Decision Record

Individual Environmental Report #12
Gulf Intracoastal Waterway (GIWW), Harvey, and Algiers Levees and Floodwalls
Jefferson, Orleans, and Plaquemines Parishes, Louisiana,
IER #12

Description of Proposed Action. The New Orleans District, US Army Corps of Engineers (CEMVN) proposes construction and upgrades of levees, floodwalls, floodgates, and pumping station(s) to achieve the authorized 100-year level of risk reduction for the West Bank and Vicinity of the Mississippi River (WBV) Hurricane and Storm Damage Risk Reduction System (HSDRRS). The proposed action is located in Jefferson, Orleans, and Plaquemines Parishes in the state of Louisiana.

The action, Gulf Intracoastal Waterway West Closure Complex (WCC) alternative, proposes to alter the original system alignment and construct a streamlined surge barrier, floodwall, levee alignment. The alternative would consist of constructing approximately 3 miles of levee and floodwall that would reduce the primary line of defense by 38 percent. By removing 25 miles of existing parallel protection from the primary line of defense, this more streamlined surge barrier reduces the number of potential failure points in the system, increases quality control and the certainty of subsurface conditions during construction, and minimizes human impacts since the footprint of the existing levees system would not be widened to 100-year level of risk reduction. Funding for the construction of the proposed action has been obtained via supplemental appropriations (see www.nolaenvironmental.gov).

Construction of this action would not only provide a high degree of system reliability and risk reduction for this segment of WBV, but would incorporate industrial areas along the Harvey Canal that are currently outside of the risk reduction system into the system. In addition, the existing protection would become a secondary line of risk reduction during a storm event.

The government’s action for IER # 12 would raise and/or construct levees, floodwalls, and other structures to meet the 100-year level of risk reduction for the Harvey -Westwego, Gretna – Algiers, and Belle Chasse areas. The new levee and floodwall designs in IER # 12 would require approximately 3,125,000 cubic yards of earthen material and 310,000 tons of stone to construct (quantities are approximate and may change as construction designs are finalized).

The proposed action also includes providing risk reduction fronting protection for pump stations and backflow prevention for the existing pump stations on Harvey and Algiers Canals. Existing pump stations in the detention basin would receive fronting protection to elevation 8.5 ft.
For clarity, the proposed action is described from west to east and the entire alignment has been divided into “western”, “northern”, and “eastern” sections.

The western section of this alignment extends north from approximately 6,000 ft northeast of the V-line levee intersection with Highway 45 in Jefferson Parish to Old Estelle Pump Station (PS). This section includes a 200 ft wide by 15 ft deep interior drainage canal on the protected side and the Bayou aux Carpes CWA Section 404(c) area on the flood side. The government’s action for this section consists of an earthen levee enlargement with a protected side shift, partially outside of existing ROW. The centerline of the new levee would be shifted 58 ft to the protected side of the centerline of the existing levee. This 5,900 ft earthen levee stretch would be raised to 100-year level of risk reduction, with a design elevation of approximately El. 14 ft (table 1). An additional 125 ft of permanent ROW into a Bottomland Hardwood (BLH) area would be required along the V-line levee to the Old Estelle PS. The proposed action would require the relocation of the existing drainage canal 200 ft to the protected side. The additional ROW required to upgrade the levee and relocate the drainage canal would be 17 acres (table 1). The levee would tie into the fronting protection at Old Estelle PS.
### Table 1. Proposed Action Components

<table>
<thead>
<tr>
<th></th>
<th>New ROW Impacts (acres)</th>
<th>Design Elevation (ft)</th>
<th>Length* (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Levee</td>
<td>17</td>
<td>14</td>
<td>5,900</td>
<td>V-line levee upgrade and Canal Relocation</td>
</tr>
<tr>
<td>Northern Floodwall</td>
<td>1</td>
<td>14</td>
<td>N/A</td>
<td>Old Estelle PS Improvements</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>14 - 16</td>
<td>3,700</td>
<td>Estelle Outfall Canal Floodwall and Flow Control Structure</td>
</tr>
<tr>
<td>Eastern Floodwall</td>
<td>9.6</td>
<td>16</td>
<td>4,200</td>
<td>Innovative T-Wall within Bayou aux Carpes CWA Section 404(c) Area</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>TBD</td>
<td>TBD</td>
<td>Project Feature Augmentations</td>
</tr>
<tr>
<td>Closure Complex and Levee and Road Realignment</td>
<td>240</td>
<td>16</td>
<td>N/A</td>
<td>Main Channel Gate (150 ft – 300 ft)</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>N/A</td>
<td>4,000 – 5,000</td>
<td>Bypass Channel Gate (75 ft – 150 ft)</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>N/A</td>
<td>20,000</td>
<td>20,000 cfs Pump Station</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>4,000 – 5,000</td>
<td></td>
<td>Levee and Road Realignment East of the GIWW</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>4</td>
<td>2,000</td>
<td>Foreshore Protection</td>
</tr>
<tr>
<td>Pipeline Relocation</td>
<td>1</td>
<td>N/A</td>
<td>N/A</td>
<td>Via Directional Drilling to Avoid Impacts to the Bayou aux Carpes CWA 404(c) Area</td>
</tr>
<tr>
<td>Detention Basin Improvements</td>
<td>6</td>
<td>8.5</td>
<td>1,900</td>
<td>Harvey Canal West Bank Levees</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>8.5</td>
<td>13,700</td>
<td>Harvey Canal West Bank Levees</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>8.5</td>
<td>N/A</td>
<td>Belle Chasse Tunnel</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>8.5</td>
<td>8,700</td>
<td>Algiers Lock to Belle Chasse Hwy (West)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>8.5</td>
<td>6,330</td>
<td>Hero Cutoff to Belle Chasse Hwy (East)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>387</strong></td>
<td><strong>51,430</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Approximations

All of the construction work for this segment would occur on the protected side of the levee and would not impact the Bayou aux Carpes CWA Section 404(c) area. Construction of the western section would be expected to take 2 years.

The northern section of this alignment extends east from Old Estelle PS to the Harvey Canal. This section includes BLH habitat on the protected side and the Old Estelle Pump Station Outfall Canal on the flood side. Fronting protection would be built to the 100-year level of risk reduction at the Old Estelle PS and would tie into the levee on each side of the pump station (table 1). A T-wall would be constructed within existing ROW on the protected side of the existing earthen levee that runs along the northern bank of Old Estelle Outfall Canal. The T-wall would have a design elevation of El. 14 to El.16 ft and would be 3,700 ft in length (table 1).
This T-wall would tie into a new flow control structure at the intersection of the Old Estelle Outfall Canal and the Harvey Canal. The flow control structure would be constructed at El. 16 ft, and would cross the Old Estelle Outfall Canal and tie into the eastern section of this alignment (the Bayou aux Carpes CWA Section 404(c) T-wall). This flow control structure would be required to control the discharge from the Old Estelle pumping station into the GIWW. All of the construction work would occur on the protected side of the levee and would not impact the Bayou aux Carpes CWA Section 404(c) area.

A benefit of this flow control structure would be the potential to augment the Bayou aux Carpes CWA Section 404(c) wetland area by actively managing the freshwater discharge from the Old Estelle PS. The USACE in cooperation with the EPA, the National Park Service (NPS), the U.S. Fish and Wildlife Service (USFWS), and other Federal and state resource agencies is conducting studies that are investigating the engineered gapping of the south bank of the Old Estelle Outfall Canal. These gaps in the outfall canal would allow freshwater from the pumping station to be directed into the Bayou aux Carpes CWA Section 404(c) area if determined to be beneficial to the wetland. The freshwater would be directed to the GIWW if it was determined not to be beneficial. Studies are ongoing to optimize the use of this feature to provide maximum benefit to the Bayou aux Carpes CWA Section 404(c) wetlands.

The eastern section of this alignment extends south from the flow control structure within the Old Estelle Outfall Canal, along the western bank of the GIWW within the Bayou aux Carpes CWA Section 404(c) area, crosses the GIWW and ends just north of Hero Canal. This section includes the GIWW channel and a BLH habitat on the GIWW east bank on the protected side of the existing HSDRRS, and a portion of the Bayou aux Carpes CWA Section 404(c) area on the flood side. A T-wall constructed north to south along the western bank of the GIWW within the Bayou aux Carpes CWA Section 404(c) area would tie into the flow control structure at the end of the Old Estelle Outfall Canal and at the southern end of the wall would tie into the closure complex and pump station complex that crosses the GIWW. This T-wall would be constructed so that a 100 ft by 4,200 ft, 9.6 acre or less, corridor of the Bayou aux Carpes CWA Section 404(c) area would be impacted by the construction of the floodwall (table 1). Obtaining the approximately 9.6 acres of new ROW to construct the innovative T-wall within the Bayou aux Carpes CWA Section 404(c) area would be contingent upon the EPA granting a modification to the Bayou aux Carpes CWA Section 404(c) Final Determination. The CEMVN submitted a formal request to modify the Bayou aux Carpes Final Determination on 4 November 2008.

In order to minimize impacts to these unique wetlands and confine construction impacts within that corridor, an innovative T-wall design will be used. This innovative T-wall design will minimize the footprint of the structure in the Bayou aux Carpes CWA Section 404(c) area. In addition, because the GIWW is a Federally maintained navigation channel, a protective earthen berm would be constructed on the protected side of the floodwall, the GIWW channel side. This berm would protect the wall from barge impacts, provide concrete scour protection, and serve as a maintenance access road.

Because of necessary channel dredging and pile driving activities, the Enterprise Pipeline will be relocated. In order to further minimize impacts to the Bayou aux Carpes CWA Section 404(c) area, the existing pipeline would be relocated utilizing modern directional drilling technologies that would allow the new line to pass under the 404c area. The pipeline relocation would not only avoid direct impacts to the 404c area, but would also minimize future impacts since the new more modern design would require less intrusive operations and maintenance than the existing pipeline.
In the GIWW adjacent to the Bayou aux Carpes CWA Section 404(c) area, 2,000 linear feet (LF) of foreshore dike protection using 650 lb stone would be constructed to prevent impacts (i.e., scouring, bank erosion, etc.) from occurring within the 404c area due to the discharge from the 20,000 cfs pump station. This foreshore dike protection would be constructed within the GIWW adjacent to but not within the Bayou aux Carpes CWA Section 404(c) area. Foreshore protection would not alter existing hydrologic conditions within the Bayou aux Carpes CWA Section 404(c) area.

The gate(s) and pump station described in the eastern section are referred to throughout this report as the “closure complex”, which is a component of the proposed action referred to as the “GIWW West Closure Complex” or WCC. Features of the closure complex that would cross the GIWW would include a primary 150-ft to 300-ft navigation gate and a secondary 75-ft to 150-ft gate built to a design elevation of 16 ft (table 1). The closure complex would tie into a floodwall to the west and flood protection levee to the east. The design of the closure complex is being done in collaboration with representatives from the navigation industry and the US Coast Guard to ensure that the safest and most reliable system would be constructed. One of the primary design criteria of these gates is that the structure is large enough to meet the current flow rates in the channel. It would also be necessary to construct a permanent bypass channel and a 20,000 cfs pump station with positive backflow prevention.

A new levee would be constructed further eastward on what is currently the protected side. The levee work may require geotextile fabric and/or deep soil mixing to strengthen the levee foundation. Bayou Road would be realigned to provide access around the new levee on the protected side.

Four million cubic yards of material would be removed during construction of the eastern floodwall, closure complex, levee, and road realignment. After being evaluated for suitability this material would be used as borrow for the HSDRRS project. The material not used for borrow will be disposed of in the Walker Road borrow sites. The overburden material (i.e. roots, stumps, trees, etc.) would be mulched and used on site or hauled away to a landfill. Any road material (i.e. rock and earthen material) would be used to construct the new road.

The construction of this closure complex, levee, and road realignment would require a total of 240 acres of additional ROW to implement the construction work (table 1). The realignment of the road would have indirect impacts on the High Point Shooting area, such that they would need to reconfigure several of their shooting lanes in different directions.

Draft Individual Environmental Report (IER) #12, which detailed the impacts of the proposed actions, was released for a 30-day public review on 5 January 2009. In cooperation with the US Environmental Protection Agency (EPA) a public hearing date was set for 11 February 2009. The USACE extended the IER 12 comment period to allow stakeholders until 11 February 2009 to comment on the proposed project. Verbal and written comments were received from governmental agencies, non-governmental organizations (NGOs), and citizens. A joint EPA and CEMVN public hearing specific to IER #12 was held on 11 February 2009. Approximately 15 comments were received from interested stakeholders during the public hearing.

Factors Considered in Determination, CEMVN has assessed the impacts of the proposed action on significant resources in the proposed project area, including the Bayou aux Carpes CWA Section 404(c) area, jurisdictional wetlands, non-jurisdictional bottomland hardwood forest (BLH), non-wetland/upland resources, prime and unique farmland, fisheries, wildlife, threatened
and endangered (T&E) species, cultural resources, recreational resources, noise quality, air quality, water quality, transportation, aesthetics, and socioeconomic resources.

The WCC alternative was selected for construction because it simultaneously (1) minimizes impacts to residential, commercial, and industrial properties, (2) minimizes the amount of storm frontage, thereby decreasing risk while improving reliability, and (3) minimizes overall impacts to the human environment (specifically to the EPA designated Bayou aux Carpes CWA Section 404(c) area) as compared to other alternatives.

All jurisdictional wetlands and non-jurisdictional BLH forest impacts were assessed by the US Fish and Wildlife Service (USFWS) and CEMVN under NEPA, Fish and Wildlife Coordination Act, and Section 906 (b) WRDA 1986 requirements. The unavoidable impacts for the proposed action are shown in Table 2.

Mitigation IERs will be prepared documenting and compiling the unavoidable impacts discussed in this IER. Mitigation will implement compensatory mitigation as early as possible once construction begins. All mitigation activities will be consistent with standards and policies established in the Clean Water Act Section 404 and the appropriate USACE policies and regulations governing this activity.
## Table 2. Detailed Comparison of Estimated Wetland Impacts

<table>
<thead>
<tr>
<th>Protected Side Acres</th>
<th>Flood Side Acres</th>
</tr>
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<tbody>
<tr>
<td>Pasture</td>
<td>Early Successional BLH</td>
</tr>
<tr>
<td>Western Levee (27.5 ac)</td>
<td>---</td>
</tr>
<tr>
<td>Northern Floodwall (5.8 ac)</td>
<td>---</td>
</tr>
<tr>
<td>Eastern Floodwall (9.6 ac)</td>
<td>---</td>
</tr>
<tr>
<td>Closure Complex, Levee, and Road Realignment (142.3 ac)</td>
<td>---</td>
</tr>
<tr>
<td>Eastern Staging Areas (70.5 ac)</td>
<td>63.6</td>
</tr>
<tr>
<td>Detention Basin – West Bank Harvey (44.5 ac)</td>
<td>---</td>
</tr>
<tr>
<td>Detention Basin – West Bank Algiers (24.3 ac)</td>
<td>---</td>
</tr>
<tr>
<td>Detention Basin – East Bank Algiers (67.9 ac)</td>
<td>---</td>
</tr>
<tr>
<td><strong>TOTAL Acres (392.6)</strong></td>
<td>63.6</td>
</tr>
<tr>
<td><strong>TOTAL AAHUs Lost (217.7)</strong></td>
<td>0</td>
</tr>
</tbody>
</table>
Total Altered BLH (protected side) = 251.7 acres, 177.3 AAHUs

<p>| | | |</p>
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</tr>
</thead>
<tbody>
<tr>
<td>Total BLH (404c) (flood side)</td>
<td>2.3 acres, 1.9 AAHUs</td>
<td></td>
</tr>
<tr>
<td>Total Swamp (flood side)</td>
<td>74.9 acres, 38.5 AAHUs</td>
<td></td>
</tr>
</tbody>
</table>

*Based on the HAM and WTA analyses project implementation would result in the direct loss of 255 and 75 acres, and 179.2 and 38.5 AAHUs, of bottomland hardwood forest and swamp, respectively.

Environmental Design Commitments. Due to the action’s impacts to the Bayou aux Carpes CWA Section 404(c) area, interagency collaboration, especially with the EPA, began early in the planning process and has continued during the development of IER # 12. The CEMVN agrees to support adaptive management efforts and to ensure that project feature augmentations would be implemented to minimize adverse impacts within the 404(c) area. The CEMVN has and would continue to employ measures to reduce the impacts to the Bayou aux Carpes CWA Section 404(c) area. Listed below are those efforts to minimize impacts to the 404c area:

- **The WCC alternative:** The first measure employed was the derivation of the WCC alternative in which a structure would be built along the boundary of the Bayou aux Carpes CWA Section 404(c) area instead of pursuing an alternative that would have bisected the Bayou aux Carpes 404c area. The WCC alternative limits adverse impacts to the 404(c) area by building a structure with a narrow footprint (T-wall and earthen berm) along a portion of the Bayou aux Carpes CWA Section 404(c) area that was previously disturbed and would avoid impounding the northern third of the Bayou aux Carpes CWA Section 404(c) area, largely a flotant marsh (see section 2.4.2 of IER 12).

- **Innovative techniques to build a floodwall along a navigable waterway:** The structure in the Bayou aux Carpes CWA Section 404(c) area would be constructed as a floodwall in lieu of an earthen levee in order to ensure that the least environmentally damaging alternative is in place within this section. A floodwall can be built on a much smaller footprint than an earthen levee. Because the GIWW is a Federally maintained navigation channel, a protective berm would be constructed on the protected side of the floodwall, the GIWW channel side. This berm would protect the wall from barge impacts and serve as a maintenance access road. The USACE has committed to the EPA, resource agencies and to the stakeholders to minimize the footprint of this surge barrier component within the Bayou aux Carpes CWA Section 404(c) area to the greatest extent practicable.

- **Construction via water based equipment:** The floodwall and earthen berm will be constructed within the 100 ft right-of-way or less. No additional construction easements will be required for wall construction.

- **GIWW Gate location:** The USACE endeavored to locate the gate on the GIWW as far north as practical to further reduce impacts. This resulted in a corridor with a maximum footprint of 4,200 ft by 100 ft for the floodwall. It is understood that the GIWW is a Federal navigation channel with heavy commercial barge traffic which requires that design of this structure be such that safety of users of the system be a paramount design consideration.

- **Project feature augmentations:** The USACE proposes that if it is feasible to complete augmentations to minimize adverse impacts that could potentially occur because of the
construction of the WCC alternative it will complete those augmentations, monitor the area, and apply adaptive management techniques as determined needed in cooperation with the resource agencies to the area. Studies are underway in cooperation with the EPA, NPS, and other resource agencies to determine the best and safest alternatives for augmenting the 404(c) area to avoid or minimize hydrological impacts that could result due to the government constructing this project. Once the studies are complete, the CEMVN, in conjunction with the resources agencies, would determine which features would be constructed. The appropriate features would be constructed as soon as this determination is made and design is completed. See chapters 5 and 7 in IER 12 for more information on the implementation and operation of project feature augmentations.

- **Flow control structure:** If fresh water input into the 404(c) area via dredged material bank gapping along the southern bank of the Old Estelle Outfall Canal is determined to be beneficial, the Old Estelle Canal flow control structure would be operated in a manner to provide the highest and best use of the outflow. In the event that freshwater input would result in adverse impacts, the structure would be operated to allow water to flow directly into the GIWW.

- **Relocation of the Enterprise Pipeline:** The pipeline relocation will be conducted in a manner to avoid impacts to the Bayou aux Carpes CWA Section 404(c) area. The existing pipeline will be relocated utilizing modern directional drilling technologies that will allow the new pipeline to pass under the 404(c) area. Directional drilling would not only avoid direct impacts to the 404(c) area, but would minimize future impacts since the newer, more modern design would require less intrusive operations and maintenance than the existing pipeline. Directional drilling of the pipeline would avoid impacts to BLH habitat in the 404(c) area.

- **Foreshore protection within GIWW:** Within the channel on the western side of the GIWW, adjacent to but not within the Bayou aux Carpes CWA Section 404(c) area, foreshore protection will be constructed to prevent any impacts that could result from operation of the pump station (i.e., scouring, banks erosion, etc.) within the 404(c) area due to the discharge from the 20,000 cfs pump station.

- Approximately 217.7 AAHUs of BLH and swamp habitat will be addressed in separate IERs specifically written for mitigation implementation.

