatic vegetation may colonize the shallow littoral edge of the pits, and wildlife (otters, alligators, and wading birds and ducks) adapted to an aquatic environment would be expected to expand their range into the new waterbodies. Any pits that remain dry would be expected to be colonized by vegetation and woody plants, which will attract a variety of wildlife including birds, reptiles, amphibians, and small mammals.

ENDANGERED OR THREATENED SPECIES

Significance

Endangered (E) or threatened (T) species are a significant resource because of a public desire to protect them and their habitats. The Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972; and the Bald Eagle Protection Act of 1940 govern the actions of individuals or groups in the areas near a T&E resource.

Discussion of Impacts

Unwatering

During the unwatering of the New Orleans Metropolitan Area, floodwaters were pumped out in Lake Pontchartrain, Mississippi River, and wetlands of St. Bernard and Plaquemines parishes. Floodwaters would have temporary impacts on a variety of T&E species that have been found in the New Orleans Metropolitan Area historically. Portions of Lake Pontchartrain have been identified as habitat for the West Indian Manatee (*Trichechus manatus*) and the Gulf of Mexico sturgeon (*Acipenser oxyrinchus desotoi*). In the Mississippi River the pallid sturgeon (*Scaphirhynchus albus*) may be found. Additionally, the bald eagle (*Haliaeetus leucocephalus*) and the brown pelican (*Pelecanus occidentalis*) are occasional feeders in the waters of Lake Pontchartrain, the Mississippi River, and marshes in the vicinity of New Orleans. As such, any T&E species in the area may have temporarily expanded their forage range further away from the areas where floodwaters were being pumped. USACE biologists have determined that no significant impacts to T&E species of their critical habitat occurred as a result of the emergency

actions taken. As stated previously in the Description of Action section, CEMVN Environmental staff established contact with the USFWS Emergency liaison on September 4, 2005. Coordination between CEMVN Environmental staff and the USFWS liaison occurred frequently to ensure that any potential T&E issues were addressed by the USACE during the unwatering mission.

TF Guardian

TF Guardian's mission is to rehabilitate/repair the hurricane protection network in the New Orleans Metropolitan Area prior to the start of the 2006 hurricane season on June 1, 2006. Work consists of digging up borrow material, reshaping earthen levees, replacing sheetpiling where needed, seeding disturbed areas, and repairing existing pump stations. As a result of these activities, temporary impacts may have occurred to T&E species that are normally found in the areas where this work is being done. T&E species that may have been temporarily impacted by the TF Guardian activities are the bald eagle, and the brown pelican. USACE biologists have determined that no significant impacts to T&E species or their critical habitat occurred as a result of the emergency actions taken. CEMVN Environmental staff assigned to TF Guardian routinely coordinated the actions being taken by TF Guardian with the USFWS liaison to ensure that no T&E species or their critical habitats were significantly impacted as a result of the actions taken.

Grand Isle

Hurricane Katrina created four breaches in the Federal dune/levee system on Grand Isle. Repairs were made as explained previously using sand from a local source. The Grand Isle gulf-side beach was listed as critical habitat for the Piping plover (*Charadrius melodus*) by the USFWS in July 2001. Piping plovers are known to over winter in Louisiana, appearing as early as July and leaving as late as April. Piping Plovers have not been observed on Grand Isle in recent years. Additionally, Brown Pelicans have been historically observed feeding in the waters adjacent to the island. USACE biologists have determined that no significant impacts to T&E species or their critical habitat occurred as a result of the emergency actions taken. CEMVN Environmental staff assigned to the Grand Isle Project routinely coordinated the actions being taken with the USFWS liaison to ensure that no T&E species or their critical habitat was significantly impacted as a result of the actions taken.

Non-Federal St. Bernard Parish Back Levee

Work along the St. Bernard Back Levee included clearing and grubbing the surface of the levee, resloping the sides and crown areas, and hauling in new material as needed. In cooperation with the USFWS, a review of T&E records was made, and an active bald eagle's nest was identified within 1,500 feet from one of the repair sites. A USACE biologist visited the area and confirmed that the nest had survived the storm and was still active. Because of the emergency conditions under which the USACE was operating, the USFWS staff made a recommendation (e-mail January 25, 2006) that the construction activities in the area be limited to one event and that the duration of the construction in the area be as short as possible. The USACE staff adopted the USFWS recommendations as requested to minimize any disturbance in the area of the nest.

Non-Federal Citrus Lands Levee

Work along the Citrus Lands levee in southern Plaquemines parish included grubbing reconstructing the existing levee on the protected side of the embankment and rerouting the interior drainage canal around a radio tower facility. Temporary impacts to any T&E species (bald eagles or brown pelicans) that may have been in the area at the time of construction may have occurred. Once construction was completed in this area it is expected that any eagles or pelicans in the area would resume feeding in the disturbed area again if that was their practice. CEMVN Environmental staff assigned to Citrus Lands Levee Project coordinated the actions being taken with the USFWS liaison to ensure that no T&E species or their critical habitat was significantly impacted as a result of the actions taken.

Terrebonne and St. Mary's Parishes Flood Fight

The flood fight in Terrebonne parish consisted of dropping sandbags into breaches caused by Hurricane Rita storm surge and operating temporary pumps to remove floodwaters. In St. Mary parish the USACE coordinated with parish staff the opening of breaches in the Federal levee system. Temporary impacts to any T&E species (bald eagles or brown pelicans) in the area may have occurred during the time work was going on. Impacts would have been short term in nature and it is expected that any animals affected returned to the area once the flood fight was completed.

T&E Species Potentially Found in the Project Area

West Indian Manatee

West Indian manatees are large, gray aquatic mammals also known as sea cows. The average adult manatee is about 9.8 feet long and weighs between 800-1,200 pounds. Manatees can be found in shallow, slow-moving rivers, estuaries, salt-water bays, canals, and coastal areas. Manatees are completely herbivorous on aquatic plants and can consume 10-15 percent of their body weight daily. West Indian manatees have no natural enemies, and it is believed that they can live 60 years or more. Manatees concentrate in Florida in the winter, but can be found in the summer months as far west as Texas and as far north as Virginia. West Indian manatees occasionally enter Lakes Pontchartrain and Maurepas and associated coastal waters and streams during the summer months (June through September). Manatees have been reported in the Amite, Blind, Tchefuncte, and Tickfaw Rivers and in canals within the adjacent coastal marshes of Louisiana. During the unwatering of the New Orleans Metropolitan Area, any manatees that were in the Lake Pontchartrain area may have experienced temporary impacts due to the quantity and quality of the floodwaters pumped out of the city. If manatees were present in the lake during the unwatering event, they would have moved to other areas of the lake (western side) where less floodwater were present or have left the lake entirely for better forage habitat to the east of Louisiana.

