

## SECTION 404 EVALUATION

### UNWATERING THE NEW ORLEANS METROPOLITAN AREA FOLLOWING HURRICANES KATRINA AND RITA AND REPAIR OF THE FLOOD PROTECTION SYSTEM IN SOUTHEAST LOUISIANA

The following short form 404(b)(1) evaluation follows the format designed by the Office of the Chief of Engineers, (OCE). As a measure to avoid unnecessary paperwork and to streamline regulation procedures while fulfilling the spirit and intent of environmental statutes, New Orleans District is using this format for all proposed project elements requiring 404 evaluation, but involving no adverse significant impacts.

**PROJECT DESCRIPTION:** This description of action contains the work items completed or in progress under Task Force (TF) Unwatering (removal of water and emergency repairs to levees after hurricanes Katrina and Rita) and TF Guardian (repairs of levees to pre-storm levels) which involved deposition of fill material into waters of the U.S. and therefore require evaluation under Section 404 of the Clean Water Act. In addition, this description of action contains some items of work taken in response to Hurricanes Katrina and Rita that were not part of TF Unwatering or Guardian. The pumping of floodwaters is not addressed in this description of action as the discharge of flood waters is subject to Section 402 of the Clean Water Act. Repairs to pump stations are not expected to affect waters of the U.S. and are not included in this description of action.

#### ORLEANS PARISH

##### 17th Street Canal (TF Unwatering)

During Hurricane Katrina, a breach in the levee/floodwall occurred on the east side of the 17<sup>th</sup> Street Canal just south of the Hammond Highway Bridge. An attempt was made to use concrete Jersey barriers to plug the breach. After one barrier was dumped into the water and floated away because it had a Styrofoam core, that alternative was abandoned. The 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 sand bags 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 sand bags 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.

Beginning on September 3, 2005, rock, gravel, and concrete riprap were dumped into the breach. The rock and gravel used to fill the breaches were purchased from a local commercial source that used materials from quarries in Illinois and Kentucky. 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. 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 17<sup>th</sup> Street Canal during the event. Immediately following Hurricane Rita, the gap was reopened to allow for stormwater pumping.

##### London Avenue Canal (TF Unwatering)

Two breaches occurred along London Avenue Canal. At the Lakeshore Canal Bridge across the 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 from the lake into the canal. Using sand bags and riprap, the breach near Robert E. Lee Boulevard was closed by September 5, 2005. The breach near Mirabeau Avenue was closed by the same method by September 9, 2005. 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.

### 17<sup>th</sup> Street, London Avenue, and Orleans Avenue Canals (TF Guardian)

The repairs along the 17<sup>th</sup> Street and London Avenue Canals 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 17<sup>th</sup> Street Canal breach and the two London Avenue breaches using steel sheetpile. Also, rock was placed in the canals at the breach locations to prevent any scour of the canal bottom from occurring near the breach locations during operation of pumping stations. 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.

Three temporary gated structures with associated pumping capacity are being installed at the lake end of the 17<sup>th</sup> Street Canal, Orleans Avenue Canal, and London Avenue Canal. The gated structures will be closed when storms approach or lake water levels rise to a pre-established height. The purpose of the gates is to prevent stress on the existing I-wall found along both sides of these three canals. Gates will only be kept in a closed position during storm events or high water events in the lake. Dredging of the canals was required at the locations of the temporary structures to prepare the sites. Sediments and debris removed from the canal has been either hauled to an industrial landfill or temporarily stockpiled on an urban median until it is decided what can be done with it.

### New Orleans East

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.) to 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. 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. The dam in the Maxent Canal was later removed, allowing Pump Station 15 to help unwater areas to the north of the dam.

### Inner Harbor Navigation Canal (IHNC)

The breach repairs and other work items along the IHNC were accomplished in areas that are not waters of the U.S. and therefore are not subject to Section 404.

### ST. BERNARD PARISH

A contractor was hired to close the breach in the St. Bernard back levee before Hurricane Rita made landfall. Borrow material to close the breach was obtained from a location near the Meraux Food Store and from along the Eikes Canal dredged material bank. In September 2005, plans were developed to rehabilitate the back levee to +10 feet NAVD 88. It was determined that the 0.8 miles of sheetpile wall at the western end of the levee 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 flood side of the wall to strengthen the foundation. Some of this earthen levee extends into the adjacent tidal water. The rest of the levee is being rebuilt within its original footprint right-of-way and is not subject to Section 404.

Earthen clay material is being barged from commercial borrow pits in Mississippi to augment the material being used to repair the Federal levee along the Mississippi River-Gulf Outlet (MRGO) between the Bayou Bienvenue Control Structure and Verret. Numerous offloading sites are being used alongside the MR-GO. Dredging is occurring in the shallow water near the banks of the MR-GO at multiple locations to allow barges to be pushed up against the bank for unloading. The material is being cast adjacent to the unloading sites and is being replaced in the access corridors once the offloading operations are concluded.