Agreements between the CEMVN and cooperating Federal and state resource agencies pertinent to the proposed action are:

- Include project feature augmentations that would enhance the hydrology of the Bayou aux Carpes CWA Section 404(c) area, thus offsetting any potential indirect impacts due to the construction of the HSDRRS. The benefits of these augmentations would be determined as part of the ongoing studies;

- Develop an assessment report that addresses potential hydrological and ecological impacts to the Bayou aux Carpes CWA Section 404(c) area as a result of the HSDRRS;

- Collect baseline data within the Bayou aux Carpes CWA Section 404(c) area and surrounding water bodies to inform the impact assessment;

- Develop a long-term monitoring plan (IER 12, chapter 7);
• Develop a mitigation plan that specifies on-site mitigation for the 9.6 acres that could be impacted, will be conducted within the Bayou aux Carpes CWA Section 404(c) area or the adjoining National Park Service (NPS) Jean Lafitte National Historical Park and Preserve (JLNHPP) (IER 12, chapters 5 and 7). This mitigation plan will be discussed in a future mitigation IER, and

• CEMVN will prepare IER supplements and a Comprehensive Environmental Document (CED) that may contain additional information related to IER #12 that becomes available after the execution of the Final IER.

The proposed project feature augmentations developed in collaboration with the EPA and other resource agencies, including, in order of priority:

1. Gapping the existing earthen bank along the southern side of the Old Estelle Outfall Canal to provide regulated sheet flow into the Bayou aux Carpes CWA Section 404(c) area;

2. Modifying the existing earthen bank along the Southern Natural Gas Pipeline Canal to provide hydrological exchange between the northern and southern sections of the Bayou aux Carpes CWA Section 404(c) area;

3. Modifying the shell plug at Bayou aux Carpes to provide hydrological exchange between the GIWW and the Bayou aux Carpes CWA Section 404(c) area;

4. Closing the Southern Natural Gas Pipeline Canal to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area;

5. Gapping or grading down drill hole access canal banks to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area; and

6. Gapping or grading down oil well access roads to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area.

These project feature augmentations and plans are being evaluated for effectiveness and feasibility (constructability, relation to project construction, and resource availability) in partnership with the EPA, the NPS, and other resource agencies. Final determination of which project feature augmentations to implement would be determined in collaboration with the Interagency team after an analysis of benefits and impacts is completed (See IER 12, section 7 for further details regarding the mitigation and monitoring plans for impacts to the Bayou aux Carpes CWA Section 404(c) area.

CEMVN is coordinating with USFWS to implement the recommendations laid out in the USFWS Coordination Act Report (CAR) (letter dated 24 December 2008, Appendix D). The recommendations of the USFWS, and CEMVN responses, are found in IER 12, section 6.2.

The Louisiana State Historic Preservation Officer (LSHPO) requests that if any unrecorded cultural resources are determined to exist within the proposed borrow areas, then no work will proceed in the area containing these cultural resources until a CEMVN staff archeologist has
been notified and final coordination with the LSHPO and Tribal Historic Preservation Officer has been completed.

**Agency & Public Involvement.** Various governmental agencies, non-governmental organizations, and citizens were engaged throughout the preparation of IER #12. Agency staff from USFWS, NMFS, EPA, US Geologic Survey (USGS), National Park Service (NPS), Louisiana Department of Natural Resources (LaDNR), and Louisiana Department of Wildlife and Fisheries (LaDWF) were part of an interagency team that has and will continue to have input throughout the HSDRRS planning process (Appendix C).

There have been over 100 public meetings since March 2007 about proposed HSDRRS work. Issues relating to draft IER # 12 have been discussed at several of these meetings. CEMVN sends out public notices in local and national newspapers, news releases (routinely picked up by television and newspapers in stories and scrolls), and mail notifications to stakeholders for each public meeting. In addition, www.nolaenvironmental.gov was set up to provide information to the public regarding proposed HSDRRS work. CEMVN has recently started sending out e-mail notifications of the meetings to approximately 300 stakeholders who requested to be notified by this method. Public meetings will continue throughout the planning process. In addition to the public meetings, the CEMVN held a joint public hearing on 11 February 2009 with the EPA to take comments on the government’s proposed action.

**Draft IER #12 Agency Comments (found in Appendix D)**
- a. USFWS
  2. CAR dated 24 December 2008
  3. Comment letter dated 20 January 2009
- b. NMFS
  1. Concurrence of USFWS recommendations in a letter dated 29 January 2009
- c. LaDWF:
  1. Letter of review, dated 26 January 2009

**Draft IER #12 Public Comments (found in Appendix B)**
- d. Mr. Jeff Grimes: emailed comment dated 26 May 2008
- e. Mr. Jody Coyne: emailed comment dated 5 June 2008
- g. Mr. Jody Coyne: emailed comment dated 10 December 2008
- h. Mr. George David Loeb, Jr.: Comment letter dated 5 January 2009
- i. Mr. Carl Ward: Comment letter dated 7 January 2009
- j. Mr. Glenn Trachen: Comment letter dated 7 January 2009
- k. Mississippi River Recycling: Comment letter dated 8 January 2009
- l. Mr. Richard Meissner: Comment letter dated 12 January 2009
- m. Mr. Jody Coyne: emailed comment dated 13 January 2009
- n. Mr. Allen Hero: Comment letter dated 16 January 2009
- q. Department of Wildlife and Fisheries: Comment letter dated 26 January 2009
- s. U.S. Environmental Protection Agency: Comment letter dated 5 February 2009
- t. Mr. Jay Vincent: Comment letter dated 9 February 2009
- v. Louisiana Audubon Council: Comment letter dated 11 February 2009
Draft IER #12 Public Hearing Comments: 11 February 2009

Verbal Comments (found in Appendix B)
1. Mayor Tim Kerner, Town of Lafitte, Louisiana
2. Mr. Donald Vallee, High Point Shoot Range owner
3. Mr. Matt Rota, Gulf Restoration Network
4. Mr. Gabriel Mondino, 8203 Maple Street, New Orleans, Louisiana
5. Ms. Jill Mastrototaro, Sierra Club
6. Mr. Harvey Stern, Sierra Club
7. Mr. Ray Champagne, resident of Lafitte, Louisiana
8. Dr. Barry Kohl, Louisiana Audubon Council
9. Ms. Felicia Kahn, League of Women Voters
10. Mr. Allen Hero, landowner in Belle Chasse, Louisiana
11. Mr. Jerry Huffman, Harvey Canal Industrial Association
12. Mr. Tom Halko, 4518 Jean Lafitte Blvd., Lafitte, Louisiana
13. Mr. Lawrence Pourciau

Decision. The CEMVN Environmental Planning and Compliance Branch has assessed the potential environmental impacts of the proposed action described in this IER, and performed a review of the comments received during the public review periods for Draft IER #12 and the public hearing held on 11 February 2009. Furthermore, all practicable means to avoid or minimize adverse environmental effects have been incorporated into the recommended plan.

The public interest will be best served by implementing the selected plan as described in IER #12 in accordance with the environmental considerations discussed above.

I have reviewed IER #12 and have considered agency recommendations and comments received from the public during the scoping phase and comment periods. I find the recommended plan fully addresses the objectives as set forth by the Administration and Congress in the 3rd, 4th, and 5th Supplemental Appropriations.

The plan is justified, in accordance with environmental statutes, and it is in the public interest to construct the actions as described in this document.

Date

Alvin B. Lee
Colonel, US Army
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CHAPTER 1 INTRODUCTION
The U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Individual Environmental Report # 12 (IER # 12) to evaluate the potential impacts associated with the proposed construction and upgrades of levees, floodwalls, floodgates, and pumping station(s) to achieve the authorized 100-year level of risk reduction for the this segment of the West Bank and Vicinity of the Mississippi River (WBV) Hurricane and Storm Damage Risk Reduction System (HSDRRS). The proposed action is located in Jefferson, Orleans, and Plaquemines Parishes in the state of Louisiana (figure 1).

IER 12 Study Area

Figure 1. IER # 12 Study Area
These parishes contain the Harvey-Westwego, Gretna-Algiers, and Belle Chasse Interagency Performance Evaluation Task Force (IPET) polders (figure 2). The total estimated population for these three parishes in 2006 was 687,261.

It is also important to note the presence of the U.S. Environmental Protection Agency (EPA) designated Bayou aux Carpes Clean Water Act (CWA) Section 404(c) area within this WBV project area (figure 3). These nationally significant wetlands are protected under the Clean Water Act (CWA, 33 U.S.C. 1251 et seq) Section 404c which authorizes the administrator of the EPA to deny or restrict the use of any defined area for specification as a disposal site, whenever he determines, after notice and opportunity for public hearings, that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. All potential impacts to this unique environment associated with the proposed action are thoroughly explained in sections 3.1.7, 3.2.2, 6, 7, and appendix K.

IER # 12 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. The execution of an IER, in lieu of a traditional Environmental Assessment (EA) or Environmental Impact Statement (EIS), is provided for in ER 200-2-2, Environmental Quality (33 CFR §230) Procedures for Implementing the NEPA and pursuant to the Council on Environmental Quality (CEQ) NEPA Implementation Regulations (40 CFR §1506.11). The Alternative Arrangements can be found at www.nolaenvironmental.gov, and are herein incorporated by reference.
The CEMVN implemented Alternative Arrangements on 13 March 2007 under the provisions of the CEQ Regulations for Implementing the NEPA (40 CFR §1506.11). This process was implemented in order to expeditiously complete environmental analysis for any changes to the authorized system and the 100-year level of the Hurricane and Storm Damage Risk Reduction System (HSDRRS), formerly known as the Hurricane Protection System (HPS), authorized and funded by Congress and the Administration. The proposed actions are located in southeastern Louisiana and are part of the Federal effort to rebuild and complete construction of the HSDRRS in the New Orleans Metropolitan area as a result of Hurricanes Katrina and Rita.

The draft IER # 12 was distributed for a 30-day public review and comment period on 05 January 2009. Comments were received during the public review and comment period from Federal
resource agencies, state resource agencies, non-governmental organizations, landowners, and citizens (appendix B).

At this time, the EPA has published a Federal Register notice of the CEMVN Request for Modification of the Bayou aux Carpes CWA Section 404(c) Final Determination and a joint public hearing within the Federal Register. An EPA comment period for the public to be able to submit their concerns regarding the proposed Modification to the Bayou aux Carpes CWA Section 404(c) Final Determination and impacts within Bayou aux Carpes CWA Section 404(c) area was held and ended on 13 February 2009. The CEMVN/EPA public hearing was held following both the CEMVN comment period on 11 February 2009. The CEMVN letter to the EPA formally requesting a modification to the Bayou aux Carpes CWA 404(c) Final Determination can be accessed at www.nolaenvironmental.gov and in appendix K.

After the EPA public comment period for the 404(c) Final Determination Modification Request and the CEMVN/EPA public hearing, the EPA will review all comments received concerning the 404(c) Final Determination during the review period. If the EPA decides to modify the Bayou aux Carpes CWA Section 404(c) Final Determination, a Federal Register notice will be published and the modification would be effective 30 days following that notice. After the EPA issues the Final Determination modification, the CEMVN Protection and Restoration Branch Chief will make a finding that the proposed action complies with the Section 404(b)(1) guidelines, pursuant to the CEMVN Section 404(b)(1) Evaluation, which was released for public comment concurrent with the draft IER #12.

For more information on how the CEMVN District Commander’s decision relates to the EPA modification determination see appendix K.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

Hurricane Katrina on 29 August 2005 caused major damage to Metropolitan New Orleans and to the Federal and non-Federal flood control and HSDRRS in southern Louisiana. Hurricane Rita made landfall on 24 September 2005, and added to local damages. The purpose of the proposed action is to enhance the WBV portion of the hurricane and storm damage risk reduction system to provide 100-year level of risk reduction. The proposed action would improve an important link in the comprehensive system of levees, floodwalls, floodgates and drainage structures protecting the WBV residential, commercial, and industrial establishment.

The proposed action results from a defined need to reduce flood risk and storm damages to residences, businesses, and other infrastructure from hurricanes (100-year tropical storm events) and other high water events. Such action is vital to the recovery and revitalization of metropolitan New Orleans. The completed HSDRRS would lower the risk of harm to citizens, and damage to infrastructure during a tropical storm event. The safety of the people in the region is the highest priority of the CEMVN.

The term “100-year level of risk reduction,” as it is used throughout this document, refers to a level of protection that reduces the risk of hurricane surge and wave-driven flooding that the New Orleans metropolitan area has a 1 percent chance of experiencing in any given year.

The report “Elevations for Design of Hurricane Protection Levees and Structures Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection Project and West Bank and Vicinity, Hurricane Protection Project” provides detailed documentation of the coastal and hydraulic engineering analysis performed to determine the 1 percent project design elevations for hurricane protection projects (USDOD 2007). The report has been prepared to provide levee and structure
elevations so that the USACE could initiate detailed design and construction as described in the 4th Supplemental Appropriation, Public Law 109-234 of the One Hundred Ninth Congress:

“...at least $495,300,000 shall be used consistent with the cost-sharing provisions under which the projects were originally constructed to raise levee heights where necessary and otherwise enhance the existing Lake Pontchartrain and Vicinity project and the existing West Bank and Vicinity project to provide the levels of protection necessary to achieve the certification required for participation in the National Flood Insurance Program under the base flood elevations current at the time of this construction...”

For more information on the existing flood protection system, the upgrades proposed, and details on risk and reliability visit www.nolaenvironmental.gov and read the posted literature.

1.2 AUTHORITY FOR THE PROPOSED ACTION

The authority for the proposed action was provided as part of a number of hurricane protection projects spanning southeastern Louisiana, including the Lake Pontchartrain and Vicinity (LPV) Hurricane Protection Project and the West Bank and Vicinity (WBV) Hurricane Protection Project. Congress and the Administration granted a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade the project systems damaged by the storms that gave additional authority to the USACE to construct 100-year HSDRRS projects.

The Westwego to Harvey Canal Hurricane Protection Project was authorized by the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662, Section 401(b)). The WRDA of 1996 modified the project and added the Lake Cataouatche Project and the East of Harvey Canal Project (P.L. 104-303, Section 101(a)(17) & P.L. 104-303, 101(b)(11)). The WRDA of 1999 combined the three projects into one project under the current name (P.L. 106-53, Section 328).

The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - P.L. 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized accelerated completion of the project and restoration of project features to design elevations at 100 percent Federal cost. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorizes construction of a 100-year level of risk reduction; the replacement or reinforcement of floodwalls; and the construction of levee armoring at critical locations.

Additional Supplemental Appropriations include the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental - P.L. 110-28, Title IV, Chapter 3, Flood Control and Coastal Emergencies, Section 4302) and the 6th Supplemental (P.L. 110-252, Title III, Chapter 3).
1.3 PRIOR REPORTS

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

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

- On 21 January 2009, the CEMVN signed a Decision Record on IER # 17, entitled “Company Canal Floodwall, Jefferson Parish, Louisiana.” The proposed action includes providing 100-year level of risk reduction in the project area.

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

- On 26 August 2008, the CEMVN signed a Decision Record on IER # 14, entitled “Westwego to Harvey, Levee Jefferson Parish, Louisiana.” The document was prepared to examine the potential environmental impacts associated with the proposed construction and maintenance of 100-year level of risk reduction along the WBV, Westwego to Harvey Levee project area.

- On 12 June 2008, the CEMVN signed a Decision Record on IER # 15, entitled “Lake Cataouatche Levee, Jefferson Parish, Louisiana.” The proposed action includes providing 100-year level of risk reduction in the project area.

- On 30 May 2008, the CEMVN signed a Decision Record on IER # 22 entitled “Government Furnished Borrow Material, Plaquemines and Jefferson Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of excavating borrow areas for use in construction of the HSDRRS.

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

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

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

• In July 2006, the CEMVN signed a Finding of No Significant Impact (FONSI) on an EA #433 entitled, “USACE Response to Hurricanes Katrina & Rita in Louisiana.” The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of Hurricanes Katrina and Rita.

• On 23 August 2005, the CEMVN signed a FONSI on EA # 422 entitled “Mississippi River Levees – West Bank Gaps, Concrete Slope Pavement Borrow Area Designation, St. Charles and Jefferson Parishes, Louisiana.” The report investigates the impacts of obtaining borrow material from various areas in Louisiana.

• On 22 February 2005, the CEMVN signed a FONSI on EA # 306A entitled “West Bank Hurricane Protection Project – East of the Harvey Canal, Floodwall Realignment and Change in Method of Sector Gate.” The report discusses the impacts related to the relocation of a proposed floodwall moved because of the aforementioned sector gate, as authorized by the LPV Project.

• On 5 May 2003, the CEMVN signed a FONSI on EA # 337 entitled “Algiers Canal Alternative Borrow Site.”

• On 19 June 2003, the CEMVN signed a FONSI on EA # 373 entitled “Lake Cataouatche Levee Enlargement.” The report discusses the impacts related to improvements to a levee from Bayou Segnette State Park to Lake Cataouatche.

• On 16 May 2002, the CEMVN signed a FONSI on EA # 306 entitled “West Bank Hurricane Protection Project - Harvey Canal Sector Gate Site Relocation and Construction Method Change.” The report discusses the impacts related to the relocation of a proposed sector gate within the Harvey Canal, as authorized by the LPV Project.

• On 30 August 2000, the CEMVN signed a FONSI on EA # 320 entitled “West Bank Hurricane Protection Features.” The report evaluates the impacts associated with borrow sources and construction options to complete the Westwego to Harvey Canal Hurricane Protection Project.

• On 18 August 1998, the CEMVN signed a FONSI on EA # 258 entitled “Mississippi River Levee Maintenance - Plaquemines West Bank Second Lift, Fort Jackson Borrow Site.”

• The final EIS for the WBV, East of Harvey Canal, Hurricane Protection Project was completed in August 1994. A Record of Decision (ROD) was signed by the CEMVN in September 1998.

• The final EIS for the WBV, Lake Cataouatche, Hurricane Protection Project was completed. A ROD was signed by the CEMVN in September 1998.

• In December 1996, the USACE completed a post-authorization change study entitled, “Westwego to Harvey Canal, Louisiana Hurricane Protection Project Lake Cataouatche Area, EIS.” The study investigated the feasibility of providing hurricane surge protection to that portion of the west bank of the Mississippi River in Jefferson Parish between Bayou
Segnette and the St. Charles Parish line. A Standard Project Hurricane (SPH) level of risk reduction was recommended along the alignment followed by the existing non-Federal levee. The project was authorized by Section 101 (b) of the WRDA of 1996 (P.L. 104-303) subject to the completion of a final report of the Chief of Engineers, which was signed on 23 December 1996.


- In August 1994, the CEMVN completed a feasibility report entitled “WBV (East of the Harvey Canal).” The study investigated the feasibility of providing hurricane surge protection to that portion of the west bank of metropolitan New Orleans from the Harvey Canal eastwards to the Mississippi River. The final report recommends that the existing West Bank Hurricane Project, Jefferson Parish, Louisiana, authorized by the WRDA of 1986 (P.L. 99-662), approved 17 November 1986, be modified to provide additional hurricane protection east of the Harvey Canal. The report also recommends that the level of risk reduction for the area east of the Algiers Canal deviate from the National Economic Development Plan’s level of risk reduction and provide protection for the SPH. The Division Engineer’s Notice was issued on 1 September 1994. The Chief of Engineer’s report was issued on 1 May 1995. Preconstruction, engineering, and design was initiated in late 1994 and is continuing. The WRDA of 1996 authorized the project.

- On 20 March 1992, the CEMVN signed a FONSI on EA # 165 entitled “Westwego to Harvey Canal Disposal Site.”

- On 3 June 1991, the CEMVN signed a FONSI on EA # 136 entitled “West Bank Additional Borrow Site between Hwy 45 and Estelle PS.”

- On 15 March 1990, the CEMVN signed a FONSI on EA # 121 entitled “West Bank Westwego to Harvey Changes to EIS.” The report addresses the impacts associated with the use of borrow material from Fort Jackson for LPV construction. The material was used for constructing the second life for the Plaquemines West Bank levee upgrade, as part of LPV construction.

- In December 1986, the USACE completed a Feasibility Report and EIS entitled, “West Bank of the Mississippi River in the Vicinity of New Orleans, La.” The report investigates the feasibility of providing hurricane surge protection to that portion of the west bank of the Mississippi River in Jefferson Parish between the Harvey Canal and Westwego, and down to the vicinity of Crown Point, Louisiana. The report recommends implementing a plan that would provide SPH level of risk reduction to an area on the west bank between Westwego and the Harvey Canal north of Crown Point. The project was authorized by the WRDA of 1986 (P.L. 99-662). Construction of the project was initiated in early 1991.