Gulf of Mexico Sturgeon

The Gulf of Mexico sturgeon, also know as the Gulf sturgeon was listed as a threatened species in 1991. A subspecies of the Atlantic sturgeon, Gulf sturgeon are found along the Gulf of Mexico coast from Florida to the Mississippi River in Louisiana. Sturgeon over winter in estuarine and marine habitats, such as Lake Pontchartrain. They normally show fidelity to a single river system, and movements between rivers are rare. Temporary impacts to Gulf sturgeon may have resulted as a part of the unwatering activities related to the pumping of floodwaters into Lake Pontchartrain. Impacts due to the quantity and quality of the floodwaters

may have caused some sturgeon to seek forage and resting areas in other more undisturbed locations of the lake. It is expected that any sturgeon displaced returned to the area once the unwatering activities ceased.

Pallid Sturgeon

The pallid sturgeon is an endangered fish found in Louisiana in both the Mississippi and Atchafalaya Rivers and possibly in the Red River as well. The pallid sturgeon has adapted to riverine conditions that can be described as large, free-flowing, turbid water with a diverse assemblage of physical habitats that are in a constant state of change. Detailed habitat requirements of this fish are not known, but it is believed to spawn in rivers of Louisiana. Habitat loss through river channelization and dam construction has affected this species throughout its range. Temporary impacts to pallid sturgeon may have resulted as a part of the unwatering activities related to the removal of floodwaters from Plaquemines Parish. Impacts due to the quantity and quality of the floodwaters pumped into the Mississippi River may have caused some sturgeon to seek forage and resting areas in more hospitable locations. It is expected that any sturgeon displaced returned to the area once the unwatering activities ceased.

Brown Pelican

The brown pelican is a year-round resident of Louisiana that typically forages on fishes throughout the project area described previously. This colonial nester has established colonies on Isles Dernieres, Queen Bess Island, Plover Island, Wine Island, and islands in the Chandeleur Island chain. Pelicans change nesting sites as habitat changes occur. Thus, pelicans may occasionally be found nesting on mud lumps at the mouth of South Pass (Mississippi River Delta) and on small islands in St. Bernard Parish. In winter, spring, and summer, nests are built in mangrove trees or other shrubby vegetation, although occasional ground nesting may occur. Pelicans forage primarily in shallow estuarine waters and in ocean waters within 20 miles of shore. Food consists mainly of species of forage fish less than 25 cm in size. Temporary impacts to brown pelicans foraging in the areas during the unwatering of the New Orleans Metropolitan area or near the construction activities listed in this assessment may have occurred due to poor water quality, noise and human activity. Activities associated with the unwatering of the city and the rebuilding of the levees should not have any significant impacts on the brown pelican or any of its nesting areas.

Piping Plover

The plover family (Charadriidae) is wading birds with thick, stubby bills, large eyes, and usually prominent body patterns involving solid areas of white, gray, black, and brown. Their bills are shorter and thicker than those of the sandpipers. Plovers' body shapes are somewhat like gulls, but are smaller in size. For roosting, piping plovers require unvegetated or sparsely vegetated areas. In July of 2001, the USFWS designated specific areas in the United States as critical habitat for wintering piping plovers (Federal Register/Vol. 66, No. 132, 10 July 2001). Piping plover critical habitat is defined by the USFWS as "those elements essential for the primary biological needs of foraging, sheltering, roosting, and the physical features necessary for maintaining the natural processes that support those habitat components. These primary elements are found only in coastal areas with intertidal beaches or flats that are associated with dunes systems." Critical habitat in Louisiana encompasses 24,950 acres along 342.5 miles of shoreline, which is most of the coast of Louisiana including the island of Grand Isle. Grand Isle

falls within Louisiana Critical Habitat Unit #5 (LA-5) that stretches from Timbalier Island to East Grand Terre Island. In LA-5, the area on Grand Isle that is designated critical habitat is described as the gulf shoreline of Grand Isle from the gulf side of the hurricane protection levee to the mean low low water stage (Federal Register/Vol. 66, No. 132, 10 July 2001, p.36127). Piping plovers have not been observed on Grand Isle in recent years. A USACE biologist determined that no significant impacts to the Piping plover or its critical habitat would occur as a result of the actions taken to repair the breaches. Coordination between the USACE and the USFWS in regards to the piping plover has been ongoing for the last three years.

ESSENTIAL FISH HABITAT

Significance

Essential fish habitat (EFH) is a significant resource because it provides protection for those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Coastal wetlands provide nursery and foraging habitat that support economically important marine fishery species such as spotted sea trout, southern flounder, Atlantic croaker, gulf menhaden, striped mullet, and blue crab. Categories of EFH include all estuarine waters and substrates (mud, sand, shell, rock, and associated biological communities), including the sub-tidal vegetation (seagrasses and algae) and adjacent inter-tidal vegetation (marshes and mangroves). The Gulf of Mexico Fishery Management Council, through the generic amendment of the Fishery Management Plans for the Gulf of Mexico, lists the following Federally managed species or species groups as potentially found in coastal Louisiana: brown shrimp, white shrimp, pink shrimp, Gulf stone crab, red drum, gray snapper, and Spanish mackerel. The Magnuson-Stevens Fishery Conservation and Management Act governs the use of this resource.

Discussion of Impacts

Unwatering

The unwatering of the New Orleans Metropolitan Area resulted in floodwaters being pumped out into Lake Pontchartrain, the Mississippi River, the Central Marsh, the GIWW, the IHNC, and the marshes in Plaquemines Parish. The USACE staff determined that temporary impacts to EFH did occur as a result of the USACE unwatering activities. Because these impacts were temporary in nature, no further action is required.

Non-Federal St. Bernard Back Levee

At the western end of the St. Bernard Back Levee is 0.8 miles of steel sheetpile wall that was impacted (leaning) by Hurricane Katrina. Repairs to this site include the straightening of the sheetpile and the addition of a ten-foot wide gravel berm on the floodside of the wall. Habitat on the floodside is mostly shallow open water with a fringe of vegetation along the shoreline. The berm impacts approximately one acre of EFH, but does not have any significant impacts to EFH in the area. The berm will have a shallow slope floodside to allow native vegetation to grow in this area. The establishment of a vegetated edge provides for replacement of the EFH lost and should help to protect the floodside of the berm from future erosion.

Non-Federal Plaquemines Parish East Bank Back Levee Repair

Hurricane Katrina created two breaches in the Plaquemines Parish East Bank Back Levee in the vicinity of Braithwaite and Scarsdale, totaling approximately 4,000 linear feet in size. Under emergency authorization, the USACE is working to repair both of these breaches to the

established hurricane protection standards. Because both of the breaches occurred in the immediate vicinity of the Caernavron Fresh Water Diversion structure, salinities in the area are greatly influenced by the operation of the diversion structure. In previous USACE environmental documents concerning the operation of the diversion, it was discussed that managed species in the immediate vicinity of the diversion would be displaced virtually year-round due to the quantity of fresh water being diverted into the area.

AIR QUALITY

Significance

Air quality is a significant resource because of the public's desire for clean air. The resource is governed by the Clean Air Act of 1963, as amended, and the Louisiana Environmental Quality Act of 1983, as amended.