### PLAQUEMINES PARISH

#### Federal Levees

To help dewater Plaquemines Parish, parish workers and a USACE hired labor unit cut several breaches to allow drainage from the protected areas on the east bank of the Mississippi River. The east bank back levee was breached at Gravolet Canal and in Bohemia. A Corps of Engineers hired labor unit out of Memphis created the breach at Bohemia on September 5, 2005 and then closed it two days later when flood waters 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.

#### Non-Federal Levees

Two breaches occurred in the northern stretch of the non-Federal Plaquemines Parish east bank back levee in the vicinity of Braithwaite and Scarsdale. Emergency work to close the breaches was completed by the Louisiana National Guard and Plaquemines Parish staff. The USACE 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 are to rebuild approximately 4,000 feet of the levee by placing fill material on the flood side of the existing levee. This work impacts 21.3 acres of fresh/intermediate wetlands and compensatory mitigation is being implemented.

The privately-owned 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. Emergency repairs were completed by air dropping sand bags 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 rerouting of 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 compensatory mitigation is being implemented.

#### JEFFERSON PARISH

Repairs along the west side of the 17<sup>th</sup> Street Canal consist of repairing foreshore protection on the flood side, 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 the displacement of lakeside foreshore protection. Foreshore protection and damaged concrete slope paving is being replaced.

#### HURRICANE RITA - LAFOURCHE PARISH

Hurricane Rita's storm surge damaged the Larose to Golden Meadow levee in two areas. The flood side of the south levee and the mitigation levee at the Point Au Chein Wildlife Management Area experienced 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.

#### BORROW MATERIAL SOURCES

TF Guardian personnel investigated and approved or disapproved earthen clay material for levee repairs. USACE engineers have estimated that 7,500,000 cubic yards of clay is required to rehabilitate the Federal levees to pre-Hurricane Katrina design specifications.

A total of 63 potential sites were investigated. Of this total, 10 were contractor-furnished commercial borrow pits of which most were located in Mississippi. These commercial pits are either already permitted through the USACE permitting program or do not affect waters of the U.S. Approximately 266 acres of the 1,712 acres identified in Orleans, Plaquemines, and St. Bernard Parishes as potential borrow sites are wetlands. About 56 of these wetland acres are in the process of being used, and those 56 acres are primarily low quality wetlands. Section 404 actions associated with the borrow pits includes the deposition of overburden around the edges of the pits to access underlying clay material.

1. Review of Compliance (§230.10 (a)-(d)).

Preliminary<sup>1</sup>

Final<sup>2</sup>

A review of this project indicates that:

a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose (if no, see section 2 and information gathered for environmental assessment alternative);

YES NO\*

YES NO

b. The activity does not appear to: (1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the Clean Water Act; (2) jeopardize the existence of Federally listed endangered or threatened species or their habitat; and (3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);

FOR (1) ONLY  
YES NO\*

YES NO

c. The activity will not cause or contribute to significant degradation of waters of the United States including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values (if no, see section 2);

YES NO\*

YES NO

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).

YES NO\*

YES NO

2. Technical Evaluation Factors (Subparts C-F).

N/A      Not Significant      Significant\*

a. Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).

- (1) Substrate impacts.
- (2) Suspended particulates/turbidity impacts.
- (3) Water column impacts.
- (4) Alteration of current patterns and water circulation.
- (5) Alteration of normal water fluctuations/hydroperiod.
- (6) Alteration of salinity gradients.

	X	
	X	
	X	
	X	
X		
X		

b. Biological Characteristics of the Aquatic Ecosystem (Subpart D).

- (1) Effect on threatened/endangered species and their habitat.
- (2) Effect on the aquatic food web.
- (3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).

	X	
	X	
	X	

c. Special Aquatic Sites (Subpart E).

- (1) Sanctuaries and refuges.
- (2) Wetlands.
- (3) Mud flats.
- (4) Vegetated shallows.
- (5) Coral reefs.
- (6) Riffle and pool complexes.

	X	
	X	
	X	
	X	
X		
X		

d. Human Use Characteristics (Subpart F).

- (1) Effects on municipal and private water supplies.
- (2) Recreational and commercial fisheries impacts.
- (3) Effects on water-related recreation.
- (4) Esthetic impacts.
- (5) Effects on parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves.

	X	
	X	
	X	
	X	
	X	

Remarks. Where a check is placed under the significant category, the preparer has attached explanation.

3. Evaluation of Dredged or Fill Material (Subpart G).<sup>3</sup>

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material.