- On 16 October 1985, the Environmental Protection Agency (EPA) signed a Final Determination concerning the Bayou aux Carpes Site in Jefferson Parish pursuant to Section 404(c) of the Clean Water Act (CWA). The authority for this determination was given to the Administrator of the EPA under the CWA (33 USC, 1251 et eq).
1.4 INTEGRATION WITH OTHER INDIVIDUAL ENVIRONMENTAL REPORTS

In addition to this IER and to the IERs for all other work areas and IERs for mitigation and borrow sites, the CEMVN is preparing a draft Comprehensive Environmental Document (CED) that will describe the work completed and remaining to be constructed. The purpose of the draft CED will be to document the work completed by the CEMVN on a system-wide scale. The draft CED will describe the integration of individual IERs into a systematic planning effort. Overall cumulative impacts and future operations and maintenance requirements will also be included. Additionally, the draft CED will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review.

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

Compensatory mitigation for unavoidable impacts associated with this and other proposed HSDRRS projects will be documented in forthcoming mitigation IERs, which are being written concurrently with all other IERs (see chapter 5 for details on mitigation).

1.5 PUBLIC CONCERN

This section presents a summary of the public concerns received regarding the proposed action. In addition, section 6.1 contains a list of the public involvement meetings that were held for the proposed project as well as the concerns expressed at those meetings and appendix B contains a public comment and response summary.

Comments at public meetings indicated concern over the current protection from hurricane-induced tidal surges during major storm events that might overtop levees near the proposed action. A key concern of local officials is to increase public confidence in the HSDRRS so that the physical and economic recovery of the area can proceed. Scheduling of construction for the 100-year level of risk reduction system was also a concern. Local officials also want the public to be aware that this hurricane risk reduction system is not intended to invalidate evacuation measures.

Concern has also been expressed for environmental impacts to the Bayou aux Carpes Clean Water Act (CWA) Section 404(c) area and the need to minimize adverse effects from project alternatives on hydrology and ecology. Generally, the public is concerned with the intangible values of this environmental resource (section 3.1.7) and would like impacts to it avoided or minimized as much as possible. Documentation of the rigorous procedure currently underway to assure that the impacts to such a valued resource are minimal, that those impacts are properly mitigated, and that there are project feature augmentations which would enhance the Bayou aux Carpes CWA Section 404(c) area can be found in appendix K.

Non-governmental organizations have commented on several aspects of IER # 12. Requests for an extended comment period, full avoidance of the Bayou aux Carpes CWA Section 404(c) area, and details on the augmentations features were made at public meetings and can be found in appendix
B. The most common question regarding full avoidance of the Bayou aux Carpes area suggested that moving the floodwall further into the GIWW, outside of the EPA boundary.

Other concerns include possible vulnerability along Peters Road from Lapalco Boulevard to Hero Pump Station where flood damage reduction projects are not yet complete (currently under construction); taking residences and businesses at any location; providing interim protection until the entire levee system is brought up to 100-year level of risk reduction; coastal restoration and wetland preservation; and the adequacy of the planning model used to predict the levee improvements required.

People living along Walker Road and East Bayou Road in the area of a proposed pump station and road relocation, have expressed concerns of increased traffic, traffic congestion, road repairs, security of their private property during construction activities. A local business owner has also expressed concerns of impacts to his business due to the road relocation.

Borrow from local sources impacting potential future development, increasing mosquito populations, and public safety have also been expressed as concerns by the public in writing and during the public meetings.

1.6 DATA GAPS AND UNCERTAINTIES

At the time of submission of this report, engineering evaluations have not been completed for all of the proposed actions and alternatives. Final selection and engineering details (e.g., placement of features) of the proposed action could vary based on the final engineering report. Substantial changes to the proposed action resulting in further impact to the natural or human environment would be addressed in a supplemental IER if needed.

The following data gaps exist at this time:

- The CEMVN has not identified the sources of levee material (i.e. borrow areas) to be used in levee construction. Several approved sources exist in the WBV area as detailed in IERs 18, 19, 22, 23, and 26. Additionally, other borrow sources are currently being investigated by the CEMVN. The CEMVN intends to select a borrow source prior to contract award that minimizes environmental impacts, provides the best technical solution, and is cost effective.

- The design report on which this analysis is based is in process. Thus, this analysis has been performed prior to formal design and is based on concept level design and reasonable assumptions regarding the proposed action. While the alternatives identified are in the preliminary design phases, their basic function and footprint for construction should be substantially the same as presented. The estimated environmental impacts have been assessed to create an envelope of effects within which design could proceed without compromising the integrity of this assessment.

- Environmental surveys are currently being conducted within the Bayou aux Carpes CWA Section 404(c) area to retrieve baseline condition data, e.g., water and soil quality and nutrient levels, for the various habitats that would be impacted by the proposed project and the proposed project feature augmentations within the 404c area. Therefore, the environmental surveys are discussed in this document; however, data and results of the surveys are not included. For more information see appendix K.

- Future plans to monitor the Bayou aux Carpes CWA Section 404(c) area for various parameters (e.g., water and soil quality and nutrient levels) are discussed in this IER;
however, the final data from those proposed monitoring programs are not available at this time and are not discussed in this document.

- Comprehensive project costs have not been determined because of uncertainties as to final design and other data gaps.

- Cumulative impact data is not complete in this report. A draft Comprehensive Environmental Document (CED) will be prepared which will include documented cumulative impacts on a system-wide basis. Cumulative impacts analysis would be prepared for all of the IERs affecting the WBV. Currently these include six IERs for levee/floodwall improvements, two for borrow areas, and two for mitigation pools (chapters 4 and 5).

- Complete impacts on transportation remain unknown. Large quantities of construction materials would be delivered to the project area, as well as to other ongoing 100-year level of risk reduction projects in the Greater New Orleans area. Consequently, air quality impacts due to transportation are also unknown. All applicable new data will be reviewed as it becomes available, and the CEMVN is currently completing a transportation analysis to quantify these impacts. The CEMVN intends to provide this transportation analysis in the CED.

- Mitigation planning of impacts is not complete in this report. Mitigation IERs will be prepared that will include mitigation of impacts on a system-wide basis for all IERs in the Metropolitan New Orleans area including IER # 12 (chapters 5 and 7).

- The exact start and end dates of construction for the project study area are approximate at the time of development of this report.

CHAPTER 2  ALTERNATIVES

2.1  ALTERNATIVES DEVELOPMENT AND PRELIMINARY SCREENING CRITERIA

NEPA requires that in analyzing alternatives to a proposed action a Federal agency considers an alternative of “No Action.” Likewise, Section 73 of the WRDA of 1974 (PL 93-251) requires Federal agencies to give consideration to non-structural measures to reduce or prevent flood damage. The CEMVN Project Delivery Team (PDT) considered a no action alternative and non-structural measures in this IER, which are discussed in sections 2.4.1 and 2.5.2, respectively.

In addition to these mandated alternatives, a range of reasonable alternatives was formulated through input by the CEMVN PDT, Value Engineering Team, engineering and design consultants, Federal and state resource agencies, local government, and the public.

The “action” alternatives are comprised of varying alternative alignments. The CEMVN investigated a wide range of possible alternative alignments to provide the most reliable, time sensitive and cost effective solution with the least adverse environmental impacts within the IER # 12 project area. Once a full range of alternatives was established, a preliminary screening was conducted to identify alternatives which would proceed through further analysis.

The PDT evaluated the alternatives against many criteria such as engineering effectiveness, economic efficiency, and environmental and social acceptability, before recommending the most feasible (per engineering), least environmentally damaging alternative to accomplish the risk reduction system improvements. The main PDT objective was to maximize system reliability
and minimize impacts to highly valued environmental resources such as the Bayou aux Carpes CWA Section 404(c) area and the human population, while also keeping in mind schedule and cost. Two significant parameters related to minimizing environmental impacts were the utilization of existing right-of-way (ROW) and innovative design as much as practicable. By incorporating these parameters into the design in the early stages, environmental consequences would be avoided and/or minimized to the greatest extent practicable. The selection of the proposed action alternative is the result of a collaborative planning effort with the EPA and other Federal and state resource agencies, members of the public and CEMVN (see appendix K, section 2.5, and section 6.3 for information on the wide range of alternatives considered).

2.2 DESCRIPTION OF THE ALTERNATIVES

Although it is the CEMVN’s intent to employ an integrated, comprehensive, and systems-based approach to hurricane and storm damage risk reduction in raising the HSDRRS to the 100-year level of risk reduction, each segment of the system has its own range of alternatives. This approach allows individual alternative decisions to be made in a manner cognizant of unique local circumstances. At the same time, the alternatives analysis and selection remain integrated and comprehensive, considering reaches in relation to one another and other past, current, and reasonably foreseeable actions by the CEMVN and other entities within the project study area.

The alternative descriptions also state how each alternative would tie into other, adjacent IER projects to insure awareness of the HSDRRS as a whole.

Alternatives. Five project alternatives were considered. These alternatives are described in sections 2.3 and 2.4:

1. No Action Alternative

2. Gulf Intracoastal Waterway (GIWW) West Closure Complex (WCC), (proposed action)

3. Southern Closure Option (GIWW A)

4. Algiers Gate (AG)

5. Parallel Protection (PP)

The discussions of levees, floodwalls, gates and alignments associated with these alternatives are excerpted from these reports: (1) GIWW Navigable Closure Structure Alternatives, (2) Sector Gate South Detailed Alternative Study Report, (3) WBV 14e.2 Engineering Alternative Report, and (4) WBV 14g.2 Engineering Alternative Report.

All elevations are with reference to North American Vertical Datum of 1988, 2004.65 (NAVD88) datum. NAVD88 uses one base monument located at Father’s Point, Quebec Canada as Mean Sea Level (MSL). All other bench marks in North America are referenced to that one base monument for NAVD88 elevations. The NAVD88 datum is now the standard datum used by the surveying community. All references to project feature elevations or El. (height) are design elevations for a specific level of risk reduction (i.e. previously authorized, 100-year, etc.).

Borrow material for IER # 12 is expected to come from the greater New Orleans area by one of three processes; Government furnished, Contractor Furnished, or a Supply Contract. Environmental compliance of potential borrow areas is being covered under a series of borrow IERs. The amount of borrow material needed ranges from 1 million cubic yards to 4.5 million cubic yards depending upon the alternative. All borrow material is coming from non-wetland sites at this time. The public
would be fully informed of any proposed changes to the current borrow standards, and public comments would be solicited prior to changing to those current standards.

2.3 PROPOSED ACTION: GULF INTRACOASTAL WATERWAY (GIWW) WEST CLOSURE COMPLEX (WCC)

The proposed action, WCC alternative proposes to alter the original system alignment and construct a streamlined surge barrier (figure 4a). The alternative would consist of constructing approximately 3 miles of levee and floodwall that would reduce the primary line of defense by 38 percent. By removing 25 miles of existing parallel protection from the primary line of defense, this more streamlined surge barrier reduces the number of potential failure points in the system, increases quality control and the certainty of subsurface conditions during construction, and minimizes human impacts since the footprint of the existing levees system would not be widened to 100-year level of risk reduction. Funding for the construction of the proposed action has been obtained via supplemental appropriations (see www.nolaenvironmental.gov).

![Figure 4a. Proposed Action Alignment for 100-Year Level of Risk Reduction](image)
Construction of this proposed action would not only provide the most system reliability and risk reduction for this segment of WBV, but would bring into protection those industrial areas along the Harvey Canal that are currently outside of the risk reduction system. In addition, the existing protection would become a secondary line of protection during a storm event.

The proposed action for IER # 12 would raise and/or construct levees, floodwalls, and other structures to meet the 100-year level of risk reduction for the Harvey -Westwego, Gretna – Algiers, and Belle Chasse IPET polders. Typical earthen materials used for levee construction consist of low organic clays, fertilizer, seed, mulch, and water, reinforced high strength geotextile fabric if required, low strength geotextile filter fabric for silt fences, plastic or steel hog wire for safety fences, steel or wood posts for silt and safety fences, crushed stone for surfacing and riprap for wave erosion prevention. The new levee and floodwall designs in IER # 12 would require approximately 3,125,000 cubic yards of earthen material and 310,000 tons of stone to construct (these quantities may change based on a revised alignment and hydraulic physical modeling which may require more stone).

The proposed action also includes providing a 100-year level of risk reduction fronting protection for pump stations and backflow prevention. Existing pump stations in the detention basin behind the surge barrier would receive fronting protection (El. 8.5 ft, less than 100-year level of risk reduction) and backflow prevention. During Hurricanes Katrina and Rita many low lying areas experienced flooding, which appears to have come partially from backflows that occurred at several east and west bank pumping stations. Backflows occur when pumps are off and high water levels on the discharge side force flow through the pumps and into the interior canals. If the discharge stage is above the highest invert of the discharge pipe or tube, but below the top elevation, free flowing backflows can occur. If the stages rise above the top elevation of the discharge pipe, siphonic backflows can occur. Backflow preventative measures for these pump stations within the existing alignment would reduce the risk of free flowing water from the Algiers and Harvey canals through the pump station discharge pipes into adjacent neighborhoods and infrastructure.

Figures of the proposed action alternative alignment are included which show the location of the pump station and navigation gates in conceptual configurations. These alignments are presented to present potential innovations. Impacts for both configurations are the same.

For clarity, the proposed action is described from west to east and the entire alignment has been divided into “western”, “northern”, and “eastern” sections (figure 4b). Proposed action components within each section are illustrated using conceptual models (figures 4c-4e).

The western section of this alignment extends north from approximately 6000 ft northeast of the V-line levee intersection with Highway 45 in Jefferson Parish to Old Estelle Pump Station (PS) (figure 4b). This section includes a 200 ft wide by 15 ft deep interior drainage canal on the protected side and the Bayou aux Carpes CWA Section 404(c) area on the flood side. The proposed action for this section consists of an earthen levee enlargement with a protected side shift, partially outside of existing ROW. The centerline of the new levee would be shifted 58 ft to the protected side of the centerline of the existing levee. This 5900 ft earthen levee stretch would be raised to 100-year level of risk reduction, with a design elevation of approximately El. 14 ft (table 1). An additional 125 ft of permanent ROW into a Bottomland Hardwood (BLH) area would be required along the V-line levee to the Old Estelle PS. The proposed action would require the relocation of the existing drainage canal 200 ft to the protected side. The additional ROW required to upgrade the levee and relocate the drainage canal would be 17 acres (table 1). The levee would tie into the fronting protection at Old Estelle PS.
Figure 4b. Proposed Action Alignment Divided into Sections
Figure 4c. Proposed Action (Conceptual Model)
Figure 4d. Proposed Action Close up of the Closure Complex (Conceptual Model)
Levee upgrade and new T-Wall along Old Estelle PS Outfall Canal

Innovative T-Wall (4200' X 100' construction corridor)

Levee upgrade and pipeline canal relocation (Protected side shift - does not impact 404c area)

Flow control structure

Bayou aux Carpes 404c area

Figure 4e. Proposed Action Close up of the Old Estelle Pump Station and Outfall Canal (Conceptual Model)
Table 1. Proposed Action Components

<table>
<thead>
<tr>
<th>Proposed Action</th>
<th>New ROW Impacts* (acres)</th>
<th>Design Elevation (ft)</th>
<th>Length* (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Levee</td>
<td>17</td>
<td>14</td>
<td>5900</td>
<td>V-line levee upgrade and Canal Relocation</td>
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<tr>
<td>Northern Floodwall</td>
<td>1</td>
<td>14</td>
<td>N/A</td>
<td>Old Estelle PS Improvements</td>
</tr>
<tr>
<td></td>
<td>4.8</td>
<td>14 - 16</td>
<td>3700</td>
<td>Estelle Outfall Canal Floodwall and Flow Control Structure</td>
</tr>
<tr>
<td>Eastern Floodwall</td>
<td>9.6**</td>
<td>16</td>
<td>4200</td>
<td>Innovative T-Wall within Bayou aux Carpes CWA Section 404(c) Area</td>
</tr>
<tr>
<td>Closure Complex and Levee and Road Realignment</td>
<td>240</td>
<td>16</td>
<td>N/A</td>
<td>Main Channel Gate (150 ft – 300 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>N/A</td>
<td>Bypass Channel Gate (75 ft – 150 ft)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>N/A</td>
<td>20,000 cfs Pump Station</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14</td>
<td>4000 - 5000</td>
<td>Levee and Road Realignment East of the GIWW</td>
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<td></td>
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<td>N/A</td>
<td>Staging Areas (71 acres)</td>
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<td>Pipeline Relocation</td>
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<td>4</td>
<td>2000</td>
<td>Foreshore Protection</td>
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<td>Detention Basin Improvements</td>
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<td>8.5</td>
<td>1900</td>
<td>Harvey Canal West Bank Levees</td>
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<tr>
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<td>18</td>
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<td>Belle Chasse Tunnel</td>
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<td>13</td>
<td>8.5</td>
<td>8700</td>
<td>Algiers Lock to Belle Chasse Hwy (West)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>8.5</td>
<td>6330</td>
<td>Hero Cutoff to Belle Chasse Hwy (East)</td>
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<td>Total</td>
<td>351*</td>
<td>N/A</td>
<td>51,430</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Approximations, ** USFWS calculated 9.8 acres of impacts. The final acreage number will be determined during the final design phase and CEMVN intends to minimize impacted area to greatest extent practicable.

All of the construction work would occur on the protected side of the levee and would not impact the Bayou aux Carpes CWA Section 404(c) area. Construction of the western section would be expected to take 2 years.

The levee work may require geotextile fabric and/or deep soil mixing to strengthen the levee foundation. The deep soil mixing method involves the blending of a binder such as lime, cement, and slag into the soil through a hollow stem auger and mixing tool arrangement to produce round “columns” of treated soil. Applications for this method include stability and support, seepage cutoff, and seismic retrofit. This method has proven to be a viable method to effectively improve the competency of soils in Southeast Louisiana (Woodward 2007). Strengthening of the foundation can also be achieved by installing geotextile fabric in the foundation of the levee.
The northern section of this alignment extends east from Old Estelle PS to the Harvey Canal (figure 4b). This section includes BLH habitat on the protected side and the Old Estelle Pump Station Outfall Canal on the flood side. Fronting protection would be built to the 100-year level of risk reduction at the Old Estelle PS and would tie into the levee on each side of the pump station (table 1). A T-wall would be constructed within existing ROW on the protected side of the existing earthen levee that runs along the northern bank of Old Estelle Outfall Canal. The T-wall would have a design elevation of El. 14 to El.16 ft and would be 3,700 ft in length (table 1). This T-wall would tie into a new flow control structure at the intersection of the Old Estelle Outfall Canal and the Harvey Canal. The flow control structure would be constructed at El. 16ft, and would cross the Old Estelle Outfall Canal and tie into the eastern section of this alignment (the Bayou aux Carpes CWA Section 404(c) T-wall). This flow control structure would be required to control the discharge from the Old Estelle pumping station into the GIWW.

A benefit of this flow control structure would be the potential to augment the Bayou aux Carpes CWA Section 404(c) wetland area by actively managing the freshwater discharge from the Old Estelle PS. The USACE in cooperation with the EPA, the National Park Service (NPS), the U.S. Fish and Wildlife Service (USFWS), and other Federal and state resource agencies is conducting studies that are investigating the engineered gapping of the south bank of the Old Estelle Outfall Canal. These gaps in the outfall canal would allow freshwater from the pumping station to be directed into the Bayou aux Carpes CWA Section 404(c) area if determined to be beneficial to the wetland. The freshwater would be directed to the GIWW if it was determined not to be beneficial. Studies are ongoing to optimize the use of this feature to provide maximum benefit to the Bayou aux Carpes CWA Section 404(c) wetlands.

All of the construction work would occur on the protected side of the levee and would not impact the Bayou aux Carpes CWA Section 404(c) area. Construction of the northern section would be expected to take 2 years.