Discussion of Impacts

All actions taken or presently underway by the USACE as a part of the Hurricane Katrina emergency occurred in parishes currently classified as in attainment of National Ambient Air Quality Standards (NAAQS). USACE personnel have coordinated with the LDEQ, Air Quality Assessment Division staff to ensure that the actions of the USACE were consistent with the air quality standards of the impacted areas. Temporary, de minimus impacts to air quality did occur as a result of actions taken by the USACE when heavy equipment was utilized, pumps were run, and levees were repaired.

NON-WETLAND RESOURCES/UPLAND RESOURCES

Significance

These resources are a significant resource because of the habitat provided for both open and forest-dwelling wildlife and the provision or potential for provision of forest products and human and livestock food products. The Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981; and the Fish and Wildlife Coordination Act of 1958, as amended, govern the use of these resources.

Bottomland hardwood forest is a significant resource because it provides necessary habitat for a variety of species of plants, fish, and wildlife; it often provides a variety of wetland functions and values; it is an important source of lumber and other commercial forest products; and it provides various consumptive and non-consumptive recreational opportunities. Section 906 of the Water Resources Development Act of 1986 and the Fish and Wildlife Coordination Act of 1958, as amended, govern the use of this resource.

Discussion of Impacts

Unwatering

Temporary impacts to upland resources occurred during the unwatering of the flooded areas. Impacts dealt primarily with the moving of equipment via non-traditional paths (off road) and the stockpiling of flood fighting materials. Impacts were short term and are not expected to have any lasting impacts.

TF Guardian

Impacts as a result of TF. Guardian activates have occurred during the execution of the emergency repairs to the levees. Temporary impacts occurred as a result of the staging of construction equipment, the staging areas in support of the construction activities, and vehicle traffic on local roadways. Permanent impacts to some areas used as borrow areas did occur when upland areas, such as pasturelands, cleared urban areas, and forested areas were used for borrow materials. Borrow pits will likely fill with water once construction activities are completed. These impacts are not considered to be significant.

PRIME/UNIQUE FARMLANDS

Significance

These resources are a significant resource because of the habitat provided for both open and forest-dwelling wildlife and the provision or potential for provision of forest products and human and livestock food products. The Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981; and the Fish and Wildlife Coordination Act of 1958, as amended, govern the use of these resources.

Discussion of Impacts

Of the nine borrow sites in Plaquemines Parish and the four sites in St. Bernard Parish that were farmland in the past, all but one are considered Prime and Unique Farmlands by NRCS (Table 3). This designation is primarily based on soils. In Plaquemines Parish, 29,000 acres are farmed, and the borrow sites comprise 2.43 percent of those farmlands. In St. Bernard Parish, 19,734 acres are farmed, and the borrow sites comprise 0.21 percent of the farmlands.

Removing soils from these borrow sites resulted in a permanent loss of Prime and Unique Farmlands. Although the percentages are low (2.43 percent in Plaquemines and 0.21 percent in St. Bernard Parishes), the sites will no longer be available for farming. The borrow areas would most likely fill with water and could potentially be used as ponds for fisheries. These impacts are not considered to be significant.

CULTURAL RESOURCES

SIGNIFICANCE

Cultural resources are a significant resource because of their association or linkage to past events, to historically important persons, and to design and/or construction values and because of their ability to yield important information about prehistory and history. The National Historic Preservation Act of 1966, as amended; the Native American Graves Protection and Repatriation Act of 1990; and the Archeological Resources Protection Act of 1979 govern this resource.

South Louisiana is an area full of prehistoric and historic remains related to lifeways of Native Americans, European settlement, plantation life, and modern agricultural and industrial activities. Many of these resources may have been lost as a result of the devastation caused by Hurricane Katrina. Other of these resources may have faced destruction as a result of the necessary repair activities undertaken by the USACE. The CEMVN has sought to remain in compliance with the National Historic Preservation Act and to fully investigate areas encompassed by any repair efforts undertaken by the USACE.

Following is a brief discussion of project areas included in CEMVN repair efforts. All sites are being coordinated with the Louisiana State Historic Preservation Officer (SHPO). Because of the nature of destruction already present at some of the sites, numerous borrow areas were coordinated from a review of historic and modern maps, a review of past cultural resources studies, and a site visit. No further cultural resources investigations were undertaken for these areas.

Discussion of Impacts

TF Guardian

Mississippi River Levee, Plaquemines Parish

Cultural resources investigations were conducted for the proposal to set back the Federally authorized East Bank Mississippi River Levees from Port Sulphur to Buras. No cultural resources were located by this survey, and a finding of no impact was coordinated with the SHPO.

Borrow Areas

Borrow areas that were coordinated through this review and site visit process include Point a la Hache, Creedmore Farm, Whisper Wood, Maynard, New Orleans East Sites 1-4, Walker Road Extension, Buras, Homeplace, Triumph, Homeplace West, Port of St. Bernard, Port Sulphur, Homeplace Extension, Poydras, Meraux, Creedmore Expansion, Bayou Dupre to Verret, and the 2938 Bayou Road site.

Borrow areas that were considered for use and received a site visit but were never further reviewed for coordination efforts with SHPO include St. Bernard Sites C, D, E, G, H, I, J, K, M, N, O, P, and Q (Appendix E).

Borrow areas that have already been coordinated with SHPO for a determination of no adverse impact to cultural resources includes the Citrus Lands borrow area, the Walker Road borrow area, and the Bonnet Carre borrow area.

Borrow areas that required special conditions to be met before coordination was completed include the Fort Jackson borrow area west of Highway 23. Uses of this site required reducing the easement between existing borrow pits and Highway 23 from 200 feet to 100 feet. SHPO considered the impacts of this request to create a potential adverse impact to Fort Jackson. Further consideration of coordination towards reducing this easement was not pursued.

The Triumph East borrow pit similarly received a notification of potential adverse impact from SHPO. Because of encroaching excavations towards the foundations of Fort Jackson, SHPO requested further consultation. CEMVN removed some portions of the borrow pit nearest to Fort Jackson from consideration, and SHPO concurred that no adverse impact to Fort Jackson or other cultural resources would occur.

The East Paris Road Bridge borrow site was very close to known cultural resource site 16OR40. Coordination with SHPO included monitoring of this site when the borrow excavations began.

A small borrow pit was considered from the location of the Woodlands Plantation. SHPO believed that this excavation would cause an adverse impact to the historic plantation unless further cultural resources studies were undertaken. CEMVN dropped consideration of this borrow pit.

Similarly, the Toca borrow pit in St. Bernard Parish is located along a high piece of ground adjacent to Bayou Terre aux Boeufs. This land was determined to hold a high potential for unknown cultural resources, and it was determined that further cultural resources investigations were necessary. CEMVN dropped consideration of this borrow pit.