- |   |                   |
|---|-------------------|
| (1) Physical characteristics .....  | <u>  X  </u>      |
| (2) Hydrography in relation to known or anticipated sources of contaminants .....   | <u>          </u> |
| (3) Results from previous testing of the material or similar material in the vicinity of the project .....  | <u>          </u> |
| (4) Known, significant sources of persistent pesticides from land runoff or percolation .....   | <u>          </u> |
| (5) Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances .....  | <u>  X  </u>      |
| (6) Other public records of significant introduction of contaminants from industries, municipalities, or other sources .....  | <u>          </u> |
| (7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities ..... | <u>          </u> |
| (8) Other sources (specify) .....   | <u>  x  </u>      |

Appropriate references:

1. "LDEQ Environmental Regulatory Code, dated 2005"
2. "State of Louisiana, Water Quality Management Plan, Volume 5, Part B, Water Quality Inventory, 2005"
3. CERCLIS
4. U.S. Coast Guard Spill Records.
5. EPA STORET
6. "Task Force Unwatering Water Sampling and Analysis – Task 2 Plaquemines Parish, LA" dated January 2006.
7. "Task Force Guardian" Sediment Testing at Temporary Closure Structure Locations in Orleans Parish; 17<sup>th</sup> Street Canal, Orleans Avenue Canal, and London Avenue Canal, March 2006

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or the material meets the testing exclusion criteria.

YES	NO*
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4. Disposal Site Delineation (§230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

- |  |                   |
|--|-------------------|
| (1) Depth of water at disposal site .....  | <u>  X  </u>      |
| (2) Current velocity, direction, and variability at disposal site .....                                      | <u>  X  </u>      |
| (3) Degree of turbulence .....   | <u>          </u> |
| (4) Water column stratification .....  | <u>          </u> |
| (5) Discharge vessel speed and direction .....   | <u>          </u> |
| (6) Rate of discharge .....  | <u>          </u> |
| (7) Dredged material characteristics (constituents, amount, and type of material, settling velocities) ..... | <u>  X  </u>      |
| (8) Number of discharges per unit of time .....  | <u>          </u> |
| (9) Other factors affecting rates and patterns of mixing (specify) .....                                     | <u>          </u> |

Appropriate references:  
Same as 3(a)

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

YES      NO\*

5. Actions to Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of the recommendations of §230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

YES      NO\*

Actions taken: All canal bottom sediments excavated from the 17<sup>th</sup> Street, Orleans Avenue, and London Avenue Canals has been deposited in non-aquatic sites.

6. Factual Determination (§230.11).

A review of appropriate information as identified in items 2-5 above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to:

- a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above).       YES      NO\*
- b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).       YES      NO\*
- c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5)       YES      NO\*
- d. Contaminant availability (review sections 2a, 3, and 4).       YES      NO\*
- e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5).       YES      NO\*
- f. Disposal site (review sections 2, 4, and 5).       YES      NO\*
- g. Cumulative impact on the aquatic ecosystem.       YES      NO\*
- h. Secondary impacts on the aquatic ecosystem.       YES      NO\*

\*A negative, significant, or unknown response indicates that the project may not be in compliance with the Section 404(b)(1) Guidelines.

<sup>1</sup>Negative responses to three or more of the compliance criteria at this stage indicates that the proposed projects may not be evaluated using this "short form procedure". Care should be used in assessing pertinent portions of the technical information of items 2a-d, before completing the final review of compliance.

<sup>2</sup>Negative responses to one of the compliance criteria at this stage indicates that the proposed project does not comply with the guidelines. If the economics of navigation and anchorage of Section 404(b)(2) are to be evaluated in the decision-making process, the "short form" evaluation process is inappropriate.

<sup>3</sup>If the dredged or fill material cannot be excluded from individual testing, the "short form" evaluation process is inappropriate.

7. Evaluation Responsibility.

a. Water quality input provided by: Donna K. Bivona

Position: Hydraulic Engineer

Date: 23 March 2006

b. Biological input provided by: Richard E. Boe

Position: Supervisory Environmental Resources Specialist

Date: 31 May 2006

8. Findings.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines.....  X

b. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines with the inclusion of the following conditions..... \_\_\_\_\_

c. The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) guidelines for the following reason(s):

(1) There is a less damaging practicable alternative ..... \_\_\_\_\_

(2) The proposed discharge will result in significant degradation of the aquatic ecosystem ..... \_\_\_\_\_

(3) The proposed discharge does not include all practicable and appropriate measures to minimize potential harm to the aquatic ecosystem ..... \_\_\_\_\_

Date: 20 Jan 06

  
Elizabeth Wiggins  
Chief, Environmental Planning and  
Compliance Branch