The eastern section of this alignment extends south from the flow control structure within the Old Estelle Outfall Canal, along the western bank of the GIWW within the Bayou aux Carpes CWA Section 404(c) area, crosses the GIWW and ends just north of Hero Canal (figure 4b). This section includes the GIWW channel and a BLH habitat on the GIWW east bank on the protected side of the existing HSDRRS, and a portion of the Bayou aux Carpes CWA Section 404(c) area on the flood side (figures 4c-4e). A T-wall constructed north to south along the western bank of the GIWW within the Bayou aux Carpes CWA Section 404(c) area would tie into the flow control structure at the end of the Old Estelle Outfall Canal and at the southern end of the wall would tie into the closure complex and pump station complex that crosses the GIWW. This T-wall would be constructed so that an approximately 100 ft by 4,200 ft, 9.6 acre, corridor of the Bayou aux Carpes CWA Section 404(c) area would be impacted by the construction of the floodwall (table 1, diagram 1, figure 5). Obtaining the approximately 9.6 acres of new ROW to construct the innovative T-wall within the Bayou aux Carpes CWA Section 404(c) area would be contingent upon the EPA granting a modification to the Bayou aux Carpes CWA Section 404(c) Final Determination. The CEMVN submitted a formal request to modify the Bayou aux Carpes Final Determination on 4 November 2008 (see section 6.3 for coordination information and appendix K for modification letter). The CEMVN has calculated that the 100 ft by 4,200 ft corridor is 9.6 acres, which is different than the most recent USFWS calculation. The CEMVN calculation is used consistently in this IER # 12 as the correct number of acres impacted in the Bayou aux Carpes CWA Section 404(c) area.
Diagram 1

In order to minimize impacts to these unique wetlands and confine construction impacts within that corridor, an innovative T-wall design would be used (diagram 1). This innovative T-wall design was needed to minimize the footprint of the structure in the Bayou aux Carpes CWA Section 404(c) area. In addition, because the GIWW is a Federally maintained navigation channel, a protective berm would be constructed on the protected side of the floodwall, the GIWW channel side. This berm would protect the wall from barge impacts, provide concrete scour protection, and serve as a maintenance access road.

Because of necessary channel dredging and pile driving activities, the Enterprise Pipeline would be relocated. In order to avoid impacts to the Bayou aux Carpes CWA Section 404(c) area the existing pipeline would be relocated utilizing modern directional drilling technologies that would pass under the 404c area. The pipeline relocation would not only avoid direct impacts to the 404c area (1 acre of wetlands), but would also minimize future impacts since the new more modern design would require less intrusive operations and maintenance than the existing pipeline.
Diagram 2

In the GIWW adjacent to the Bayou aux Carpes CWA Section 404(c) area, 2,000 linear feet (LF) of foreshore dike protection using 650 lb stone would be constructed to prevent impacts (i.e., scouring, bank erosion, etc.) from occurring within the 404c area due to the discharge from the 20,000 cfs pump station (figure 4a, 4c, and 4d; diagram 2). This foreshore dike protection would be constructed within the GIWW adjacent to but not within the Bayou aux Carpes CWA Section 404(c) area. Foreshore protection would not be expected to alter existing hydrologic conditions within the Bayou aux Carpes CWA Section 404(c) area.

The gate(s) and pump station described in the eastern section are referred to throughout this report as the “closure complex”, which is a component of the proposed action referred to as the “GIWW West Closure Complex” or WCC. Features of the closure complex that would cross the GIWW would include a primary 150-ft to 300-ft navigation gate and a secondary 75-ft to 150-ft gate built to a design elevation of 16 ft (table 1). The closure complex would tie into a floodwall to the west and flood protection levee to the east (figure 4a). The design of the closure complex is being done in collaboration with representatives from the navigation industry and the US Coast Guard to ensure that the safest and most reliable system would be constructed. One of the primary design criteria of these gates is that the structure is large enough to meet the current flow rates in the channel. It would also be necessary to construct a permanent bypass channel. A 20,000 cfs pump station would be constructed, and would provide positive backflow prevention.

A new levee would be constructed further eastward on what is currently the protected side (figure 4c and 4d). The levee work may require geotextile fabric and/or deep soil mixing to strengthen the levee foundation. Bayou Road would be realigned to provide access around the new levee on the protected side.

Four million cubic yards of material would be removed during construction of the eastern floodwall, closure complex, levee, and road realignment. After being evaluated for suitability this material would be used as borrow for this IER # 12 project. The material not used for borrow will be disposed of in the Walker Road borrow sites. The overburden material (i.e. roots, stumps, tress, etc.) would be mulched and used on site or hauled away to a landfill. Any road material (i.e. rock and earthen material) would be used to construct the new road.

The construction of this closure complex, levee, and road realignment would require a total of 240 acres of additional ROW to implement the construction work (table 1). Construction of the eastern section would be expected to take 4 years.
will be in place by June 2011. The interim protection would provide a storm surge barrier at the appropriate design elevation.

Bayou aux Carpes CWA Section 404(c) Area

Due to the proposed action’s impacts to the Bayou aux Carpes CWA Section 404(c) area, interagency collaboration, especially with the EPA, began early in the planning process and has continued during the development of IER # 12.. The CEMVN agrees to support adaptive management efforts and to ensure that project feature augmentations would minimize adverse impacts within the 404c area. The CEMVN has and would continue to employ measures to reduce the impacts to the Bayou aux Carpes CWA Section 404(c) area. Listed below are those efforts to minimize impacts to the 404c area:

Figure 5. Proposed Actions Within the Bayou aux Carpes CWA Section 404 (c) Area
The WCC alternative: The first measure employed was the derivation of the WCC alternative in which a structure would be built along the boundary of the Bayou aux Carpes CWA Section 404(c) area. Based on a system reliability study, the CEMVN had initially proposed the GIWW A alternative, which would construct a gate structure through the Bayou aux Carpes CWA Section 404(c) area. However, after collaborating with the EPA, National Park Service staff, and other Federal and state resource agencies, the WCC alternative, which would provide comparable system reliability to the GIWW A alternative, was derived to minimize adverse direct and indirect impacts to the Bayou aux Carpes CWA Section 404(c) area. Thus, the WCC alternative, which would provide comparable system reliability while minimizing adverse environmental impacts, was analyzed by the USACE and brought forward as the proposed action. The WCC alternative would limit adverse impacts to the 404(c) area by building a structure with a narrow footprint (T-wall and earthen berm) along a portion of the Bayou aux Carpes CWA Section 404(c) area that was previously disturbed and would avoid impounding the northern third of the Bayou aux Carpes CWA Section 404(c) area, largely a flotant marsh (see section 2.4.2).

Innovative techniques to build a floodwall along a navigable waterway: The structure proposed in the Bayou aux Carpes CWA Section 404(c) area would be constructed as a floodwall in lieu of an earthen levee in order to ensure that the least environmentally damaging alternative is in place within this section. A floodwall can be built on a much smaller footprint than an earthen levee. Because the GIWW is a Federally maintained navigation channel, a protective berm would be constructed on the protected side of the floodwall, the GIWW channel side. This berm would protect the wall from barge impacts and serve as a maintenance access road. The USACE recognizes that there are certain risks associated with placing a floodwall along a navigable waterway. Consequently, to minimize the footprint of this surge barrier component within the Bayou aux Carpes CWA Section 404(c) area, the USACE investigated innovative techniques to design and build a structure with the narrowest footprint possible.

Construction via water based equipment: The floodwall would be constructed within the current 100 ft right-of-way. No additional construction easements would be required for wall construction. Every effort would be made during the design phase to minimize the size of this corridor to the greatest extent practicable.

GIWW Gate location: The USACE endeavored to locate the gate on the GIWW as far north as practical to further reduce impacts (figure 4c). This resulted in the 4,200 ft by 100 ft corridor for the floodwall. However, it is understood that the GIWW is a Federal navigation channel with heavy commercial barge traffic which requires that design of this structure be such that safety of users of the system be a paramount design consideration.

Project feature augmentations: The USACE proposes that it is feasible to complete augmentations to minimize adverse impacts that could potentially occur because of the construction of the WCC alternative within a 4,200 ft by 100 ft corridor along the eastern boundary of the Bayou aux Carpes CWA Section 404(c) area (figure 5). Studies are underway in cooperation with the EPA, NPS, and other resource agencies to determine the best and safest alternatives for augmenting the 404(c) area to avoid or minimize hydrological impacts that could result if the proposed action is constructed. Once the studies are complete, the CEMVN, in conjunction with the resources agencies, would determine which features would be constructed. The appropriate features would be constructed as soon as this determination is made and design is completed. See chapters 5 and 7 for more information on the implementation and operation of project feature augmentations.
• **Flow control structure**: If fresh water input into the 404(c) area via dredged material bank gapping along the southern bank of the Old Estelle Outfall Canal is determined to be beneficial, this flow control structure would be operated in a manner to provide the highest and best use of the outflow. In the event that freshwater input would result in adverse impacts, the structure would be operated to allow water to flow directly into the GIWW. This structure would augment the Bayou aux Carpes CWA Section 404(c) wetland area by permitting the active management of the freshwater discharge from the Old Estelle PS.

• **Relocation of the Enterprise Pipeline**: The pipeline relocation would be conducted in a manner to avoid impacts to the Bayou aux Carpes CWA Section 404(c) area. The existing pipeline would be relocated utilizing modern directional drilling technologies that would pass under the 404(c) area. Directional drilling would not only avoid direct impacts to the 404(c) area, but would minimize future impacts since the newer, more modern design would require less intrusive operations and maintenance than the existing pipeline. Directional drilling of the pipeline would avoid impacts to 1 acre of BLH in the 404(c) area.

• **Foreshore protection within GIWW**: Within the channel on the western side of the GIWW, adjacent to but not within the Bayou aux Carpes CWA Section 404(c) area, foreshore protection would be constructed to prevent any further impacts that could result from operation of the pump station (i.e., scouring, banks erosion, etc.) within the 404(c) area due to the discharge from the 20,000 cfs pump station (figure 4c).

Agreements between the CEMVN and cooperating Federal and state resource agencies pertinent to the proposed action are:

• Include project feature augmentations that would enhance the hydrology of the Bayou aux Carpes CWA Section 404(c) area, thus offsetting any potential indirect impacts due to the construction of the HSDRRS. The benefits of these augmentations would be determined as part of the ongoing studies;

• Develop an assessment report (chapter 7) that addresses potential hydrological and ecological impacts to the Bayou aux Carpes CWA Section 404(c) area as a result of the HSDRRS;

• Collect baseline data within the Bayou aux Carpes CWA Section 404(c) area and surrounding water bodies to inform the impact assessment;

• Develop a long-term monitoring plan (chapter 7); and

• Develop a mitigation plan that specifies on-site mitigation for the 9.6 acres that would be impacted, which would be conducted within the Bayou aux Carpes CWA Section 404(c) area or the National Park Service (NPS) Jean Lafitte National Historical Park and Preserve (JLNHP) (chapters 5 and 7). This mitigation plan will also be discussed in the mitigation IER.

The proposed project feature augmentations developed in collaboration with the EPA and other resource agencies, including, in order of priority:

1. Gapping the existing earthen bank along the southern side of the Old Estelle Outfall Canal to provide regulated sheet flow into the Bayou aux Carpes CWA Section 404(c) area;
2. Modifying the existing earthen bank along the Southern Natural Gas Pipeline Canal to provide hydrological exchange between the northern and southern sections of the Bayou aux Carpes CWA Section 404(c) area;

3. Modifying the shell plug at Bayou aux Carpes to provide hydrological exchange between the GIWW and the Bayou aux Carpes CWA Section 404(c) area;

4. Closing the Southern Natural Gas Pipeline Canal to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area;

5. Gapping or grading down drill hole access canal banks to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area; and

6. Gapping or grading down oil well access roads to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area.

These project feature augmentations and plans are being evaluated for effectiveness and feasibility (constructability, relation to project construction, and resource availability) in partnership with the EPA, the NPS, and other resource agencies. Final determination of which project feature augmentations to implement would be determined in collaboration with the Interagency team after an analysis of benefits and impacts is completed (See section 7 for further details regarding the mitigation and monitoring plans for impacts to the Bayou aux Carpes CWA Section 404(c) area.

Detention Basin Improvements

The WCC would cause water to be impounded in the Harvey and Algiers Canals, when closed during a storm event, creating a detention basin. The proposed action would provide 100-year level of risk reduction south of the confluence of the Algiers and Harvey Canals in lieu of parallel protection along the Harvey and Algiers Canals. Currently, there are over 25 miles of levees, floodwalls, gate structures, and 9 pump stations along the Harvey and Algiers Canals. Improvements to these levees and floodwalls are required to meet Federal factors of safety, as outlined in USACE standards.

USACE standards can be found at [www.mvn.usace.army.mil/eng/hurrdesign.asp](http://www.mvn.usace.army.mil/eng/hurrdesign.asp)

The proposed action includes the use of Harvey and Algiers Canal as a detention basin. This would involve a combination of improvements and dredging activities along the Harvey Canal and Algiers Canal. Improvements would consist of building fronting protection and providing positive backflow prevention at pump stations, capping or replacing floodwalls, and upgrading levees along the detention basin. Construction would occur within the existing ROW unless noted (figure 6). In IER # 12, work inside the existing ROW, which has been analyzed in a Final NEPA document, is considered part of the existing conditions (sections 1.2 and 1.3). Work that involves going outside the existing ROW is considered part of the proposed action for this IER.

Based on the results of hydraulic models for the GIWW WCC, a detention basin still water level of maximum elevation 4 ft in Harvey Canal and 5.8 ft in Algiers Canal would provide protection along these canals. Dredging of the Algiers Canal would be required from the Belle Chasse Tunnel South to the Hero Cutoff. A top of protection design elevation of 8.5 ft in compliance with HSDDRS standards in the retention basin would still require work along the Harvey and Algiers Canals. However, the work would be considerably less than what would be required if the retention basin stage were increased to the 100-year level of risk reduction. All work would be performed within existing ROW unless otherwise noted. The following projects would be affected (contract numbers are provided in parentheses where applicable):
Harvey Canal West Bank Levees (14g.2, 14a.2): The existing I-Wall sections along the west bank of the Harvey Canal would need to be capped and a berm would be added to provide barge impact protection. The existing levee alignments would be raised to design El. 8.5 ft via a 35 ft protected side shift earthen levee enlargement. An additional 38 acres of new ROW would be required on the protected side (table 1, figure 6).

Cousins PS Fronting Protection & Outfall Canal to Lapalco (38/39): The existing fronting wall and Cousins 3 discharge tubes would be checked for lower elevation. The Cousins 2 discharge tube invert is at El 4.23 so fronting protection would need to be provided. A portion of I-Wall along the Outfall Canal would be replaced. This work was analyzed in a previous EIS.

Cousins Outfall South of Lapalco and Harvey Sector Gate (46.2): The existing sector gate at Lapalco Boulevard meets the detention basin design elevation requirements. The only portion of this reach that would require work would be a tie-back wall on the Southeast side of the Cousins culverts, which would be replaced with a T-Wall. This work was analyzed in a previous EIS.
Harvey Canal Floodwalls (3a, 3b): The flood protection along this reach is currently being constructed and will consist of floodwalls built to design El. 14.0. Because the walls are exposed on a navigation channel, impact barriers consisting of steel pipe piles would need to be added to protect against barge impact. This work was analyzed in a previous EIS.

Hero Cutoff to Belle Chasse Hwy West (6a.2): A 10,000 LF stretch of levee would require reshaping, thus providing a small berm within the existing ROW. This work was analyzed in a previous EIS.

Floodgates along Hero Cutoff to Belle Chasse Hwy West (4.2, 5.2, 6.2): Ramp(s) and four gates would be constructed. This work was analyzed in a previous EIS.

Belle Chasse Tunnel: A T-Wall around the tunnel would be constructed along with five vehicular gates (three on the East and two on the West) and two railroad gates (one on each side). The additional ROW required to construct the new floodwall on either side of the Algiers Canal would be approximately 18 acres (table 1; figure 6).

Algiers Lock to Belle Chasse Hwy (West) (47.2): Minor reshaping would be required as a small, protected side berm would be required along nearly 20,000 LF. An additional 65 ft of permanent ROW would be required along a 8,700 LF stretch of levee to construct a protected side berm. The additional ROW required adding the necessary stability berm would be 13 acres (table 1).

Algiers Lock to Belle Chasse Hwy (East) (48.2): A 3,500 LF stretch of levee would require minor reshaping as a small, protected side berm would be required. This work was analyzed in a previous EIS.

Hero Cutoff to Belle Chasse Hwy (East) (49.2): An additional 65 ft of permanent ROW into a BLH area would be required along a 6,300 LF stretch of levee to construct a protected side berm. The additional ROW required to add the necessary stability berm would be 9.4 acres (table 1, figure 6). Due to houses adjacent to the existing ROW, a reinforced levee would need to be constructed for 2,700 LF.

Planters PS (07): Fronting protection would be constructed to the lower detention basin elevation and backflow prevention would be provided. This work was analyzed in a previous EIS.

Sewage & Water Board PS 13 (08): Fronting protection would be constructed to the lower detention basin elevation and backflow prevention would be provided. This work was analyzed in a previous EIS.

Belle Chasse PS 1 (10): Fronting protection would be constructed to the lower detention basin elevation and backflow prevention would be provided. This work was analyzed in a previous EIS.

Belle Chasse PS 2 (11): Fronting protection would be constructed to the lower detention basin elevation and backflow prevention would be provided. This work was analyzed in a previous EIS.

Sewage & Water Board PS 11 (13): Fronting protection would be constructed to the lower detention basin elevation and backflow prevention would be provided. This work was analyzed in a previous EIS.
New Estelle PS (23): Fronting protection would be constructed to the lower detention basin elevation and backflow prevention would be provided. This work was analyzed in a previous EIS.

Whitney Barataria PS (44): No backflow suppression would be needed. The existing fronting wall would be checked with the new criteria for the lower detention elevation. The existing sheet pile I-Wall tie-ins would be replaced with L-Walls or T-walls.

Algiers Canal: Approximately 700,000 cubic yards would be excavated from the Algiers Canal. The frequency of maintenance dredging would exceed 25 years. A dredge and disposal plan can be found in its entirety in appendix L. Disposal sites for future maintenance dredging would be determined in compliance with the Louisiana Coastal Resource Plan in place at the time when there is a need for dredging. The proposed action is for the dredge material to be utilized in a marsh restoration project in the Jean Lafitte National Historical Park and Preserve (JLNHPP) (figure 7). Material would be barged to the site from the Algiers Canal (see appendix L and section 7).

![Figure 7. Algiers Canal Dredging Extent and Locations for Beneficial Use of Dredged Material](image_url)
The plan is still being coordinated with resource agencies and will be finalized once the full costs and benefits of the plans can be determined. Disposal options are being investigated as described below in case costs, logistics of the disposal plan, or contaminates are found to be an issue. The CEMVN has notified the appropriate resource agencies as to which course of action is preferred. The resource agencies will continue to be involved as cost estimates and the results of any further sediment tests become available.

Disposal options are consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program, which requires that dredged material be used beneficially when practicable. Two alternatives have been discussed with the Interagency Team. The preferred alternative is the disposal of the material into the JLNHP Lake Salvador “Geocrib,” and the alternative use of the material is placement of the material in the Walker Road borrow sites (appendix L). The alternative of placement of dredged material in the Walker Road borrow sites would be done only as a convenience to the government if the preferred option is not practicable. The placement of dredged material in the Walker Road borrow sites would not be considered backfilling of those sites. If dredged material is placed in the Walker Road borrow sites, the quantity of the material would be insufficient to refill those sites. Disposal of the material in either location would be considered a project feature. The first option of placing the dredged material into the JLNHP Lake Salvador Geocrib is preferred because it is a beneficial use site and the wetlands created with this material would be counted as mitigation for the HSDRRS projects.

Provided the material is determined to not be contaminated, the material could be excavated via either:

a) hydraulic cutter head dredge and transported as a slurry to a disposal site(s) via pipeline, or
b) via mechanical dredge (i.e. barge mounted dragline or backhoe) and placed in barges and transported to site, and either removed from the barges via a hydraulic pump and transported to the site via pipeline, or offloaded from barges, placed within trucks, and hauled to disposal site where it would then be mechanically offloaded into the disposal site.