The Myrtle Grove borrow pit was found to contain a brick foundation situated along a drainage canal in the middle of the proposed borrow area. This brick foundation was of unknown cultural resources significance and a Phase I cultural resources investigation was undertaken. In coordination with SHPO, a “no work zone” was marked surrounding the brick foundation, and a concurrence of no adverse impact was reached for this resource.

A phase I archeological survey was also completed of the Bohemia borrow pit. No historic properties were identified. The SHPO concurred with this finding by email dated October 19, 2005.

Lastly, the Florissant borrow pit is in the process of SHPO coordination at this time. The SHPO concurred with this finding by email dated January 10, 2006.

PUMP STATIONS

Orleans Parish Pump Station

Pump Stations 1, 3, 6, and 7 are eligible for the National Register of Historic Places, while the other Orleans Parish pump stations are not. Because the repairs are replacements in-kind, the New Orleans District concluded that the proposed work will have no adverse impact on the historic pumping stations. This determination was submitted to the SHPO for review. The SHPO did not formally respond to this review, and as such after a 30 day review period has expired concurrence is assumed.

Jefferson Parish Pump Stations

Research and discussions with the Jefferson Parish Department of Drainage indicates that the drainage stations were constructed from the 1920s to the 1980s. The Hero Pump Station dates back to the early 1920s and contains 2 Albert Baldwin Wood screw pumps. The pumps were not damaged and require no repairs. The building has no characteristics that would qualify it for listing on the National Register of Historic Places. The roof on the building will be repaired, as will the aluminum cable tray covering.

The other parish stations became operational in the 1960s, 1970s and 1980s (Bonnabel, 1986; Suburban, 1970; Elmwood, 1981; Duncan, 1986; Ames, 1985; Bayou Segnette No. 1, 1962; Cousins No. 1, 1972; Cousins No. 2, 1985; Estelle No. 1, 1962; Harvey, 1986; Planters, 1973; Lake Cataouche No. 2, 1985; Whitney Baratavia, 2005; Westwego No. 1, 1969; and Westwego No. 2, 1985). These buildings are a standard industrial construction of a steel frame with metal skin. Neither the buildings nor the standard pumps have characteristics that would

make them eligible for listing on the National Register of Historic Places. The SHPO concurred with this recommendation on February 21, 2006.

St. Bernard Parish Pump Stations

Research and discussions with the Lake Borgne Basin Levee District indicate that the drainage system was constructed from the 1950s to the 1990s. Pump Station 1 was constructed in the early 1970s. The pumps are vertical axial flow pumps powered by diesel engines. The industrial building is built of concrete and steel. Pump Station 2 was constructed in the early 1950s. The hydrologically driven pumps are standard pumps of the time, and the building is of standard industrial construction. Pump Station 3 was constructed in the late 1950s. The pumps are standard horizontal axial flow pumps, and the building is of standard industrial design. Pump Station 4 was constructed in the early 1970s. The pumps are vertical axial flow pumps powered by diesel engines. The industrial building is built of concrete and steel. Pump Station 5 was constructed in the 1980s. It originally belonged to the St. Bernard Parish government. The hydrologically driven pumps are powered by diesel engines, and the building is of standard industrial construction. Pump Stations 6 and 7 both began operation in 1992. Both stations have standard pumps are of the vertical axial flow type, and the buildings is constructed of concrete and steel. Pump Station 8 was constructed in 1996 and contains vertical axial flow pumps in a building constructed of concrete and steel.

The pump station buildings have no characteristics that would make them eligible for listing on the National Register of Historic Places. The pumps are standard pumps with no characteristics that would make them eligible for listing on the National Register of Historic Places. The SHPO concurred with this recommendation on January 26, 2006.

Plaquemines Parish Pump Stations

The New Orleans District assessed the Plaquemines Parish pump stations by completing research and having discussions with past employees of the parish engineering office. This research indicates that the drainage system was constructed during the late 1940s and early 1950s. The buildings are constructed of transite, a cement board on a metal frame, and have no characteristics that would make them eligible for listing on the National Register of Historic Places. The pumps are standard pumps commonly used during the 1940s and 1950s and also have no characteristics that would make them eligible for listing on the National Register of Historic Places. In a letter to the SHPO dated December 23, 2005, CEMVN recommended that no historic properties would be affected by this project. The SHPO concurred with this recommendation on January 5, 2006.

NON-FEDERAL WORK

St. Bernard Parish Back Levee Project

The non-Federal St. Bernard Back Levee project area impacted by construction and repairs was investigated for present or past cultural resources. Although construction in these areas originally occurred without Federal involvement in the 1960s, the current CEMVN involvement requires that cultural resources documentation occur. A cultural resources investigation was completed and submitted to the SHPO along with CEMVN's determination that no adverse impacts to any cultural resources would occur. The SHPO concurred with this determination on June 16, 2006.

Braithwaite/Scarsdale

The CEMVN conducted a cultural resources investigation of two levee repair sites at the Plaquemines Parish constructed back levees. The areas include repairs near Scarsdale and Braithwaite. No previous cultural resources work had been previously conducted for the area since there appears to have been no federal involvement in the construction of the parish levee. The USACE has become involved in repairing these levee breaches to offer better protection to the residents and property of Plaquemines Parish. Federal involvement in this repair work now requires that applicable federal laws such as the National Historic Preservation Act (NHPA) documentation take place for the areas involved. R. Christopher Goodwin and Associates conducted a cultural resources survey of the Scarsdale and Braithwaite levee repair areas and the proposed borrow pit. No historic properties were located in the area of potential effect, although one archaeological site was located along the access road at the intersection of the Scarsdale Pumping station road and the parish levee. This site known as the Wiltz Ridge site (16PL01) is a prehistoric shell midden that was impacted by the construction of the Scarsdale Pumping Station Road. Kniffen, Ford, and Russell recorded the site in 1935. The USACE project to repair the break in the parish levee will not impact the site since construction vehicles will be confined to the existing road in this area. Gravel may be placed on the existing road if ruts should develop on its crest. MVN recommended in a letter to the SHPO that no historic properties would be affected by this project. The SHPO agreed with this recommendation on March 22, 2006.

Citrus Lands Levee Project

The non-Federal Citrus Lands Levee project is also still under the coordination process. CEMVN archaeologists have determined that there was no impact to cultural resources as a result of this project. The SHPO agreed with this recommendation on April 24, 2006.

HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW)

A Phase I Initial Site Assessment (ISA) is required for all USACE Civil Works Projects to facilitate early identification and appropriate consideration of potential HTRW problems. Engineer Regulation ER 1165-2-132 and Division Regulation DIVR 1165-2-9 describe the policies for conducting HTRW reviews for USACE Civil Works Projects. HTRW includes any material listed as a "hazardous substance" under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and any material listed as a hazardous waste under the Resource Conservation and Recovery Act (RCRA). Other regulated contaminants include those substances that are not included under CERCLA and RCRA but may pose a potential health or safety hazard and are regulated by other statutory authorities. Examples include, but are not limited to, many industrial wastes; naturally occurring radioactive materials (NORM); many products and wastes associated with the oil and gas industry; herbicides; and pesticides.