The following alternative plans would be considered for accomplishment of this task:

a) Preferred Option - Material from the Algiers Canal to be excavated by barge-mounted dragline/backhoe and transported via barge from Algiers Canal down the GIWW, Bayou Barataria and Lake Salvador, and placed within the Geocrib site in JLNHP. Retention dikes would be constructed as necessary in order to retain the dredged material and prevent effluent sedimentation from occurring outside of the site. Prior to disposal, a before disposal survey of the disposal site, as well as the water bodies adjacent to the disposal site, would be performed. This is a 16 mile transport option (figure 7).

b) Hydraulic cutter head dredging, with material excavated from the canal transported via barge from Algiers Canal down the GIWW, Bayou Barataria, and Lake Salvador, and placed within the Geocrib site in JLNHP. Retention dikes would have to be constructed as necessary in order to retain the dredged slurry and prevent effluent sedimentation from occurring outside of the site. A silt screen/turbidity curtain may be installed to trap and prevent any sediment that might exit the site and fall out into the adjacent water bodies. Prior to disposal, a before disposal survey of the disposal site, as well as the water bodies adjacent to the disposal site, would be performed. This is a 16 mile transport option.

c) Material from the Algiers Canal to be excavated by hydraulic cutter head dredge and transported via pipeline within Algiers and Hero Canals and placed within the Walker
Road borrow sites adjacent to Hero Canal (appendix L). Retention dikes would be constructed around the pit(s) as necessary in order to retain the dredged slurry to the pit(s) and prevent effluent sedimentation from occurring outside of the pit(s). A marsh buggy dragline/backhoe would be used for construction of the retention dikes with borrow for retention dikes to come from within the pit(s) themselves. Waste water would be drained from the pit(s) via spill box weirs that would be constructed within the retention dikes paralleling Bayou Barrier canal. The spill box weirs would be controlled and monitored to assure that retention of the material is maximized and to prevent effluent sedimentation from occurring within Bayou Barrier. A silt screen/turbidity curtain would be installed in Bayou Barriere just north of the spill box to trap and prevent any sediment that might exit the weir and fall out into the canal/bayou. Prior to disposal, a before disposal survey of the canal would be performed and the bayou restored to pre-disposal conditions if needed. This is a 7.5 mile transport option.

d) Material from the Algiers Canal to be excavated by barge-mounted dragline/backhoe and transported via barge and placed within the Walker Road borrow sites adjacent to the Hero Canal. The material could either be offloaded onto trucks and hauled to the Walker Road borrow sites, or removed from barge via hydraulic pump and transported via pipeline pumped to the Walker Road borrow sites. Retention dikes would be constructed around the pit(s) as necessary in order to retain the dredged material to the pit(s) and prevent effluent sedimentation from occurring outside of the pit(s). A marsh buggy dragline/backhoe would be used for construction of the retention dikes with borrow for retention dikes to come from within the pit(s) themselves. Waste water would be drained from the pit(s) via spill box weirs that would be constructed within the retention dikes paralleling Bayou Barrier canal. The spill box weirs would be controlled and monitored to assure that retention of the material is maximized and to prevent effluent sedimentation from occurring within Bayou Barrier. A silt screen/turbidity curtain would be installed in Bayou Barriere just north of the spill box to trap and prevent any sediment that might exit the weir and fall out into the canal/bayou. A before disposal survey of the canal would be performed and the bayou restored to that pre-disposal condition if needed. This is a 7.5 mile transport option.

e) If the material is found to be classified as contaminated then the material would be mechanically dredge (i.e. barge-mounted dragline or backhoe) and the excavated material would be placed in sealed barges and transported to a disposal site for contaminated material. Initial tests conducted by the USACE do not indicate that the material is contaminated, but additional testing is underway. This is a 77 mile transport option to the Type I landfill in Venice, LA.

The WCC alternative would provide 100-year level of risk reduction based upon improvements, enhancements, and construction in concert with tie-ins to improvements to the Hero Canal Levee (IER # 13) and the V-line Levee (IER # 14) (figure 2).

2.3.1.5 Other Necessary Actions

Armoring

Armoring may be required at a number of locations throughout the HSDRRS. These locations may include: transition points (where levees transition into any hardened features such as other levees, floodwalls, and pump stations), floodwall protected side slopes, pipeline crossings, and earthen levees that are exposed to excessive wave overtopping during a 500-year hurricane event. For the proposed action, nearly all of these armoring areas would occur along the GIWW. However, the
specific locations have not yet been determined. Armoring types vary, but the following are the most common, from the most resistant, downward:

- **ACB** – Articulated concrete blocks.
- **ACB/TRM** – Articulated concrete blocks/Turf reinforced mattress: the hydraulic parameters and physical conditions are such that small modifications could allow a reduction to TRM.
- **TRM** – Turf reinforced mattress.
- **TRM/Grass** - The hydraulic parameters and physical conditions are such that small modifications could allow a reduction to grass.
- **Well maintained grass cover.**

**Utility Relocations**

As needed, utilities would be relocated to cross the project area in accordance with existing standards. Disruptions of service would be kept to a minimum. Relocations would be conducted in order to avoid impacts to the wetland areas, and the Enterprise Pipeline would be directionally drilled underneath the 404c area to avoid impacts to that significant resource.

**Operation and Maintenance**

In addition to initial construction activity, the proposed action would include all of the routine maintenance activities required to keep this element of the HSDRRS at full operational capability. This would include pump station and navigation maintenance, mowing, re-paving, repairs to the structures, in-kind replacement, etc., to be provided by either the non-Federal sponsor or the USACE if Congressionally authorized.

Operation and Maintenance (O&M) of the HSDRRS would have minimal impact on the significant resources in the area. Levees would be periodically mowed and herbicides might be used (on a very limited basis) around control structures. The floodwalls and levees would be annually inspected by the CEMVN (quarterly by the local authority) and repaired, as needed, to bring them up to design standards. This would include adding subsequent lifts of earthen material to levees in order to address subsidence and sea level rise. The Algiers Canal would be maintenance dredged approximately every 25 years in order to maintain the detention basin still water level. The dredge material would be disposed of in a manner consistent to the maximum extent practicable with the Louisiana Coastal Resources Program. The closure complex would be maintained, and tested as needed. Modifications to the banks and shell plug in the Bayou aux Carpes CWA Section 404(c) area would not be expected to require O&M. O&M activities would be conducted within the established ROW and within previously disturbed areas. Temporary and localized maintenance-related effects (e.g., noise, air emissions, increased traffic, temporary erosion and sedimentation, etc.) might occur during O&M work.

**Temporary Flood Protection Contractually Required During Construction**

As part of the construction process, temporary flood protection would be required whenever existing floodwall or levee is removed until the replacement floodwall or levee is sufficiently completed to withstand floodwaters. Sufficiently completed is defined as the time when the concrete in the replacement floodwall reaches a compressive strength of 4,000 psi and all earthwork for the floodwall/levee replacement has been completed. Typically, the contractor would provide temporary protection or a cofferdam that would in no way affect the stability of the existing flood protection or flood protection being constructed. The contractor would maintain all temporary flood
control, including maintaining and operating drainage facilities. During the required time, the contractor would provide, maintain, and operate pumps of adequate capacities, for the removal of the water that could accumulate in excavations within the areas protected by the temporary flood protection, during construction. The discharge from the pumps would be into the flood side. The contractor would remove all temporary flood control structures and incidental features when no longer required. All material used in providing temporary flood control structures, and any debris generated during their removal, would become the property of the contractor and would be removed from the job site prior to completion.

Prior to beginning work, the contractor would submit for approval his proposed plan to accomplish the specified temporary flood protection. The submittal would be in accordance with Section 01330, “Submittal Procedures” and would include, but not necessarily be limited to the following:

- Design and layout of temporary flood protection works,
- Methods and duration of maintenance of temporary flood protection,
- Methods, sequence, equipment, and materials to be used for draining of excavations for floodwall demolition and floodwall replacement, and
- Method and sequence of removal, including disposal of materials.

These measures provide assurance that protection would be maintained during the construction process even in the event of significant flooding.

| Table 2. Construction Materials Needed to Complete the Proposed Action* |
|--------------------------|------------------|---|-----|------|------------------|
|                          | Cut (cy)  | Fill (cy) | Stone (tons) | Sheetpile (lf) | Concrete (cy) |
| Western Levee           | 363,660   | 484,300   | 0            | 0               | 0               |
| Old Estelle PS          | 5,201     | 19,600    | 1,080        | 30,258          | 5,201           |
| Northern Floodwall      | 772       | 39,786    | 0            | 163,800         | 7,847           |
| Eastern Floodwall, Closure Complex, Levee, and Road Realignment | 4,000,000 | 1,325,187 | 300,000      | 550,000         | 140,000         |
| Detention Basin         | 274,974   | 1,255,734 | 9,714        | 889,764         | 89,380          |
| Algiers Dredging        | 700,000   | 0         | 0            | 0               | 0               |
| TOTAL                  | 5,344,607**| 3,124,607 | 310,794      | 1,633,822       | 242,428         |

*Estimated, **Will be evaluated for borrow suitability

2.4 ALTERNATIVES TO THE PROPOSED ACTION

Four alternatives to the proposed action were considered in detail. These alternatives were no action, southern closure option (GIWW A), Algiers gate (AG), and parallel protection (PP).

2.4.1 No Action

Under the no action alternative, the proposed action would not be constructed by the CEMVN. The levee and floodwall projects would be built to the previously authorized level of risk reduction rather than the 100-year level of risk reduction. The current project-area levee system of 25 miles
includes the Algiers Canal and Harvey Canal levees, a navigable floodgate at Lapalco Boulevard, fronting protection for nine existing pump stations, and the Algiers Lock. With no action, the authorized level of risk reduction would be completed by raising the levees and building flood walls to approximately elevation 10 ft. The Harvey Canal levees and structures are currently being upgraded to the authorized level. The levees were previously improved along much of the Algiers Canal; however, settlement has taken place and as such additional levee lifts would be required.

The protection along the east side of the Harvey Canal and along the west side of the Algiers Canal, from the Belle Chasse Tunnel to the Harvey Canal, is new construction (these areas are currently under construction to provide the previously authorized level of risk reduction). Many industries in these areas front on the canals and limit the space for levees; therefore, many of the areas to be raised as part of the no action alternative would require floodwalls in order to avoid major impacts to these industries and businesses. The level of risk reduction afforded by this alternative would not be adequate to protect against 100-year flood or storm-surge events. Consequently, the no action alternative would potentially result in continued negative impacts due to 100-year storm surge events effecting property, public safety, and local economic stability.

2.4.2 Southern Closure Option (GIWW A)

The GIWW A alternative (figure 8) would be similar to the proposed action, but would utilize different levee and floodwall alignments to traverse the Bayou aux Carpes CWA Section 404(c) area.

A navigable floodgate would be constructed in the GIWW approximately 1 mile south of the confluence of the Harvey and Algiers Canals. The details regarding the navigable closure(s) would be identical to those described for the proposed action (WCC).

The overall structure would include the floodgates, pumping station, and by-pass channel as previously described. A new 3,000-ft long tidal exchange structure would be constructed west of the navigable floodgate across the EPA Bayou aux Carpes CWA Section 404(c) area to the V-line Levee. The tidal exchange structure floodwall would be designed to utilize the smallest construction footprint possible to minimize environmental impacts. Gates in the wall would be constructed at specified locations in an effort to maintain the natural hydrology of the area. The floodwall would also be designed to facilitate the passage of wildlife. While all reasonable and practicable designs would be utilized to minimize impacts to the 404c area, this alternative would result in the greatest unavoidable impacts to the Bayou aux Carpes CWA Section 404(c) area.

The navigable floodgate and tidal exchange structure would be constructed to the 100-year level of risk reduction of elevation 16 ft. The specific tie-in locations of the GIWW A alternative to other HSDRRS (IER #13 and #14) project elements would provide 100-year level of risk reduction to the study area without raising the parallel protection above that currently authorized along the Harvey and Algiers Canals.

The details regarding the detention basin would be identical to those described for the proposed action (WCC).
2.4.3 Algiers Gate (AG)

The AG alternative (figure 9) would require the construction of a navigable floodgate on the Algiers Canal and major levee and floodwall improvements along the Harvey Canal, GIWW, and V-Line Levee.

The AG alternative would include a 150 ft to 300 ft navigable floodgate on the Algiers Canal, just above the confluence with the Harvey Canal. This navigable floodgate would require a permanent pumping station (approximately 20,000 cfs) adjacent to the gate, providing 100-year level of risk reduction along the Algiers Canal. Levee extending from the gate and pump station would need to be raised to 100-year level of risk reduction (14 ft). These improvements would tie into additional levee and floodwall improvements along the GIWW and Harvey Canals. Levees and floodwalls would be raised to 14 ft along both banks of the Harvey Canal, sections of the GIWW, and sections of the V-Line Levee.

Figure 8. Southern Closure Option (GIWW A) Alternative
Levee improvements would specifically occur in two main locations. Existing levee on the eastern side of the GIWW would be raised from the navigable floodgate on the Algiers Canal to the Hero Canal Levee. In addition, existing levee on the west bank of the Harvey Canal would be raised from Lapalco Boulevard to the Estelle Pump Station Outfall Canal, west to the Estelle Pump Station, and continuing south along the V-line Levee.

Floodwall would be built to 14 ft on the east bank of the Harvey Canal from Lapalco Boulevard south to the GIWW. Floodwall would be used in this area in order to minimize impacts to existing development. These floodwall improvements along the Harvey Canal are currently being constructed under previous authorization.

The proposed levee and floodwall improvements would require major modifications to the Harvey Canal Floodgate at Lapalco Boulevard and the Cousins Pump Station discharge channel. Fronting protection to the 100-year level of risk reduction would also be required at the Cousins Pump Station and all pump stations south of Lapalco Boulevard on the Harvey Canal, to prevent inundation of the existing pumps. These additional improvements would provide the desired 100-
year level of risk reduction in coordination with levee tie-ins to additional HSDRRS projects (IER #13 and #14).

The details regarding the detention basin along the Algiers Canal behind the structure are identical to those described for the proposed action (WCC) for the Algiers Canal.

These additional improvements would provide the desired 100-year level of risk reduction in coordination with levee tie-ins to additional HSDRRS projects (IER #13 and #14).

2.4.4 Parallel Protection (PP)

The PP alternative (figure 10) would use only improvements to existing levees and floodwalls along the GIWW, Harvey Canal, and Algiers Canal to achieve 100-year level of risk reduction. This alternative is similar to the AG alternative along the GIWW and Harvey Canal; however, there would be no navigable floodgate built on the Algiers Canal. Instead, 100-year level of risk reduction would be achieved along the Algiers Canal by raising levees and floodwalls.

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**IER 12 Parallel Protection Alternative**

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**Figure 10. Parallel Protection (PP) Alternative**
Levee would be raised to 14 ft along the V-line Levee to the Estelle Pump Station, continuing along the Old Estelle Outfall Canal, and finally running north along the western bank of the Harvey Canal to Lapalco Boulevard. Major modifications to the Cousins PS discharge walls and the Lapalco floodgate would be required. On the opposite side of the Harvey Canal (east bank), floodwall would be raised to 14 ft from Lapalco Boulevard to the Algiers Canal. The existing levees and floodwalls on both banks of the Algiers Canal would be modified from Hero cut to the Algiers Lock. Elevations of the levee and floodwall improvements along the Algiers Canal would range from 14 ft to 16 ft. Improvements to existing flood protections structures would consist of:

- Raising existing levees (which would require the acquisition of additional rights-of-way and the removal of numerous dwellings, apartment complexes, electrical transmission towers, modifying the bridge supporting piers for two vehicle bridges and one railroad bridge crossing the canal, degrading the existing levees, installing a high strength geotextile at elevation 0 ft and rebuilding the levee to the 100-year level of risk reduction);
- Constructing and modifying existing floodwalls; and
- Constructing floodwalls and floodgates on existing levees.

The construction options utilized along the Algiers Canal would be highly dependent upon localized land use and constructability.

In addition to the levee and floodwall improvements, the PP alternative would require elevation modifications and flood protection tie-ins to all pump stations along the Harvey and Algiers Canals, the Algiers Locks, the Lapalco Sector Gate, and the Estelle PS. The existing Belle Chasse tunnel would need to be improved. A T-Wall around the tunnel would be constructed along with five vehicular gates (three on the East and two on the West) and two railroad gates (one on each side). Some of these modifications have already occurred, or are currently under construction as part of a pre-Katrina authorized action. These modifications, and the PP alternative levee and floodwall modifications, would provide 100-year level of risk reduction in coordination with levee tie-ins with additional HSDRRS projects (IER #13 and #14).

### 2.5 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

#### 2.5.1 Hollow Core Levees

Large amounts of borrow material are needed to construct the hurricane protection system in the New Orleans area to the levels required. The CEMVN is considering several alternatives to earthen levees that would change the quantity of borrow material required. One is to substitute construction of an existing levee with a hollow core levee. The concept of the hollow core concrete levee system is that open sections fill with water from the bottom as the storm surge rises. The combined weight of the concrete frame and its water-filled voids inside the frame result in a gravity structure that is designed to resist hydrostatic forces (from a surge), while resisting impact forces from possible vessel collisions. Hollow core levees are comprised of trapezoidal shapes similar to earthen levees. The levee superstructure is comprised of sloped side-walls with a flat-bottom slab, with access to the interior via steel grating or manholes in the crest.

Water inlets or ports are incorporated into the cross-sections near the levee base on the flood side to allow the section to flood with water to contribute to the overall weight for stability purposes. Shear
keys in the base are designed to protect against sliding under design loading conditions. The substructure consists of a concrete base slab (pad) that would be supported by steel pipe piles. Excavation and granular backfilling would be required to construct the pile-supported concrete pad. The concrete base slab serves a two-fold purpose. It distributes loads to the pile foundation as well as serves as a “roadway” for cast-in-place construction.

Hollow core levees would not be advantageous to use in lieu of traditional reinforced levee sections for this proposed project because the existing levees in Orleans, Plaquemines, and Jefferson Parishes only need to be raised approximately 4 ft to 6 ft. Therefore, degrading an existing levee and replacing it with a concrete levee section would not be cost effective.

2.5.2 Nonstructural Measures

The nonstructural measures alternative would include options that might significantly reduce flood damage without the construction of major flood protection structures. Such measures would include raising residential and commercial structures in flood prone areas, structure relocation, and rezoning, among others. Generally, each of these potential options would incur high costs and could have high socioeconomic impacts, while providing limited and varying levels of flood damage relief. According to Section 73 of WRDA, ER 1105-2-100, nonstructural measures can be considered independently or in combination with structural measures (USACE 2000).

Independently, nonstructural measures cannot achieve the federal statutory mandate of 100-year level of risk reduction in the project area. Nonstructural measures could reduce flood damages without significantly altering the nature and extent of flooding, inside the protected area of the 100-year level of risk reduction for the WBV project area if this option were pursued.

Flood damage reduction is achieved from nonstructural measures by changing the use made of the floodplain, or by accommodating the uses there to the flood hazard. Typically, structure relocation, raising the structures, flood proofing, and regulation of the floodplain may be involved.

2.5.2.1 Structure Relocation

One way to reduce damages from storms and hurricanes would be a mandatory public acquisition of properties in areas subject to flooding. This would be done pursuant to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 USC Section 4601, et seq., as amended (the Uniform Act) for financial assistance for subject properties. Accordingly, a nonstructural program based on acquisition of commercial and residential properties in flood-prone areas would be subject to these guidelines, including payment of just compensation for the acquired properties and payment of Uniform Relocation Assistance Benefits under Title II of the Uniform Act for the displacement of individuals, families, businesses, farms, and non-profit organizations.

Two primary options exist under this alternative: (1) relocation of the structure to a comparable site outside of the area of flooding; and (2) acquisition of the structure and site by the local sponsor for demolition and relocation. Neither of these options is considered viable under the existing circumstances. Some of the more important marine industries in the New Orleans area are located adjacent to the Algiers and Harvey Canals. Both waterways are used by nearby marine industry. Acquisition and relocation would be very expensive and would defeat the purpose of the original levee system: to provide storm damage risk reduction for commercial, industrial, and residential areas.

2.5.2.2 Raise in Place

This form of flood proofing would require elevating all commercial and residential properties subject to flooding in the study area above the 100-year flood level. In addition, certain infrastructure that would need to be operational in a flooding event might have to be raised also (i.e.
roadways, public buildings, and certain utilities). The average cost of elevating residential structures in the New Orleans area has been estimated at $95 per square ft (USACE 2007). Thus, the cost of raising a 1,800-square-ft residence would be approximately $171,000. Because the proposed action would be a component in the overall system of levee improvements on the WBV, all residential structures on the WBV would need to be raised if the raise-in-place program was implemented.

A detailed economic study of the WBV and hurricane protection was conducted in 1994, using 1993 figures (WBV Feasibility Report, Technical Appendixes, 1994). While these figures are dated, and while they must be considered in general terms, they remain a relevant estimate of costs for non-structural improvements. The area has developed substantially since this economic assessment was made, providing a very conservative estimate of costs to raise structures in place. In 1993, there were 31,262 residential structures in the WBV (east of the Harvey Canal), 360 apartment complexes, and 2,152 commercial structures.

Assuming each residential structure as a standard 1,800 square-ft house, the 31,262 residential structures in Orleans, Jefferson, and Plaquemines Parishes in the WBV (east of the Harvey Canal) would cost approximately $5.5 billion to raise above the 100-year level of risk reduction elevation. In addition, apartment buildings, commercial buildings, and other non-residential buildings would need to be raised, along with selected utilities and infrastructure. In 1993, residential structures constituted 63 percent of the value of total real estate in the area. Using this figure, it might cost another $2 billion to raise the apartment buildings, commercial buildings, and other non-residential buildings (or otherwise flood-proof them). Moreover, certain critical infrastructure (such as highway escape routes) would require raising, essentially making them bridges, with resultant large cost expenditures. Conservatively, raising in place would likely cost well in excess of $10 billion for the structures and facilities existing in 1993, which does not include the growth that has occurred over the last 15 years. Therefore, this is not a viable stand-alone option when the costs are compared with the approximate $1.2 billion required for construction of the proposed action. The proposed action would not only protect existing real estate to the 100-year level of risk reduction, but also lower future development costs. Thus, the option of raising in place has been eliminated from consideration.

2.5.2.3 Floodproofing

Floodproofing can be used to reduce flood damages by modifying structures and relocating building contents. Floodproofing involves techniques to keep water out of structures, as well as reducing the damaging effects of inundation. Raising the structure, as identified in section 2.5.2.2, is a primary technique that can be used as part of a collective action. This can be done either when the building is under construction or through retrofitting of an existing structure. As with raising in place, floodproofing has been eliminated as a major element for consideration due to prohibitive costs.

2.5.2.4 Rezoning

This option provides for zoning tools to be used to preclude or limit land development in flood-prone areas. While this option could minimize future damages from new development in flood-prone areas, the goal is to provide a system of 100-year level of risk reduction throughout the WBV according to Federal statutory requirements. Zoning cannot achieve this goal.

In summary, no combination of non-structural tools could independently achieve the required 100-year level of risk reduction needed to provide hurricane surge protection on the WBV as intended by federal statutes.
2.5.3 Structural Alternatives

Three alternatives identified in the design alternatives study (URS, January 2007) for the proposed project were eliminated from further discussion during the environmental documentation stage. These include the following:

2.5.3.1 Alternative B (Design Report Designation)

Alternative B would include construction of a 150 ft gate and pumping station in the GIWW south of the confluence of the Algiers and Harvey Canals. The permanent gate would be constructed to the 100-year elevation, thus eliminating the need for any increase to the parallel protection along the canals, and eliminating any need to modify existing pump stations. A new pump station would be constructed adjacent to the gate to move interior drainage from the canals, across the gate, and then discharging into the GIWW.

The permanent features would be tied in to the nearest existing levees by either constructing a floodwall northward along the edge of the GIWW and then westward to tie in to the protection at the Old Estelle PS; or by constructing a floodwall, with sluice gates, to the west across high-quality wetlands and tying in to the V-Line Levee.

This alternative was dismissed from further review for the following reasons:

- Alternatives GIWW A and WCC, which are carried forward in this document, would offer more advantages than alternative B, which is very similar.

2.5.3.2 Alternative E (Design Report Designation)

Alternative E would use a permanent 150 ft sector gate located on the Harvey Canal, just above the confluence with Algiers Canal. (Note: The levees would be raised along the GIWW the same as for the PP alternative.) This alternative would require a permanent pumping station adjacent to the sector gate. The sector gate would provide 100-year level of risk reduction along the Harvey Canal. The parallel protection along Algiers Canal would have to be raised to the 100-year level of risk reduction. To quickly provide the authorized level of risk reduction along the Algiers Canal, it would be necessary to raise the parallel protection along the east side of the canal to at least the authorized level of risk reduction during the first phase of this alternative.

This alternative would have the same options as the PP alternative in the area of the existing Highway 23 tunnel at Belle Chasse. Alternative E is based on using floodwalls that would extend back from the canal on both banks, along both sides of the tunnel entrances, and the addition of flood gates across the highway.

This alternative was dismissed from further review for the following reasons:

- This alternative has the highest costs of the alternatives.
- High impacts to residents and businesses in the area.
- Placing a sector gate on the Algiers Canal and raising the protection on the Harvey Canal to a 100-year level of risk reduction (alternative 3) has many advantages over a sector gate on the Harvey Canal and raising protection to 100-year level of risk reduction on the Algiers Canal; thus this option was eliminated.
2.5.3.3 Alternative F (Design Report Designation)

Alternative F would use permanent 150-ft sector gates located on both the Algiers and Harvey Canals, slightly north of their confluence. Along the GIWW, alternative F would require the same protection upgrades as those discussed for the PP alternative. These upgrades would be capable of providing the desired 100-year level of risk reduction in coordination with the sector gates along the Algiers and Harvey Canals and levee tie-ins with additional HSDRRS projects (IER # 13 and # 14). On Algiers Canal, alternative F would require no further upgrades above the authorized level. On Harvey Canal, no further upgrades would be required above the authorized level.

This alternative was dismissed from further review for the following reasons:

- This alternative has higher costs than most of the other alternatives.
- Construction of two sector gates is complex and the difficulty of maintaining traffic on the two canals during construction would be greater than with the GIWW A or WCC alternatives.
- GIWW A and WCC both offer decreased storm load exposure and decreased operational complexity.
- Location of a navigable floodgate in the sharp curve of the Harvey Canal would make navigating through the structure impractical.

2.5.3.4 Alternative G – GIWW C

Bayou aux Carpes CWA Section 404c area alternatives that would avoid impacts to that area were considered. Alternative G is similar to WCC but would construct the eastern innovative floodwall completely within the GIWW, avoiding all discharges of dredge and/or fill material in the Bayou aux Carpes CWA Section 404(c) area. This alternative was eliminated from further consideration due to constructability and navigation concerns. The construction a floodwall within the heavily used navigation channel that would eliminate all discharges of fill material and eliminate all impacts to the Bayou aux Carpes CWA Section 404(c) area wetland would create engineering and construction challenges producing significant increases in construction time and cost necessary to maintain the same structure reliability achieved by placement of the wall on the bank.

The channel geometry in this area, in particular the very tight curves and narrow channel in the Harvey Canal directly adjacent to this portion of the Bayou aux Carpes CWA Section 404(c) area present challenges that would require impractical actions to achieve a structure that would be able to be completed by June 2011. This action would require the relocation of the navigation channel as well as the wall and berms and or structures required to protect the wall from barge impacts. A small channel behind the wall to maintain hydraulic flows to the Bayou aux Carpes CWA Section 404(c) area would also have to be constructed under this alternative. The greatly increased construction cost and durations as well as the increased risk to the walls make moving the walls into the channel impractical.

Continued coordination with the NPS and EPA on ways to minimize impacts on the Bayou aux Carpes CWA Section 404(c) area will continue throughout the design and construction phase.
2.6 SUMMARY TABLE

Table 3 provides a summary of the preliminary alternative screening results.

<table>
<thead>
<tr>
<th>Table 3: Summary of Preliminary Alternative Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>No Action</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Nonstructural</td>
</tr>
<tr>
<td>Existing Alignment</td>
</tr>
<tr>
<td>• Earthen Levee</td>
</tr>
<tr>
<td>• T-wall Floodwall</td>
</tr>
<tr>
<td>• Earthen Levee with T-wall Floodwall cap</td>
</tr>
<tr>
<td>Flood-side Shift</td>
</tr>
<tr>
<td>• Earthen Levee</td>
</tr>
<tr>
<td>• T-wall Floodwall</td>
</tr>
<tr>
<td>• Earthen Levee with T-wall Floodwall cap</td>
</tr>
<tr>
<td>Protected-side Shift</td>
</tr>
<tr>
<td>• Earthen Levee</td>
</tr>
<tr>
<td>• T-wall Floodwall</td>
</tr>
<tr>
<td>• Earthen Levee with T-wall Floodwall cap</td>
</tr>
<tr>
<td>New Alternative – GIWW A</td>
</tr>
<tr>
<td>New Alternative – WCC</td>
</tr>
<tr>
<td>New Alternative – AG</td>
</tr>
<tr>
<td>New Alternative – PP</td>
</tr>
<tr>
<td>Alternative B (Design Report designation)</td>
</tr>
<tr>
<td>Alternative E (Design Report designation)</td>
</tr>
<tr>
<td>Alternative F (Design Report designation)</td>
</tr>
</tbody>
</table>

X = Eliminated from further study  
✓= Considered in detail  
N/A = Not applicable; this alternative was not formulated for this alignment
CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 ENVIRONMENTAL SETTING

3.1.1 General

The study area is located on the west bank of the Mississippi River within Orleans, Jefferson, and Plaquemines Parishes. The area, which extends from the Bayou aux Carpes CWA Section 404(c) area on the western end to just north of Hero Canal on the eastern end, is approximately 25 miles long (figure 1). In the vicinity are the Mississippi River to the north and east, Barataria Bay and the Gulf of Mexico to the south, and JLNHP to the west. The proposed action and the alternatives to the proposed action in this document are situated along the GIWW, Harvey Canal, and Algiers Canal and would influence habitats along those waterways (figures 4a, 4c, and 5-8).

3.1.2 Land Use along Major Waterways

3.1.2.1 GIWW

The GIWW area of influence, as described in this document, extends northward on both sides of the GIWW from Hero Canal to the island at the confluence of the Algiers and Harvey Canals (figure 4). This includes a section extending westward to the Estelle Pump Station and then south for approximately 1 mile bordered by the Bayou aux Carpes CWA Section 404(c) area and the JLNHP. All of the alignments included in the proposed action are associated with this area. The southern end of the IER # 12 project area is undeveloped with land-use primarily restricted to a shooting range on the east bank of the GIWW or recreational use of the pristine marsh and swamp habitat within the Bayou aux Carpes CWA Section 404(c) area west of the GIWW. BLH habitat is dominant along the east and west banks of the GIWW.

3.1.2.2 Algiers Canal

The Algiers Canal is a part of the GIWW that proceeds northeasterly to intersect with the Mississippi River. The Algiers Canal area of influence includes the levees and adjacent land on both sides of the canal, extending from the Algiers Lock located near the Mississippi River (figure 4) to the confluence of the Harvey and Algiers Canals. Existing levees, floodwalls, and gates are located on both sides of this canal. Land use proceeding northeasterly on the east bank of the canal begins as vacant land adjacent to the U.S. Naval Air Station at Belle Chasse, continues north through a new, high-end residential subdivision to LA 23 where the Belle Chasse Tunnel crosses, through the Bayou Barriere public golf course, and proceeds through mostly vacant land with intermittent industrial/commercial, residential, and public uses to the Algiers Lock (a new residential subdivision is located just south of the General De Gaulle Bridge). Starting southwesterly from the Algiers Lock on the west bank, vacant land is first encountered and then housing is located adjacent to and on both sides of the General De Gaulle Bridge (figure 11; see figure 10 for existing features along the canal). Continuing southward, a large section of vacant land is crossed until a new subdivision is encountered adjacent to LA 23, crossing the Belle Chasse Tunnel. Under the bridge that crosses the Algiers Canal is a parish park that is widely used by recreational walkers, dog owners, and others. South of LA 23 to the Harvey Canal is a dense mix of commercial and industrial enterprises, mostly oriented to the marine industry.
3.1.2.3 Harvey Canal

The Harvey Canal area of influence includes the levees and adjacent land on both sides of the canal extending from the confluence with the Algiers Canal to the sector gate and Cousins Pump Station at Lapalco Boulevard (figure 4b). The Harvey Canal is an alternate GIWW, route that affords navigation interests access to the Mississippi River via the Harvey Lock. Proceeding north on the east side of the canal, land is primarily in industrial uses, with barge and tow boat repair and storage predominating (figure 11; see figure 10 for existing features along the canal). Proceeding south from Lapalco Boulevard on the west bank of the Harvey Canal to the Estelle PS, all of the land is vacant and is either BLH or marsh land.

Table 4 identifies land uses within the study area (figure 11).
Table 4: Land Use in Study Area, By Area of Influence (acres)

<table>
<thead>
<tr>
<th>Land Use</th>
<th>GIWW (acres)</th>
<th>Algiers Canal (acres)</th>
<th>Harvey Canal (acres)</th>
<th>Total Acres in Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>0</td>
<td>236</td>
<td>22</td>
<td>258</td>
</tr>
<tr>
<td>Commercial</td>
<td>5</td>
<td>8</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Industrial</td>
<td>0</td>
<td>113</td>
<td>405</td>
<td>518</td>
</tr>
<tr>
<td>Cropland and Pasture</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Waterways and Canals</td>
<td>188</td>
<td>654</td>
<td>0</td>
<td>842</td>
</tr>
<tr>
<td>Forested Wetland</td>
<td>726</td>
<td>1291</td>
<td>913</td>
<td>2930</td>
</tr>
<tr>
<td>Non-Forested Wetland</td>
<td>1128</td>
<td>3</td>
<td>113</td>
<td>1244</td>
</tr>
<tr>
<td>Upland/ Urban</td>
<td>0</td>
<td>599</td>
<td>0</td>
<td>599</td>
</tr>
<tr>
<td>Transportation or</td>
<td>0</td>
<td>613</td>
<td>0</td>
<td>613</td>
</tr>
<tr>
<td>Communications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deciduous Forest</td>
<td>0</td>
<td>536</td>
<td>0</td>
<td>536</td>
</tr>
<tr>
<td>Transitional Areas</td>
<td>0</td>
<td>112</td>
<td>0</td>
<td>112</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2042</strong></td>
<td><strong>4175</strong></td>
<td><strong>1453</strong></td>
<td><strong>7670</strong></td>
</tr>
</tbody>
</table>

3.1.3 Climate

The project area, which includes the parishes of Plaquemines, Jefferson, and Orleans, experiences a gulf coast regional climate characterized as hot, humid, and subtropical (Ning et al. 2003). The maritime tropical air masses associated with the Gulf of Mexico significantly influence the local climate. Summers are long, humid, and hot. The summer average daily temperature is 81°F, with the average daily high temperature around 90°F. During winter, cooler, dry, polar air masses move southward from Canada, often influencing the project area. Winter average daily temperature is 54°F and the average daily minimum is 44°F. The area receives approximately 65 inches of precipitation annually.

Tropical storms and hurricanes frequent the region, specifically between August and October. These storms bring high winds (capable of exceeding 155 mph), heavy precipitation, and storm surges that cause extensive flooding, property damage, environmental devastation, and loss of life (National Hurricane Center 2007).

Regional climate trends show that over the past decade Louisiana has been subject to increasing temperatures and humidity, increasing precipitation, more intense precipitation events, stronger tropical storms, and rising sea levels (Ning et al. 2003). Climate projections predicting increasing hurricane frequency are currently inconclusive; however, the currently supported climatic trends listed previously are generally agreed to result in future increases in flooding, erosion, and subsidence, specifically to coastal areas (Ning et al. 2003).
3.1.4 Soils and Subsidence

Soils in the project area can be divided into three main groups: (1) soils found on naturally occurring levees that are protected from flooding, (2) soils frequently ponded in marshes and swamps that experience frequent flooding, and (3) soils previously ponded, but have been drained and are protected from flood events (Matthews 1983, Trahan 1989).

Almost all of the soils within the study area exhibit substantial subsidence ranging from approximately 6 inches to 51 inches when dried (Soil Survey Staff 2007). To ensure 100-year level of risk reduction, final levee elevation should be determined as the elevation post predicted subsidence, or levee elevation should be monitored and reconstructed as needed. In addition, Cancienne silt loam, Cancienne silty clay loam, Shriever clay, Schriever silty clay loam, and Harahan clay are designated prime and unique farmland soils (Soil Survey Staff 2007). Areas of prime and unique farmland soils are designated in figure 11.

3.1.4.1 Soils found on naturally occurring levees that are protected from flooding

Sharkey-Commerce soils occur on the naturally formed levees of the Mississippi River and the distributaries within the Mississippi Delta. These clayey/loamy soils are somewhat-poorly to poorly drained. The vast majority of these soils within the project area are currently developed with urban land uses. Within the project area these soils are mainly found directly adjacent to the Mississippi River and at the northern end of the Harvey Canal.

3.1.4.2 Ponded soils in marshes and swamps

Barbary and Kenner-Allemands soils are typically found in flooded swamps and marshes that are consistently ponded. These soils are composed of layers of muck with underlying clay. Areas containing these soils are heavily vegetated with both herbaceous aquatic marshes and forested plant communities and provide excellent habitat for wildlife. Neither Barbary nor Kenner-Allemands soils are well suited for development or agricultural uses.

3.1.4.3 Previously ponded soils that have been drained and are protected from flooding

Harahan-Westwego (also known as Westwego-Harahan) and drained Kenner-Allemands soils occur in protected areas of natural and man-made levees and in broad inter levee basins that were previously accustomed to frequent flooding events. These soils generally have a surface layer of muck over a clay base and are naturally poorly drained. Drainage in many of these areas is assisted by pumps. Much of these areas are developed for agricultural and urban land uses. These drained soils are often built upon; however, they are poorly suited for this purpose and experience significant rates of subsidence. Within the project area these soils can be found within the basin between the existing Harvey and Algiers Canals, and directly to the west of the Harvey, Algiers, and Hero Canal junctions.

3.1.5 Geology

The study area is located west of the Mississippi River, along the GIWW, Harvey Canal, and Algiers Canal. Natural ground elevations are near sea level. Dominant physiographic features in the area consist of the Mississippi River and its associated natural levees and Bayou Barataria.

The surface is composed of artificial levee material that ranges from 10 ft to 24 ft thick. Beneath the artificial levee deposits lie swamp deposits that are composed of organic clays, fat clays, and peats with occasional sand and silt layers. Swamp deposits are generally between 10 ft and 20 ft thick. Peat layers are common in the swamp deposits between -10 ft and -20 ft in elevation. An
abandoned distributary channel crosses the Algiers Canal due west of English Turn. It is located between -5 ft and -46 ft in elevation and filled with interbedded layers of sands, silts, and clays. Flanking the abandoned distributary are natural levee deposits composed of predominantly fat clays and silts. Natural levee deposits are located between -4 ft and -28 ft elevation and range in thickness from 4 ft to 24 ft. Interdistributary deposits are located beneath the natural levee and swamp deposits and consist of interbedded layers of fat and lean clays, silts, and silty sands. They average 40 ft in thickness. Intradelta deposits are present beneath swamp and within interdistributary deposits. Intradelta deposits are typically coarse material with interbedded layers of silt, silty sand, and sand with some clay layers. Intradelta deposits range in thickness from 2 ft to 20 ft and are generally found between -20 ft and -40 ft in elevation. Beneath the interdistributary deposits lie nearshore gulf sediments that are composed predominantly of sand and silty sand with clay layers and shell fragments and prodelta deposits that are mainly clay. Nearshore gulf deposits lie atop Pleistocene deposits that are composed of stiff to very stiff oxidized clays interbedded with layers and lenses of silts and sands. The top of the Pleistocene ranges from -75 ft to -100 ft in elevation and extends to an unknown depth.

Soils in the area are composed of drained swamp and marsh. Generally, there is a peat or muck layer over soft clays.

Groundwater is at or near the surface. Intradelta silts and sands and the abandoned distributary may be hydraulically connected to the Mississippi River and the Intracoastal Waterway.

Long-term relative subsidence rates average approximately 0.5 ft/century in the study area. It is estimated that eustatic sea level will rise an additional 1.3 ft over the next 100-years (IPCC, 2001). Combined, the relative subsidence rate is estimated to be 1.8 ft over the next 100-years. (Note: all elevations are in NAVD 88.)

3.1.6 Vegetation and Wildlife

Vegetation found within the study area is typical of the BLH Region of the Mississippi River Alluvial Plain. Habitat types in the study area consist of oak-dominated BLH forests, cypress-tupelo swamps, various fresh and saltwater emergent, shrub-scrub and forested wetland habitat types, as well as tidal channels, creeks, and estuaries. Most of the vegetation habitats within the study area are considered forested or non-forested wetlands and are indicated as such in figure 10. National Wetland Inventory data regarding wetland habitat in the study area is shown in figure 12 (U.S. Fish and Wildlife Service 2007).

The maintenance of habitat types in the region was historically dependent upon sediment input from freshwater flooding events producing a slow and gradual elevation transition. The gradual elevation change provides a highly elongated freshwater to saltwater transition zone capable of supporting a high diversity of wetland and marsh vegetation communities. Currently, these coastal areas are in a transgressive phase resulting in the rapid replacement of freshwater marsh and swamp habitat with increasingly marine-dominated habitats (Roberts 1997). Historically, the coastal region encompassing the project area would receive freshwater and sediment inputs during frequent flooding events from the Mississippi River. These flooding events would act to maintain the freshwater habitat characteristics and negate the effects of tidal outwash through silt deposition; however, the construction of levees and other flood control measures has significantly altered freshwater, nutrient, and sediment inputs (Kesel 1989, Boesch et al. 1994, Day et al. 2000). If not developed, areas protected from both freshwater and backwater tidal flooding with levees and water pumps have significantly dried, causing both subsidence and the conversion of BLH forest to more upland habitat.