The purpose of the Phase I ISA is to ensure that HTRW and contamination issues are properly considered in project planning and implementation. The ISAs generally consist of a review of all properties in a project area to determine the potential for HTRW concerns on each property. In addition, appropriate state and Federal agencies' records are reviewed to identify any potential hazardous situations. Early detection of HTRW sites of concern within the project area would be accomplished prior to land acquisition and initiation of construction activities. HTRW problem areas would be avoided where practicable.

Should an ISA discover HTRW problems within a project area, a Phase II environmental site assessment (ESA) may be conducted to further investigate areas of concern identified by the Phase I ISA. A Phase II assessment consists of sampling and testing various media (e.g. water, soil, container, substances, etc.) that were identified in the ISA as areas of concern. Sampling and testing would confirm the presence, characteristics, and extent of contamination. The Phase II assessment would also present recommendations on what removal and/or control actions would be necessary to mitigate potential hazards. Where HTRW contaminated areas or impacts cannot be avoided, response or remediation actions must be acceptable to state and Federal regulatory agencies.

UNWATERING

It is assumed that repair or unwatering events that occurred within the pre-Katrina Federal ROWs would result in minimal risk of encountering HTRW because these areas were previously reviewed during initial construction and maintenance of the flood control projects. A site visit was conducted to the Federal levees and associated ROWs to investigate for any HTRW issues that may have arisen as a result of Hurricane Katrina. A Phase I ISA or HTRW Checklist was conducted for each unwatering or repair feature that occurred outside of pre-Katrina ROWs. In addition to the emergency repairs to the Federal levees, breaches were repaired in the non-Federal levees in the St. Bernard and Plaquemines parishes. A follow-up investigation of these levee repairs has determined that no HTRW sites of concern were impacted during repairs of the subject levees.

TF GUARDIAN

TF Guardian activities are repairing the existing Federal levees to at least pre-Katrina elevations and conditions. In addition to the Federal levees in the Orleans, St. Bernard, and Plaquemines Parishes being repaired, non-Federal levees and pump stations in the three Parishes are also being repaired. Several borrow pits are being excavated to obtain suitable earthen materials required for levee repairs. In Jefferson Parish, a previously authorized Federal protective sand dune project on Grand Isle is also being repaired.

In order to restore the hurricane protection to pre-Katrina conditions in Orleans Parish, temporary closure structures are being constructed within the Orleans Avenue, London Avenue, and 17th Street Canals to protect against future tidal and storm surges. Dredging will be required at the locations of the closure structures. New Orleans outfall canals are known to contain contaminants that have settled into bottom sediments. Samples of bottom sediments were collected from each of the three canals and analyzed for metals, total petroleum hydrocarbons (TPH), volatile and semi-volatile organics, pesticides, and dioxins. Results of the samples were compared to the LDEQ Risk Evaluation Corrective Action Procedures (RECAP). At each of the three closure locations, TPH was detected above the lowest RECAP screening levels for each canal. One semi-volatile compound was detected above the lowest screening level at the 17th Street Canal closure structure location. All other substances were below RECAP standards. Because of the amount of debris present in the bottom of the 17th Street Canal, all of the sediments and debris will be hauled to a state approved landfill. The canal sediments removed from the Orleans Avenue and London Avenue canals will be treated and reused or hauled to a state approved landfill.

During site visits to the Federal levees, it was discovered that a large number of vessels, propane and fuel tanks, chemical containers, and 55-gallon drums containing unknown substances have settled within the levee ROWs in Plaquemines Parish. Representatives of TF Guardian coordinated with the EPA and USACE debris mission personnel to remove and properly dispose of the materials. Following removal of these materials, damaged levees were repaired with earthen materials obtained from approved sources. In addition to these repairs, TF Unwatering personnel using sandbags dropped by helicopters completed emergency repairs to levee breaches. No significant leaks or spills occurred within existing Federal ROWs, and there is little risk of encountering HTRW within these ROWs.

In Plaquemines Parish, hurricane protection floodwalls along the west bank Mississippi River levee are being removed and replaced with earthen levees. Construction of the earthen levees requires expansion of the Federal levee and the associated ROW. A Phase I ISA was conducted for the expanded ROW and levee construction area. Three HTRW sites of concern were initially discovered within the levee ROW. The Lucky II car wash, Circle K gas station, and an Entergy Corp. storage facility are all located within the expanded ROW and construction area. The Lucky II car wash was initially believed to have three underground storage tanks (USTs) containing gasoline and diesel fuels. After further investigation by CEMVN contractors, it was discovered that the USTs were removed prior to landfall by Hurricane Katrina. A closure report was submitted to and approved by LDEQ, which indicated that no issues requiring remediation were present at the site. The Circle K gas station currently contains three 8,000-gallon USTs containing gasoline. The USTs lie outside of the levee ROW and are likely to remain in place. Should conditions change to require removal of the USTs at this location, removal activities would be coordinated with LDEQ, and a contractor certified by LDEQ would be used for UST removal. The third site of concern is the Entergy Corp. storage facility located within the ROW in Buras, Louisiana. At the time of the investigation, creosote poles, electric meters, 55-gallon drums, and mercury vapor fluorescent light bulbs, and an incinerator were present at the site. A Phase II ESA is currently being conducted to determine if any hazardous substances are present at the site. Should results of the ESA show potentially significant levels of contamination at the site, the site may be avoided or remediated prior to initiation of construction of the levee at that location.

Numerous borrow pits are required to obtain large volumes of suitable materials for repairs to the Federal and non-Federal levees in the Orleans, St. Bernard, and Plaquemines Parishes. Each borrow pit has been investigated for the presence of HTRW at each site. During the investigations, it was discovered that dry-hole oil wells, previously plugged and abandoned, might be present within the Triumph and Port Sulphur borrow pits. No structures or appurtenant structures are visible above-ground. The Louisiana Department of Natural Resources (LDNR) was contacted regarding the subject wells. Representatives of LDNR stated that the chance that the wells would be damaged during excavation activities was negligible. Should the wells be uncovered within the borrow areas, an oil industry contractor would be used to recap the well following completion of excavation activities. No other HTRW sites of concern were discovered in the other borrow pits that were investigated. The investigation of additional borrow areas is on-going. As additional borrow areas are proposed, appropriate HTRW investigations will be conducted.

GRAND ISLE

The protective sand dune at Grand Isle was repaired using hauled in fill obtained from construction of canals on the north side of Grand Isle. The fill materials were tested for contaminants. Results revealed no hazardous substances in the fill material. The sand dune is a previously authorized Federal project and was reviewed for the presence of HTRW during previous CEMVN construction projects. Results of both the previous review and the recent test show a low risk of encountering HTRW in the vicinity of the sand dune.