The BLH forests, cypress-tupelo swamps, marshes, and tidal channels provide habitat for an abundance of birds, mammals, amphibians, reptiles, and fish. The wetlands of coastal Louisiana fall
within the Mississippi Flyway, a major migration corridor for the majority of all bird species found in North America, and also provide critical nesting and breeding habitat for resident species (Lowery 1974, Barrow et al. in press). Coastal wetlands provide essential habitat for commercially important marine and freshwater species and game species that are wetland-dependent at some stage in their life-cycle. The estimated annual economic input to Louisiana from recreational hunting, fishing, and non-consumptive uses of wildlife (e.g., bird watching, outdoor recreation, ecotourism) exceeds $1.2 billion per year (U.S. Department of Interior, Fish and Wildlife Service and U.S. Department of Commerce, Census Bureau 2001). Harvested commercial fish and wildlife commodities total over $500 million per year (Louisiana State University Agriculture Center 2004).

**Figure 12. Wetlands within Project Vicinity**
3.1.7 Bayou aux Carpes CWA Section 404(c) Area

As originally authorized in the 1960s, the Harvey Canal-Bayou Barataria Levee Project, south of the V-line levee, included draining over 3,000 acres of the Bayou aux Carpes wetlands for developmental purposes. In response to environmental concerns by the EPA and several public interest groups, the USACE agreed to a modified proposed project design in 1976. Consequently, the proposed project was modified by: 1) substituting floodgates for earthen closures at the mouths of the Bayou Des Familles, Bayou aux Carpes, and the Southern Natural Gas Pipeline Canal, 2) eliminating the land reclamation features, and 3) stipulating if a pump station was needed for flood control, that it be operated in a manner which would maintain the integrity of the swamp. Jefferson Parish also agreed to these modifications, but was unable to provide local assurance for the modified project due to State court litigation brought about by area property owners. The landowners filed suit in Federal court, requesting the court to order the USACE to complete the original project. In that lawsuit, the U.S. District Court (on remand from the U.S. Court of Appeals for the 5th Circuit), issued an order that stayed further proceedings and gave the EPA a timeframe within which to decide whether or not to proceed with a veto action under Section 404c of the Clean Water Act. This provision of the Clean Water Act affords the EPA the authority to designate areas in which discharges of dredged or fill material are prohibited.

In October 1985, the EPA exercised its veto authority under Section 404c of the Clean Water Act, and with three specific exceptions, prohibited discharges of dredged or fill material to wetlands in the Bayou aux Carpes site (see www.nolaenvironmental.gov for copies of the report). This area is bounded by the existing V-line levee, the Old Estelle Outfall Canal, Bayou Barataria, Bayou des Familles, and the Lafitte-Larose Hwy. The Federal District Court for the Eastern District of Louisiana subsequently found the EPA action, which rendered the original project infeasible, was consistent with the law and was supported by the agency’s administrative record. The prohibitions on discharges of dredged or fill material in the Bayou aux Carpes site remains in effect today.

In the 1980s, the USACE proposed to construct a hurricane protection levee for the west bank of Jefferson Parish. The preferred alternative would have resulted in the discharge of dredged or fill material to 59 acres of wetlands in the Bayou aux Carpes and to 257 acres of wetlands in the JLNHPP. The EPA rated the draft EIS “environmentally unacceptable” based on proposed adverse impacts to the Bayou aux Carpes CWA Section 404(c) area, inconsistency with a separate agreement with Jefferson Parish regarding wetland protection at this site, and other adverse wetland and water quality impacts. As an alternative, the EPA supported the “V-Levee North” alignment, which is the alignment that was adopted and subsequently constructed (See figure 3).

3.2 SIGNIFICANT RESOURCES

This section contains a list of the significant resources located in the vicinity of the proposed action, and describes in detail those resources that would be impacted, directly or indirectly, by the alternatives. Direct impacts are those that are caused by the action taken and occur at the same time and place (40 CFR §1508.8(a)). Indirect impacts are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8(b)). Cumulative impacts are briefly addressed here and are then discussed in section 4.

The resources described in this section are those recognized as significant by laws, executive orders, regulations, and other standards of National, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. Further detail on
the significance of each of these resources can be found by contacting the CEMVN, or on www.nolaenvironmental.gov, which offers information on the ecological and human value of these resources, as well as the laws and regulations governing each resource. Table 5 shows those significant resources found within the project area, and notes whether they would be impacted by the proposed action.

This report assumes that under the no action alternative the HSDRRS would be raised to the previously authorized grade (El. 10) rather than the 100-year level of risk reduction (El. 14 to El. 16). Consequently, the impacts discussed in this report are those impacts specifically associated with raising the level of risk reduction from the originally authorized grade up to the 100-year level of risk reduction. In other words, impacts associated with the no action alternative are not considered. Rather, the no action alternative is considered as the baseline “no impact” alternative. All impact calculations and discussions are assumed to be impacts incurred in addition to the previously authorized action.

### Table 5: Significant Resources in Project Study Area

<table>
<thead>
<tr>
<th>SIGNIFICANT RESOURCES</th>
<th>Impacted</th>
<th>Not Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Bayou aux Carpes CWA Section 404(c) Area</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Upland Resources</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Prime Farmland</td>
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<tr>
<td>T&amp;E Species</td>
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<td>X</td>
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<tr>
<td>Fisheries</td>
<td>X</td>
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</tr>
<tr>
<td>Wildlife</td>
<td>X</td>
<td></td>
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<tr>
<td>Air Quality</td>
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<td>Water Quality</td>
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<td>Noise</td>
<td>X</td>
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<td>Aesthetics</td>
<td>X</td>
<td></td>
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<tr>
<td>Recreational Resources</td>
<td>X</td>
<td></td>
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<tr>
<td>Cultural Resources</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

X = Impacted

### 3.2.1 Wetlands

#### 3.2.1.1 Existing Conditions

Nearly all of the project area constitutes wetland, or previously drained wetland habitats retaining various wetland characteristics. Certain locations within the project area have experienced a significant hydrological shift due to the construction of numerous pump stations during the 1960s to locally control drainage. These drained wetland habitats are found in areas along the entirety of the GIWW, Harvey Canal, and Algiers Canal. Much of this area has become heavily developed for both residential and industrial purposes. Small habitat fragments retain historic vegetative characteristics of BLH forests.
The remainder of the project area contains a wide array of wetland habitat types including; (1) wet and non-wet BLH forest, (2) cypress-tupelo swamp, (3) freshwater emergent and shrub-scrub wetland, and (4) marsh. The only undeveloped areas resembling any substantial upland habitat characteristics are the levees themselves.

Intact tracts of BLH (BLH) forest habitat are primarily located on the eastern side of the Algiers Canal south of Plaquemines Pump Station, and along the western side of the Harvey Canal running from the Old Estelle Pump Station north to the Harvey Canal Sector Gate. BLH forest patches are scattered elsewhere along the Harvey and Algiers Canals, but these patches tend to be small remnants. BLH forests communities are forested alluvial wetlands typically occupying floodplain regions of large flooding water bodies and rivers (Cowardin et al., 1979). These habitats are characterized by a mix of deciduous and evergreen vegetation often grouped into particular species associations based upon the hydrology and topography of the area. Typical dominant overstory species include overcup oak (*Quercus lyrata*), nuttal oak (*Quercus nuttall*), water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), water hickory (*Carya aquatica*), hackberry (*Celtis laevigata*), and American elm (*Ulmus americana*), just to name a few (Allen et al. 2002). BLH forests provide all basic ecosystem services of a typical wetland (Smith et al. 1995).

Hydrologically, forested wetlands act to store ground water, maintain surface water, and aid in flood and storm protection by acting as natural “sponges”. Biogeochemically, forested wetlands provide numerous valued services such as carbon sequestration, nutrient detention, and natural nonpoint source pollution mitigation (Coastal Wetland Forest Conservation and Use Science Working Group 2005). BLH forests also support significant wetland biological communities. Numerous species of insects, amphibians, mammals, and birds utilize critical habitat found within BLH forests.

Cypress-Tupelo Swamp

Cypress-tupelo swamp and flotant marsh habitat occupy the areas south of the Old Estelle Pump Station and to the west of the GIWW within the Bayou aux Carpes CWA Section 404(c) area as designated by the EPA (U.S. Environmental Protection Agency 1985). The overstory of Cypress swamp habitat is dominated by Bald Cypress (*Taxodium distichum*), Swamp Red Maple (*Acer rubrum var. drummondii*), and Tupelo Gum (*Nyssa aquatica*), with a relatively sparse and flooded understory dominated by Dwarf Palmetto (*Sabal minor*). Cypress-tupelo swamp habitat is nearly always inundated over the entire growing season.

Cypress-tupelo swamps are flooded on a regular basis and, as such, provide spawning and nursery areas for larval and juvenile fish and shellfish of both freshwater and estuaries such as sunfish (*Lepomis spp.*), menhaden (*Brevoortia sp.*), blue crabs (*Callinectes sapidus*), and bay anchovies (*Anchoa mitchilli*). Cypress-tupelo swamps were heavily impacted beginning in the late 1700s. Bald cypress was harvested and used for house construction, shingles, barrels, tanks, casks, and coffins (Mattoon 1915). After accounting for much of the economic growth in Louisiana for nearly a century and half, heavy logging and developmental impacts have drastically decreased the historical forested acreage (Norgress 1936, Norgress 1947, Mancil 1972).

The marshes in this area are dominated by smartweed (*Polygonum spp.*), bulltongue (*Sagittaria lancifolia*), pennywort (*Hydrocotyle spp.*), and softstem bullrush (*Scirpus validus*). Flotant marshes are also a highly valuable, unique marsh type, composed of thick, floating mats of vegetation with open water beneath. These marshes are mainly *Panicum hemitomon* dominated.

Flotant Marsh

A variety of other wetland and marsh habitats exist within the project study area. Small patches of freshwater emergent and shrub/scrub wetlands exist primarily in areas protected by levees along the
entire project area. These habitats are typically dominated by various rushes, sedges, and hydrophytic shrubs such as waxmyrtle (*Myrica cerifera*) and buttonbush (*Cephalanthus occidentalis*). In addition, more extensive areas of freshwater/brackish marsh exist in the unprotected and undeveloped areas near the GIWW and within the Bayou aux Carpes CWA Section 404(c) area. These marshes are dominated by smartweed (*Polygonum spp.*), bulltongue (*Sagittaria lancifolia*), pennywort (*Hydrocotyle spp.*), and softstem bullrush (*Scirpus validus*), among others. These habitats are important nursery areas for many marine species such as croaker (*Micropogonias undulatus*), white shrimp (*Litopenaeus setiferus*), menhaden (*Brevoortia sp.*), seatrout (*Cynoscion nebulosus*), black drum (*Pogonias cromis*), blue crab (*Callinectes sapidus*), and numerous shellfish. They provide habitat for migratory and resident waterfowl, songbirds, and wading birds, and numerous species of fish, amphibians, reptiles, and mammals.

### 3.2.1.2 Discussion of Impacts

#### 3.2.1.2.1 No Action

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina, utilizing post-Katrina engineering specifications. Generally, this would mean raising levee embankments and floodwalls to approximately a 10 ft elevation, and providing higher access gates and modified pump stations. Wetland acreage would be impacted, but few new wetland impacts would occur that have not been previously authorized (Design Alternatives Report, January 2007).

No indirect or cumulative wetland impacts have been identified.

#### 3.2.1.2.2 Proposed Action

##### 3.2.1.2.2.1 General Discussion of Wetland Impacts due to the Proposed Action

In general, the proposed action would primarily impact BLH forest (BLH) and cypress-tupelo swamp wetland habitats. The quality of the BLH habitat in much of the project area has been affected by previous levee construction or development activities with the exception of the wetlands within the Bayou aux Carpes CWA Section 404(c) area. This BLH is considered to be a lower quality habitat than the BLH in the 404c area because it has been altered (impounded) for over 20 years.

Implementation of the proposed action (WCC) would directly impact approximately 329 acres of wetland habitat (table 6). Any discrepancies between CEMVN new ROW numbers in tables 6, 7, or 7b and USFWS wetland acres impacted in those same tables will be addressed in the final Wetland Valuation Assessment. A total of 251.7 acres of altered BLH and 2.3 acres of BLH habitat would be unavoidably impacted, specifically requiring in-kind mitigation. It is important to note that approximately 9.6 acres of the total wetland impacts due to the proposed action would potentially occur within the EPA Bayou aux Carpes CWA Section 404(c) area (section 3.2.2). Direct impacts to bottomland hardwood and swamp habitat were quantified by acreage and habitat quality (i.e., average annual habitat units or AAHUs). Please see chapter 7 for a detailed explanation.
Table 6: Proposed Action (WCC) Wetland Impacts from WVA (acres)**

<table>
<thead>
<tr>
<th>Wetland Impacts (Acres)</th>
<th>Habitat Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Levee</td>
<td>Altered BLH*</td>
<td>V-line levee upgrade and Canal Relocation</td>
</tr>
<tr>
<td>27.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northern Floodwall</td>
<td>Swamp</td>
<td>Old Estelle PS Improvements , Estelle Outfall Canal Floodwall and Flow Control Structure</td>
</tr>
<tr>
<td>2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Alt. BLH</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern Floodwall</td>
<td>BLH / Swamp</td>
<td>Innovative T-Wall within Bayou aux Carpes CWA Section 404(c) area</td>
</tr>
<tr>
<td>9.6***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>BLH/ Swamp</td>
<td>Project Feature Augmentations</td>
</tr>
<tr>
<td>134</td>
<td>Alt. BLH</td>
<td>Gates, Pump Station, and Levee and Road Realignment</td>
</tr>
<tr>
<td>8.3</td>
<td>Swamp</td>
<td>Gates, Pump Station, and Levee and Road Realignment</td>
</tr>
<tr>
<td>63.6</td>
<td>Pasture</td>
<td>Staging Areas</td>
</tr>
<tr>
<td>6.9</td>
<td>Alt. BLH</td>
<td>Staging Areas</td>
</tr>
<tr>
<td>Detention Basin</td>
<td>Alt BLH</td>
<td>Harvey Canal West Bank Levees</td>
</tr>
<tr>
<td>Improvements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.7</td>
<td>Swamp</td>
<td>Harvey Canal West Bank Levees</td>
</tr>
<tr>
<td>20.5</td>
<td>Alt BLH</td>
<td>Algiers Canal West Bank</td>
</tr>
<tr>
<td>3.8</td>
<td>Swamp</td>
<td>Algiers Canal West Bank</td>
</tr>
<tr>
<td>24.9</td>
<td>Alt BLH</td>
<td>Algiers Canal East Bank</td>
</tr>
<tr>
<td>43</td>
<td>Swamp</td>
<td>Algiers Canal East Bank</td>
</tr>
<tr>
<td>TOTALS (approx. 329 acres)</td>
<td>Altered BLH</td>
<td>177.3 AAHUs</td>
</tr>
<tr>
<td>251.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>BLH</td>
<td>1.9 AAHUs (in Bayou aux Carpes CWA Section 404(c) area)</td>
</tr>
<tr>
<td>74.9</td>
<td>Swamp</td>
<td>38.5 AAHUs (7.3 acres/4.2 AAHUs in Bayou aux Carpes CWA Section 404(c) area)</td>
</tr>
</tbody>
</table>

*Hydrologically Altered BLH

** The CEMVN has calculated that the 100 ft by 4200 ft corridor is 9.6 acres, which is different than a previous USFWS calculation (appendix I). The CEMVN calculation is used consistently in this IER # 12 as the correct number of acres impacted in the Bayou aux Carpes CWA Section 404(c) area.

Wetland impacts would be minimized during construction of the proposed action by utilizing innovative design techniques, floodwall lifts, and protected side shifts where practicable. One of the primary design goals of the project planners has been to avoid and/or minimize impacts to the EPA designated 404c area.

All wetland impacts throughout the proposed action alignment would occur adjacent to sections of pre-existing ROW except within the Bayou aux Carpes CWA Section 404(c) area where there is no existing ROW. See sections 6.3, 6.7 and appendix K for details on collaboration efforts among the CEMVN, the EPA and other Federal and state resource agencies to minimize impacts to the Bayou aux Carpes CWA Section 404(c) area to the greatest extent practicable. In addition, all construction
impacts would occur in or adjacent to sections of the area which have been previously disturbed, including the 9.6 acre corridor in the Bayou aux Carpes CWA Section 404(c) area comprised of an area where dredge material was historically placed during construction of the GIWW.

Direct impacts to BLH forest habitat and cypress-tupelo swamp would be permanent. Wetlands would be mechanically cleared and grubbed to facilitate the construction of the new levee structure and would require mitigation. All construction impacts would occur in or adjacent to sections of the area which have been previously disturbed, including the approximately 9.6 acres of impacts in the Bayou aux Carpes CWA Section 404(c) area which is comprised of an area where dredge material was historically placed during construction of the GIWW.

Indirect effects of construction (e.g., increased turbidity, noise, vibrations, fugitive dust, etc.) would have temporary effects to the wetlands habitat. Indirect loss caused by changes to hydrology and inundation levels could occur. Overall, the adjacent wetlands would stabilize following construction, allowing sediment to settle and vegetation to stabilize the area. Construction-related runoff into the wetlands would be managed through best management practices, which would minimize the potential indirect adverse impacts from this alternative on wetlands. Best Management Practices (BMP) are effective, practical, structural or nonstructural methods which prevent or reduce the movement of sediment, nutrients, pesticides and other pollutants from the land to surface or ground water, or which otherwise protect water quality from potential adverse effects of construction activities. Best management practices would be used to minimize construction related impacts along the entire proposed action alignment.

Project feature augmentation within the Bayou aux Carpes CWA Section 404(c) area would have positive impacts to the wetlands within the area. Augmentations would be implemented only if they were found to have the potential for positive restoration of past hydrological impediments within the area. Section 2.3 discusses the augmented features in more detail.

The proposed action would not increase edge habitat, fragmentation, or hydrologic isolation within the study area by utilizing existing habitat edges and levee ROWs. However, overall indirect and cumulative impacts due to additional wetland losses and levee construction may have a lasting and delayed impact on wetland habitat due to altered hydrological regimes leading to habitat alterations, changes in water salinity and nutrient load, and increased rates of subsidence. These factors may contribute to long-term wetland loss within the region and subsequent negative trickle-down effects on fish and wildlife communities dependent upon nearby wetland habitat.

Cumulative wetland impacts would be expected due to implementation of the proposed action in concert with additional WBV projects. Construction of the proposed action would contribute to the cumulative losses of cypress-tupelo swamp and BLH within the HSDRRS. Cumulative wetland impacts would be mitigated.

### 3.2.1.2.2 Specific Wetlands Impacts due to the Proposed Action

#### Western Earthen Levee Enlargement

The proposed action consists of raising the existing earthen levee to 14 ft. The centerline would shift to the protected side as necessary to accommodate footprint expansions, and an additional 125 ft of ROW would be acquired. The drainage canal would be relocated 200 ft to the protected side.

This enlargement would directly impact a total of 27.5 acres of altered BLH west of the pipeline drainage canal that runs along the western edge the Bayou aux Carpes CWA Section 404(c) area. The new ROW required would also be 17 acres. All construction impacts would occur in or adjacent to areas that have been previously disturbed.
**Northern Levee Floodwall Cap and Water Control Structure Construction**

The proposed action consists of providing fronting protection at Old Estelle Pump Station, earthen levee enlargement with a T-wall floodwall cap within existing ROW from the pump station to the Harvey Canal, and construction of a water control structure (gate) where the Old Estelle Outfall Canal meets the Harvey Canal.

Construction of the Old Estelle PS fronting protection, T-wall, and flow control structure would have little direct impacts to wetlands. The entire northern section would directly impact a total of 5.8 acre of wetlands for this section (table 6). All construction impacts would occur in or adjacent to sections of the area that have been previously disturbed and within existing ROW.

**Eastern Innovative Floodwall Construction**

The proposed action consists of constructing an innovative T-wall no longer than 4,200 ft and no wider than 100 ft along the eastern boundary of the Bayou aux Carpes CWA Section 404(c) area.

This action would directly impact approximately 9.6 acres of cypress-tupelo swamp and BLH in the Bayou aux Carpes CWA Section 404(c) area. The footprint that would be required for this T-wall was designed to be much smaller to minimize impacts to this unique wetland resource (section 2.3).