NON-FEDERAL LEVEES, ST. BERNARD AND PLAQUEMINES PARISHES

The non-Federal levees in the St. Bernard and Plaquemines Parishes were investigated for the presence of HTRW. In St. Bernard Parish, various storm debris had settled upon the levees, including boats, houses, lumber, propane tanks, drums, and other various containers and materials. The miscellaneous debris were removed prior to initiation of levee repairs. No spills or leaking containers were discovered. One HTRW site of concern was discovered near Poydras, Louisiana, at a location less than one mile east of the Gore #5 pumping station where St. Bernard Parish operates a large debris pile consisting of construction and demolition material. The debris is spilling into the canal located along the southern border of the non-Federal levee. No material will be removed from the canal and, therefore, this debris does not pose any risk to the completion of this levee project. However, any future expansion of the levee footprint at this location may require additional HTRW investigations. No evidence of HTRW was apparent at the non-Federal levees in Plaquemines Parish. Therefore, there is a low risk of encountering HTRW materials during repair of the levees in St. Bernard and Plaquemines Parishes.

PUMP STATIONS

Several non-Federal pump stations damaged as a result of Katrina floodwaters are being repaired or replaced. During initial investigations, asbestos-containing materials were discovered at pump stations in Orleans and Plaquemines Parishes. These materials include asbestos wrapped exhaust piping, transite building siding, and roofing tiles. Per the cooperative agreements, the Orleans and Plaquemines Parishes are required to remove and appropriately dispose of the asbestos-containing materials.

Should any modifications be proposed to existing plans, an additional review for potential HTRW issues will be required prior to initiation of the modifications.

CUMULATIVE IMPACTS

CEQ 1508.7 defines cumulative effects as: “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The impacts caused by Hurricane Katrina are unprecedented; as such, the cumulative impacts associated with the event are highly unpredictable. For example, it is nearly impossible

to predict how much of the metropolitan area will be rebuilt or where rebuilding will occur; what the future population of the area will be; what the future economy of the area will be; etc.

It is clear that the metropolitan area would have been unwatered by some state or local entity had the USACE not been authorized to perform the act; the non-Federal pump stations in the four parishes would have been repaired; emergency measures would have been taken by a state or local entity to repair the breaches created by Hurricanes Katrina and Rita; and the USACE would have repaired the damaged Federally authorized levees back to design standards. The authorities cited earlier in this assessment allowed the events (unwatering and rehabilitation of the damaged levees and pump stations) to occur under Federal direction which allowed the events to occur at a faster rate than would have occurred, given the significant impact on local resources Hurricanes Katrina and Rita had.

Changes to Federally authorized project alignments and the rehabilitation of several existing non-Federal projects did occur as a result of Hurricane Katrina. USACE authorized projects that were modified beyond previously authorized limits include the relocation of the West Bank Mississippi River levee floodwall in Plaquemines Parish (New Orleans to Venice, LA Hurricane Protection Project); the emergency dredging of Baptiste Colette in Plaquemines Parish (Mississippi River Outlets project in the vicinity of Venice, Louisiana, was authorized by the Rivers and Harbors Act of 1968); the creation of 37 new borrow pits in the metropolitan area; the rehabilitation of the non-Federal St. Bernard Parish Back levee; the rehabilitation of the breach sites on the Plaquemines Parish non-Federal East Bank Back levee in the Braithwaite and Scarsdale areas; the rehabilitation of the Plaquemines Parish non-Federal breach sites on the West Bank Back levee on the Citrus Lands property; the three new interim closure structures in Orleans Parish; and the improved T-wall floodwalls at the sites of the I-wall failures in Orleans, St. Bernard, and Plaquemines Parishes.

Cumulative impacts related to the actions taken are directly tied to the amount of borrow material used for TF Guardian, the continued need for borrow material for future O&M of the authorized federal levees system, and the acceleration of construction of several Federally authorized hurricane protection projects. These hurricane protection projects include the West Bank and Vicinity Hurricane Protection Project; the New Orleans to Venice, LA Hurricane Protection Project the Lake Pontchartrain and Vicinity Hurricane Protection Project; and the South East Urban Flood Control Project. These actions create a need to find additional borrow materials at an accelerated pace in the vicinity of southeast Louisiana. If additional projects are authorized, such as the Louisiana Coastal Protection and Restoration Project (category five hurricane protection project) or the federalization of the Plaquemines Parish East and West Bank Back Levees, an insatiable need for borrow materials in the southern Louisiana area may develop, resulting in impacts across the southern United States as material in other states is purchased and shipped to Louisiana.

It is foreseeable that further levee upgrades to Louisiana's Federal and non-Federal levees will continue for a number of years. Changes will be made to the existing pump station network, including the possibility of new permanent pump stations and closure structures at the lakeside ends of the three Orleans parish drainage canals (17th Street, Orleans, and London Avenue) and closure structures on the GIWW/MRGO and the IHNC. It is foreseeable that many of the I-walls

built in the United States will be reengineered and rebuilt as a result of the failures in the New Orleans area. It is foreseeable that as levees are repaired, more people will return to the area, but it is likely that the population of the metropolitan area will take decades to return to pre-storm levels. It is also possible that an improved hurricane protection levee project (category five) will be authorized, funded, and constructed along all or part of the southern Louisiana coast. It is also possible that an event similar to Hurricane Katrina could occur again in the future.

COORDINATION

Preparation of this EA has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, are receiving copies of this EA:

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
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality, PER-REGC
Louisiana Department of Environmental Quality, EP-SIP
Louisiana State Historic Preservation Officer

MITIGATION

Mitigation is an integral part of project planning and if implemented properly is incorporated into the planning process prior to, during and following project construction. Properly implemented mitigation first incorporates design that avoids impacts, then minimizes adverse impacts to the greatest extent possible during design implementation and lastly compensates for the unavoidable impacts. The majority of the unavoidable impacts generated by this project resulted from acquiring sufficient borrow material to make the emergency repairs to the hurricane protection levees.

IMPACTS

USACE biologists in coordination with USFWS and NMFS biologists have determined that a total of 95.7 acres of wetland impacts have occurred or will occur as a result of the actions taken by the USACE to unwater the metropolitan area, to rebuild the existing Federally authorized levee system, to repair levee breaks in non-Federal levee system in Plaquemines parish, and as the result of building a FEMA tasked temporary morgue facility in Carville, Louisiana (Table 4). The biologists have categorized the impacted wetlands as forested wetlands, marsh, and wet pasture (open wetland). Wetland Evaluation Assessment (WVA) models were run to determine the Average Annual Habitat Units (AAHU) for each wetland type.

It was determined that the impacts to the 95.7 acres of wetlands resulted in 42.9 AAHU's of impacts.

The USFWS quantified unavoidable project impacts on wildlife resources and calculated mitigation needs for the TF Guardian and TF Unwatering efforts through the use of Wetland Value Assessment (WVA), Habitat Evaluation System (HES), and Habitat Assessment Methodology (HAM). The WVA was used to assess impacts and mitigation benefits in fresh/intermediate marsh. The HAM was used to determine impacts and mitigation benefits associated with the forested wetlands and HES was used to assess impacts to open wetlands and develop mitigation benefits to forested wetlands.

The TF Guardian Borrow Team worked diligently to avoid or minimize borrow impacts. The team developed a protocol that prioritized site selection to first utilize existing commercial pits, then upland sources that would minimize environmental impacts. If none of these options were feasible then previously disturbed or manipulated wetland sources were considered, followed by low quality wetlands inside the levee system, and as a last resort low quality wetlands outside of the levee system were utilized.

A total of 63 borrow sites were visited or evaluated by the TF Guardian Borrow Team. These sites included sites provided by local government entities, areas identified by the borrow team from maps; sites previously authorized by a Federal project and contractor furnished borrow sources. The team evaluated and coordinated a total of 29 of the sites with the appropriate resource agencies, 18 of which are being actively used. Six sites evaluated by the team were covered by existing NEPA documentation (Lake Pontchartrain and Vicinity Hurricane Protection Project, EIS, West Bank and Vicinity Hurricane Protection Project, EIS, New Orleans to Venice Hurricane protection Project, EIS and Environmental Assessment #258s entitled: MRL Maintenance: Plaquemines West Bank 2nd Lift, Ft. Jackson Borrow Site, 1998) for authorized Federal projects in the metropolitan area. Another 17 potential sites were identified in the St. Bernard Parish area by the team, however only wetlands determinations were completed. No coordination with Federal or state agencies was initiated due to real estate procurement issues with the parish, therefore none of these sites are in use at this time. A site at near the town of Reggio was evaluated by the team, but not coordinated with resource agencies due to environmental issues. This site is not in use at this time. Ten commercial contractor furnished sites were investigated and evaluated for proper soils and environmental conditions. All ten of these pits are currently being used or available for use as a part of this action.

TF Guardian staff identified 1,159 acres of potential borrow area from non-commercial sources that are either actively being used or may be used as a borrow source for the repair of the hurricane protection system. The majority of the wetland impacts incurred as a result of the TF Guardian action are located in improved pasturelands or previously disturbed areas that have returned as low quality scrub/ shrub habitat. To date, only 563 of the 1,159 acres identified have been used for borrow and only 57.5 of those acres were wetlands requiring mitigation (Table 4). Therefore only ten percent of the material actively being used is coming from wetlands (five percent of overall acreage currently identified for use as a borrow source). The 57.5 acres of wetland habitat are comprised of forested wetlands (55.0 acres) and open wetland (2.5 acres) represents a total loss of 21.0 AAHU's over the life of the project (100 year).

As explained previously, TF Guardian is utilizing commercial borrow sources for some of the clay material being used for the levee rehabilitation. These sites are primarily upland sites that have been mitigated for by the private landowner as a requirement of their permit through the local, state or Federal regulatory agencies responsible for their existence. Each of the commercial sites was visited by the borrow team in order to determine suitability of material, current status of their permits, to assure that the pits are not in environmentally sensitive areas and to visually inspect the site for signs that may indicate the presence of any HTRW issues. Additionally, the borrow team biologist contacted the appropriate state and Federal agencies responsible for regulating and permitting these borrow operations to ensure that all environmental requirements have been complied with.

TF Unwatering was given the mission of rehabilitating breaches in two non-Federal Levee systems in Plaquemines Parish. As explained in the Description of Action section of this report, breaches in the Plaquemines Parish East Bank Back levee (Braithwaite and Scarsdale) and the West Bank Back levee (Citrus Lands) were rehabilitated or are being rehabilitated under USACE tasked missions. The actions taken resulted in the loss of 35.2 acres of wetlands: 21.3 acres of fresh intermediate marsh and 13.9 acres of open wetlands. For the purposes of this report the open wetland losses are being lumped together with the forested wetland losses and mitigated for as a group. WVA models were used to calculate that a total of 19.4 AAHU's were impacted by TF Unwatering efforts.

Table 4
Project Impact Summary

Impacts by Project Feature			
Impact Area	Habitat	Acres Impacted	AAHU's lost
Walker Road Extension Borrow ¹	Open Wetland	2.5	1.9
New Orleans East Borrow #3 ¹	Forested Wetland	55.0	19.1
Braithwaite Levee Repair ²	Marsh	10.3	5.9
Scarsdale Levee Repair ²	Marsh	11.0	6.2
Citrus Land Levee and borrow ²	Open Wetland	13.9	7.3
Carville Morgue ³	Forested Wetland	3.0	2.5
Total		95.7	42.9
Impacts by Habitat			
	Forested Wetland	58.0	21.6
	Marsh	21.3	12.1
	Open Wetland	16.4	9.2

¹ TF Guardian effort

² TF Unwatering effort

³ FEMA Mission

An additional 3.0 acres of forested wetlands were impacted during the construction of the temporary morgue site in Carville Louisiana. While these impacts were the direct result of a FEMA tasked mission it was determined by the USACE that it was more beneficial to the environment to mitigate for these impacts as part of a bigger package to get the most bang for the buck.

MITIGATION

Preferred Plan

To mitigate for the unavoidable impacts to the 58.0 acres of forested wetland (21.6 AAHU's) and the 16.4 acres of open wetlands (9.2 AAHU's), the USACE is pursuing the purchase of a heavily wooded tract immediately adjacent to the Bayou Sauvage National Wildlife Refuge (BSNWR) (Figure 13). The BSNWR is located in the Orleans East drainage basin and is bordered on the north and east by Lake Pontchartrain, the south by the GIWW and the west by the urbanized Orleans East area. The proximity of this property to the BSNWR will enable controlled reforestation and management of the property as an integral part of the overall BSNWR management plan. Based on the current habitat analysis for this site approximately 146 acres would be required to replace the 30.8 AAHU'S of forested wetlands impacted (Table 5). The BSNWR land acquisition cost could be as high as \$5,110,000. An additional \$300,819 would be required to pay for the management of the area over the 100-year life of the project (\$2,060 per acre). The annual management cost during the first five years would range from \$18,000 to \$47,000 due to the labor-intensive site preparation and planting efforts. Total cost of mitigating forested wetlands at the Bayou Sauvage site could cost as high as \$5,420,819

depending on land cost. The BSNWR site is the preferred site because it is in the immediate vicinity of the areas where the wetland impacts occurred and the area is zoned for development.

Construction associated with TF Unwatering resulted in the loss of 21.3 acres of Fresh Intermediate Marsh with a habitat value loss of 12.1 AAHU's. The preferred marsh creation opportunity exists along the west side of the Big Mar area near the Carnaveron Diversion structure which is located on the east bank of the Mississippi River in Plaquemines Parish in the immediate vicinity of the Braithwaite and Scarsdale breach repair sites. Material could be hydraulically pumped from the Mississippi River to the Big Mar where it would be used to fill some of the open water area along the west side to build 24 acres of new marsh. Material would be placed to an elevation conducive to marsh development. Costs to complete this effort are estimated to be \$1,900,000 (\$79,167 per acre). These costs may also be substantially reduced if the work can be done in conjunction with maintenance dredging the Mississippi River.

An alternative method (truck hauling) of placing the material at the Big Mar was considered as a part of the mitigation plan development. The logistics, availability of haulers and earthmoving equipment capable of working on marsh soils, and competition for suitable borrow sources, in the post Hurricane Katrina environment made this alternative more expensive than using dredged material from the river. It was estimated that \$3,000,000 would be needed to truck haul material to the site and place it.

Total cost to mitigate for the loss of the 95.7 acres of wetlands impacted by the actions of the USACE could cost as much as \$7,320,819. These costs are subject to change and may be further refined based on changes in fuel costs, stability of the receiving substrate, dredge availability, changes in availability of the soil source, or real estate issues.

Alternative Plan

Forested Wetlands

An alternative site for mitigating forested wetlands is being discussed with a representative of the Paradis Mitigation Bank located on the Chevron /Tenneco property in St Charles Parish. This site is located approximately 40 miles to the east of the BSNWR in a different geographical/hydrological drainage basin. Based upon the quality of the habitat at the mitigation bank, less acreage would be needed to be purchased than at the BSNWR site. Preliminary estimates suggest that 44 acres (0.71 AAHU's per acre) would be required to meet our forested wetland mitigation requirements. Based on conversations with the Paradis Bank representative, the mitigation costs are expected to be \$23,000 per acre with management cost included. The cost of using this site for forested wetland mitigation is estimated to be as high as \$989,000.

Fresh Intermediate Marsh

An alternative site to mitigate for the loss of 21.3 acres of Freshwater intermediate marsh is to create 24 acres of fringe marsh on the flood side of the Scarsdale and Braithwaite breach repair sites. Marsh could be built by truck hauling material to the site or by use of a hydraulic dredge to place material where needed. It was determined that the use of a dredge to place material at this site was much more complicated than the Big Mar site, which is why the Big Mar site is the preferred plan. It was determined that the material needed to build marsh could be

trucked to the site and placed where needed at an estimated cost of \$3,000,000 (\$125,000 per acre) based upon an average price of \$25 per cubic yard.

Table 5
Mitigation Summary

Plan	Habitat Type	Acres Required	AAHU's Produced	AAHU's Needed	Balance
Bayou Sauvage NWR ¹	Forested Wetlands	146.4	34.6	30.8 ²	+3.8
Paradis Bank	Forested Wetlands	44	31.2	30.8 ²	+0.4
Carnaveron Diversion ¹	Fresh Intermediate Marsh	24	12.3	12.1	+0.2
Braithwaite/Scarsdale	Fresh Intermediate Marsh	24	12.3	12.1	+0.2

¹ Preferred Plan

² Includes open wetlands and forested wetlands AAHU's. Open wetlands are a USFWS Category 4 resource and can be mitigated out-of-kind.

COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the actions described in this document will be achieved upon coordination of this EA and the execution of a Finding of No Significant Impact (FONSI); USFWS and NMFS confirmation that the actions did not adversely affect any endangered or threatened species; LDNR concurrence with the determination that the actions were consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; public review of the Section 404(b)(1) Public Notice and the execution 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 Fish and Wildlife Coordination Act recommendations; and receipt and acceptance or resolution of all NMFS EFH recommendations.

Figure 13
Proposed Mitigation Site Locations



CONCLUSION

The actions taken by the USACE as a result of the damage caused by Hurricane Katrina consisted of the unwatering the New Orleans Metropolitan Area, rehabilitating numerous Federal and non-Federal levees, repairing non-Federal pump stations in the New Orleans Metropolitan Area, installing temporary closure structures in three outfall canals in the New Orleans East Bank area, renovating the breaches in the Grand Isle Dune, and completing emergency dredging of the Baptiste Collette Bayou. In response to Hurricane Rita, the USACE closed and repaired breaches in the Larose to Golden Meadow Levee system and the non-Federal levees in Terrebonne Parish. USACE also provided and operated temporary pumps in several parishes flooded as a result of Hurricane Rita. During the preparation of this assessment CEMVN environmental staff investigated the impacts the actions had on the water quality of Lake Pontchartrain and the Mississippi River, wetlands, uplands, wildlife, fisheries, EFH, T&E species, and air quality. It was determined that the actions taken by TF Guardian and TF Unwatering caused the loss of 95.7 acres of wetland habitat in Louisiana. Forested and open wetlands losses accounted for 58.0 acres of the loss, while freshwater intermediate marsh made up the remaining 21.3 acres of wetlands impacted. Mitigation for these losses will be completed by purchasing land and managing land at the BSNWR, constructing freshwater intermediate marsh adjacent to the Braithwaite and Scarsdale construction site, or through the purchase of mitigation credits at a mitigation bank in St. Charles parish.

PREPARED BY

The point of contact for this document is Gib Owen, a biologist with the USACE. Table 6 lists the preparers of relevant sections of this report. Mr. Owen can be reached at the U.S. Army Corps of Engineers, Planning, Programs, and Project Management Division; Environmental Planning and Compliance Branch; CEMVN-PM-RS; P.O. Box 60267; New Orleans, Louisiana 70160-0267 or by E-Mail to Gib.A.Owen@mvn02.usace.army.mil.

Table 6
USACE Hurricane Katrina/Rita Environmental Assessment Team

EA Section	Responsible Team Member
Environmental Manager	Gib Owen
TF Guardian Description of Actions	Elizabeth Behrens
TF Guardian Borrow	Larry Hartzog
Essential Fish Habitat	Gib Owen
Threatened and Endangered Species	Gib Owen
Air Quality	Gib Owen
Cumulative Impacts	Gib Owen
Coastal Zone Management	Laura Lee Wilkinson
Mitigation	Larry Hartzog and David Walther - USFWS
Prime/Unique Farmlands	Elizabeth McCasland
Clean Water Act 404 (b)(1)	Donna Bivona and Richard Boe
HTRW - EA	Casey Rowe
HTRW - Non-Federal, Grand Isle, and Baptiste	Chris Brown
Cultural - TF Guardian - Pump Stations	Ed Lyon
Cultural - TF Guardian - Borrow	Paul Hughbanks and Ed Lyons
Cultural - Grand Isle	Joan Exnicios
Cultural - Baptiste Dredging	Baxter Mann
Cultural - Non-Federal - Braithwaite	Joan Exnicios
Cultural - Non-Federal - St. Bernard Parish	Paul Hughbanks
Technical Editor	Sarah Wesberry - Earth Tech
USFWS Coordination Act Report	David Walther - USFWS
Water Quality Report (Appendix)	Danny Wiegand
Plaquemines Parish Sediment Report (Appendix)	Materials Management Group, Inc
Office of Counsel Reviewer	Randal Merchant
Internal Technical Reviewers	Bruce Baird and Mike Swanda
Reviewers	Robert Martinson, Rick Bush, and Richard Boe

APPENDIXES