Due to the proposed project feature augmentations discussed in section 2.3 and section 7, there are ongoing hydrology and environmental studies being conducted within the Bayou aux Carpes CWA Section 404(c) area to gain baseline soil and water conditions and to determine which, if any, of the proposed project feature augmentations would benefit and further offset adverse impacts within the Bayou aux Carpes CWA Section 404(c) area wetlands (section 7). These project feature augmentations would be implemented in addition to full mitigation of impacts due to the proposed action. These potential future benefits to the Bayou aux Carpes CWA Section 404(c) area wetlands cannot be quantified at this time.

**Closure Complex Construction**

The construction of this closure complex and levee and road realignment would directly impact 142.3 wetland acres on the east bank of the GIWW (table 6).

Construction of the closure complex and the bypass channel would temporarily disrupt water habitat in the GIWW during construction. A surge barrier with decreased pumping capacity would be constructed by June 2011, and total construction of all proposed action components would be expected to take 4 years. This could temporarily disturb wetland biota and sediments in the immediate vicinity of construction activities.

Construction in the GIWW could cause downstream increases in turbidity and sedimentation. Those impacts would be temporary in duration and would not be expected to cause any impacts to wetlands in the area.

Under normal conditions, the gate structures would be open, channel velocities would remain stable, and the pump station would not be in operation; however, during a storm event, the operation of the closure complex on the GIWW could directly impact wetlands. The gate structures would only be closed and the pump station would only operate during a storm event (and during routine maintenance activities), and during that time period, the downstream wetlands could be impacted by increased velocities causing erosion and water level fluctuation. These potential wetland impacts cannot be quantified at this time.

Additional measures proposed by the USACE to avoid adverse impacts to the 404c area include the construction of foreshore protection (an approximately 2,000 ft rock structure) in the GIWW south of the innovative T-wall to prevent erosion and scouring along the eastern boundary of the 404c area.
area. There would be no direct impacts to wetlands due to the construction of the foreshore protection (table 1). The foreshore protection would indirectly impact the edge habitat within the 404c along the GIWW (e.g., increased turbidity, noise, vibrations, etc.), but the impacts would be temporary. The foreshore protection is not expected to alter hydrologic conditions within the Bayou aux Carpes CWA Section 404(c) area.

Due to necessary channel dredging and pile driving activities, relocation of the Enterprise Pipeline would be required. Additional measures proposed by the CEMVN to avoid adverse impacts to the 404c area include the relocation of the Enterprise Pipeline via directional drilling for 4,000 ft past the current ROW inside the 404c to a point west of the V-line levee (See section 2.3 for further details regarding pipeline relocation). There would be direct impacts to 1 acre of wetlands due to relocation of the pipeline (table 1).

**Eastern Earthen Levee Construction and Bayou Road realignment**
The proposed action consists of degrading the existing levee on the eastern side of the GIWW and constructing an earthen levee further eastward, moving the levee centerline further into the protected side and putting several acres of land back to the flood side to be exposed to the natural flood regime. Bayou Road would also be realigned on the protected side of the new levee. Loss of altered BLH habitat would total 134 acres for the closure complex, eastern earthen levee, and Bayou Road realignment (tables 6, 7, and 7b).

**Detention Basin Dredging and Improvements**
The proposed action consists of dredging 700,000 cy in the Algiers Canal. This material may be beneficially used within the JLNHPP to create wetland habitat (section 7).

Dredging the Algiers Canal would have no direct impacts to wetlands, but as stated previously, the material could be used beneficially to create marsh in area identified by JLNHPP as a critical erosion zone. See section 2.3 for further details regarding the disposal plan and beneficial use of dredge material. Disposal of dredged material at a beneficial use site would create 28 acres of wetland habitat (see section 2.3 for further details regarding the disposal plan and beneficial use of dredge material). It is possible that some wetlands in the vicinity of the disposal area would be impacted temporarily due to the discharge of dredged material and the resulting turbidity plume. Indirect impacts would be temporary.

Detention basin improvements along the Harvey Canal and Algiers Canal consist of building fronting protection at pump stations, capping or replacing floodwalls, constructing impact barriers, providing backflow suppression, reshaping existing levees by constructing a berm, and reinforcing existing levees.

Improvements within the detention basin would directly impact 80 acres of BLH wetlands due to new ROW requirements (table 6). These impacts would be similar to those for the general proposed action.
3.2.1.2.3 Alternatives to the Proposed Action

Each alternative to the proposed action would directly impact wetland habitat within the project area.

The GIWW A Alternative

The GIWW A alternatives would directly impact approximately 254 acres of wetland habitat (table 7). It is important to note that approximately 5.1 acres of the total wetland impacts due to the proposed action would potentially occur within the EPA Bayou aux Carpes CWA Section 404(c) area (discussed under separate heading in section 3.2.2).

This alternative would directly impact 5.1 acres of wetlands within the Bayou aux Carpes CWA Section 404(c) area proposed to construct a tidal exchange structure that would bifurcate the 404c area (table 7).

Aside from directly impacting the 5.1 acres of Bayou aux Carpes CWA Section 404(c) area wetlands within the proposed ROW footprint for this alternative, the creation of the tidal exchange structure would have the potential for extreme indirect and cumulative impacts to the unique area. The construction of the GIWW A alternative alignment could potentially alter hydrology, limit migration and dispersal of animal and plant populations, accelerate habitat fragmentation and ultimately result in long-term habitat recession based upon anthropogenically altered conditions.

Approximately 500 acres of wetland habitat in the Bayou aux Carpes CWA Section 404(c) area would be enclosed by the tidal exchange structure and would be at risk for irreparable indirect impacts, such as habitat degradation, e.g., loss of flotant marsh.

The tidal exchange structure would tie into a closure complex with the exact specifications as the one described in the proposed action. Direct impacts from the closure complex, levee, and road realignment would be approximately 230.8 BLH acres (table 7).

Foreshore protection measures would be required to prevent erosion and scouring within the Bayou aux Carpes CWA Section 404(c) area across from the PS, and the details would be the same as those within the proposed action. There would be no direct impacts to wetlands due to the construction of the foreshore protection.

The detention basin dredging and improvements would also be the same as the proposed action, and approximately 136.7 acres of wetlands would be impacted by these actions.

The AG and PP Alternatives

The AG and PP alternatives would unavoidably impact wetlands directly adjacent to existing levee ROW. The AG and PP alternatives would directly impact BLH forested wetland that would require in-kind mitigation. The AG alternative would impact approximately 287 acres of forested wetlands, altered BLH requiring in-kind mitigation (table 7). The PP alternative would directly impact 200 acres of forested wetland, altered BLH habitat. Neither the AG nor PP alternative would impact areas within the EPA designated Bayou aux Carpes CWA Section 404(c) area. Local indirect impacts would be expected for the AG and PP alternatives that are similar to those described for the proposed action. These alternatives would not increase edge habitat, fragmentation, or hydrologic isolation within the study area by utilizing existing habitat edges and levee ROWs.
### Table 7. Alternative Comparison of Estimated Wetland Impacts

<table>
<thead>
<tr>
<th></th>
<th>GIWW-WCC (Proposed Action) Acres</th>
<th>GIWW A Acres</th>
<th>Algiers Gate Acres</th>
<th>Parallel Protection Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swamp (404c)</td>
<td>7.3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Swamp</td>
<td>67.5</td>
<td>55.1</td>
<td>59.2</td>
<td>N/A</td>
</tr>
<tr>
<td>BLH (404c)</td>
<td>2.3</td>
<td>5.1</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>BLH altered</td>
<td>251.7</td>
<td>230.8</td>
<td>254.7</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>329</strong></td>
<td><strong>291</strong></td>
<td><strong>384</strong></td>
<td><strong>200</strong></td>
</tr>
</tbody>
</table>

The detention basin dredging and improvements would also be the same as the proposed action, and approximately 136.7 acres of wetlands would be impacted by these actions.

In general, the overall indirect and cumulative impacts due to additional wetland losses and levee construction for each alternative may have a lasting and delayed impact on wetland habitat due to altered hydrological regimes leading to habitat alterations, changes in water salinity and increased rates of subsidence. These factors may contribute to long-term wetland loss within the region and subsequent negative trickle-down effects on fish and wildlife communities dependent upon wetland habitat.
Table 7b. Detailed Comparison of Estimated Wetland Impacts

<table>
<thead>
<tr>
<th></th>
<th>Protected Side Acres (hydrologically altered)</th>
<th>Flood Side Acres (hydrologically connected)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pasture</td>
<td>Early Successional BLH</td>
</tr>
<tr>
<td>Western Levee (27.5 ac)</td>
<td>----</td>
<td>23.5</td>
</tr>
<tr>
<td>Northern Floodwall (5.8 ac)</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Eastern Floodwall (9.6 ac)</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Closure Complex, Levee, and Road Realignment (142.3 ac)</td>
<td>----</td>
<td>7.8</td>
</tr>
<tr>
<td>Eastern Staging Areas (70.5 ac)</td>
<td>63.6</td>
<td>----</td>
</tr>
<tr>
<td>Detention Basin – West Bank Harvey (44.5 ac)</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Detention Basin – West Bank Algiers (24.3 ac)</td>
<td>----</td>
<td>6.7</td>
</tr>
<tr>
<td>Detention Basin – East Bank Algiers (67.9 ac)</td>
<td>----</td>
<td>1.2</td>
</tr>
<tr>
<td>TOTAL Acres (392.6)</td>
<td>63.6</td>
<td>39.2</td>
</tr>
<tr>
<td>TOTAL AAHUs Lost (217.7)</td>
<td>0</td>
<td>22.3</td>
</tr>
</tbody>
</table>

Total Altered BLH (protected side) = 251.7 acres, 177.3 AAHUs

Total BLH (404c) (flood side) = 2.3 acres, 1.9 AAHUs

Total Swamp (flood side) = 74.9 acres (7.3 acres in 404c), 38.5 AAHUs

*As indicated in Table 7b, based on the HAM and WVA analyses project implementation would result in the direct loss of 255 and 75 acres, and 179.2 and 38.5 AAHUs, of bottomland hardwood forest and swamp, respectively.
3.2.2 EPA Designated Bayou aux Carpes CWA Section 404(c) Area

3.2.2.1 Existing Conditions

Under Section 404 (c) of the Clean Water Act (CWA, 33 U.S.C. 1251 et seq), the Administrator of the EPA is authorized to prohibit the specification (including withdrawal of specification) of any defined area as a disposal site, and he is authorized to deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site, whenever he determines after notice and opportunity for public hearing, that discharge of dredged or fill materials into such an area will have unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. Before making such a determination, the EPA Administrator shall consult with the Chief of Engineers, the property owner(s), and the applicant(s) in cases where there has been application for a section 404 permit. The EPA Administrator has delegated this authority to make a Final Determination under Section 404 (c) to the Office of Water (EPA 1985).

The 3,200-acre Bayou aux Carpes CWA Section 404(c) area has been designated since 1985. The area is comprised of high quality wetland habitat including BLH forest, cypress-tupelo swamp, scrub-shrub wetland, and flotant marsh. The Bayou aux Carpes CWA Section 404(c) area is directly adjacent to the Jean Lafitte National Historical Park and Preserve. It is possible that the Bayou aux Carpes would eventually be incorporated into the National Park Service by Congressional action.

Hydrologic parameters greatly influence the quality and health of cypress-tupelo swamp and flotant marsh. Receding water levels could cause floating marsh vegetation to root into the soil, and the vegetation could potentially drown out when water levels rise again. Increased water flow and velocity into the area could push flotant marsh vegetation out and create open water. In cypress-tupelo swamp habitat, hydrologic variations also play an important role. Regeneration depends on periods of long drought, and hydrologic stresses such as altered tidal exchange can influence sapling growth rates.

The water chemistry in adjacent waterways (Old Estelle Outfall Canal and GIWW) and within the Bayou aux Carpes CWA Section 404(c) area is currently being evaluated as part of the monitoring plan in order to document baseline conditions (see chapter 7 Mitigation and Monitoring).

The wetlands and open water bodies of the 404c area provide nursery, feeding and spawning habitat for numerous recreationally and commercially important freshwater and estuarine fish and shellfish species. Wetlands such as these in the upper Barataria Basin also provide organic detritus to nearby estuarine waters, thereby contributing to the production of estuarine-dependent fish and shellfish species.

The Bayou aux Carpes CWA Section 404(c) area is a highly productive and diverse wetland habitat that is of significant value to the ecosystem for many species of fish and wildlife. The proposed project area in the Bayou aux Carpes site is a BLH area that has formed on top of the GIWW dredge material bank that was created when the GIWW was originally dredged. The portion of the 404c area adjacent to the proposed action consists of wooded wetlands, cypress-tupelo swamps, freshwater marshes, flotant marshes, and scrub-shrub wetlands. The marshes and wooded wetlands comprise a typical mixed BLH/cypress-tupelo swamp habitat dominated by a canopy of bald cypress and tupelo gum trees with localized densities determined by drainage and elevation characteristics. The existing cypress trees within this area are highly valuable, exhibiting successful naturally-regenerating cypress trees. Flotant marshes are also a
highly valuable, unique marsh type, usually found in areas with freshwater or brackish marshes. They are composed of thick, floating mats of vegetation with open water beneath them. Other dominant vegetation is generally black willow, red maple, buttonbush, palmetto, and wax myrtle.

The wetlands serve as valuable feeding, resting, nesting, hunting, and/or escape habitat for numerous species of game and non-game mammals, commercially important furbearers, songbirds, raptors, migratory and resident waterfowl, wading birds, and woodpeckers, as well as many species of amphibians and reptiles, including the American alligator (Alligator mississippiensis). Some important wildlife inhabiting the area are the gray squirrel (Sciurus carolinensis), pileated woodpecker (Dryocopus pileatus), mink (Mustela vison), wood duck (Aix sponsa), and great egret (Ardea alba). These wetlands also serve as groundwater recharge areas, storage areas for storm and flood water, and natural water filtration areas. These wetlands store waters during a rain or tropical storm event and release the water slowly after absorbing pollutants and excess nutrients.

Additional background information regarding the EPA designated Bayou aux Carpes CWA Section 404(c) area can be found in section 3.1.7. See sections 3.2.1.1 (vegetation), 3.2.5.1 (T&E species), 3.2.6.1 (fisheries), and 3.2.7.1 (wildlife) for further details regarding the plant and animal communities that would potentially be impacted within Bayou aux Carpes CWA Section 404(c) area. Also see section 6.3 for details regarding collaboration with the EPA and resource agencies.

3.2.2.2 Discussion of Impacts

3.2.2.2.1 No Action

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to approximately a 10 ft elevation, and providing higher access gates and modified pumping stations. No impacts to the Bayou aux Carpes CWA Section 404(c) area would occur (Design Alternatives Report, January 2007).

3.2.2.2.2 Proposed Action

Implementation of the proposed action (WCC), would directly impact approximately 9.6 acres of cypress-tupelo swamp and BLH habitat within the Bayou aux Carpes CWA Section 404(c) area (table 6). Direct impacts to BLH forest and cypress-tupelo swamp habitat would be permanent.

Wetlands would be mechanically cleared and grubbed to facilitate the construction of the new floodwall structure and would require mitigation. The hydrology of the Bayou aux Carpes CWA Section 404(c) area could be directly impacted by construction of the floodwall to the east (along the eastern border of the 404c area) and could be indirectly impacted by construction of the floodwalls to the north (from Old Estelle PS to the Harvey Canal). Project feature augmentations to offset these potential impacts would be developed in conjunction with the EPA, JLNHPP, and USFWS (see section 2.3 for further details regarding measures to minimize impacts to the 404c. See sections 6.3 for details regarding the CEMVN coordination with the EPA and other Federal and state resource agencies. See section 7 for further details regarding the 404c mitigation and monitoring plans, and see appendix K for the detailed letter requesting a modification to the Bayou aux Carpes CWA Section 404(c) Final Determination.

Best management practices would be used to minimize impacts to the adjacent wetlands and open water areas. Impacts to the Bayou aux Carpes CWA Section 404(c) area would be similar to those described in the Wetlands section (3.2.1) of this report.
Two acres of 9.6 acres have been impacted in the project area due to investigative soil borings that were performed in October 2008. Mitigation for these unavoidable impacts will be completed as part of the overall mitigation plan discussed in this document.

Project feature augmentations are being evaluated for effectiveness and feasibility in partnership with the EPA, the NPS, and other resource agencies. Final determination of which project feature augmentations to implement would be determined in collaboration with the Interagency team after modeling, analysis of benefits, and consideration of impacts is completed.

The project feature augmentations and possible impacts include (in order of priority):

1. Gapping the existing earthen bank along the southern side of the Old Estelle Outfall Canal to provide historic sheet flow regime to the Bayou aux Carpes CWA Section 404(c) area. Would also provide for a dedicated source of freshwater that could provide additional nutrients to the 404c area.

2. Modifying the existing earthen bank along the Southern Natural Gas Pipeline Canal to provide hydrological exchange between the northern and southern sections of the Bayou aux Carpes CWA Section 404(c) area. This would provide historic sheet flow regime to the Bayou aux Carpes CWA Section 404(c) area.

3. Modifying the shell plug at Bayou aux Carpes to provide hydrological exchange between the GIWW and the Bayou aux Carpes CWA Section 404(c) area. This would provide historic sheet flow regime to the Bayou aux Carpes CWA Section 404(c) area.

4. Closing the Southern Natural Gas Pipeline Canal to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area. This would provide historic sheet flow regime to the Bayou aux Carpes CWA Section 404(c) area.

5. Gapping or grading down drill hole access canal banks to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area. This would provide historic sheet flow regime to the Bayou aux Carpes CWA Section 404(c) area.

6. Gapping or grading down oil well access roads to promote hydrological flow within the Bayou aux Carpes CWA Section 404(c) area. This would provide historic sheet flow regime to the Bayou aux Carpes CWA Section 404(c) area.

Project feature augmentations would have direct impacts to the wetland habitat, fisheries, and wildlife (section 3.2) in the 404c area. These impacts would include some temporary adverse impacts due to the removal of earthen material (gapping or grading down) to enhance the hydrology of the area, but the augmentations would be mostly beneficial as they would potentially restore natural hydrology and enhance and/or create wetland habitat. With a potential increase in natural hydrological exchange, water quality, and wetlands habitat, there would also be potential benefits for the fisheries and wildlife. With dredge material banks gapped and canal plugs removed, fisheries and wildlife species would likely begin to have access to resources and habit areas that were previously inaccessible.

The project feature augmentations would have indirect impacts to air quality, noise levels, and aesthetic resources; however, indirect impacts of construction (e.g., increased turbidity, noise, vibrations, fugitive dust, etc.) would have only temporary effects to the Bayou aux Carpes CWA Section 404(c) area. The adjacent wetlands would stabilize following construction, allowing sediment to settle and vegetation to stabilize the area. Construction-related runoff into the wetlands would be managed through best management practices, which would minimize the potential indirect adverse impacts from this alternative on wetlands.
Additional measures proposed to avoid adverse impacts to the 404c area include the construction of foreshore protection (an approximately 2,000 ft rock structure) within the GIWW across from the PS to avoid erosion and scouring and also relocating the Enterprise Pipeline via directional drilling for 4,000 ft past the current ROW inside the 404c to a point west of the V-line levee (See section 2.3 for further details regarding the minimization of impacts, foreshore protection, or pipeline relocation). Both of these measures are being proposed to avoid direct impacts to wetland habitat within the 404c area.

Because the CWA Section 404(c) authority specifically relates to “unacceptable adverse effects on municipal water supplies, shellfish beds, and fishery areas”, it is important to state that water supply and shellfish bed resources do not exist in the Bayou aux Carpes area and would not be adversely impacted by implementation of the proposed action. Fisheries impacts are discussed in detail in section 3.2.6.2.2.1.

The proposed action consists of constructing an innovative T-wall approximately 4,200 ft long and 100 ft wide along the eastern boundary of the GIWW within the Bayou aux Carpes CWA Section 404(c) area. Implementation of the proposed action (figure 4a, 5) would directly impact approximately 9.6 acres of potential estuary habitat within the EPA designated Bayou aux Carpes CWA Section 404(c) area. This estuary habitat is considered an important fisheries resource within the greater Bayou Barataria Estuary and the loss of this habitat could impact fisheries populations dependent on this area.

Project feature augmentations would have direct impacts to the wetland habitat, fisheries, and wildlife (section 3.2) in the 404c area. These impacts would include some adverse impacts due to the removal of earthen material (gapping or grading down) to restore the hydrology of the area, but the augmentations would be mostly beneficial as they would potentially enhance and/or create wetland habitat. With a potential increase in natural hydrological exchange, water quality, and wetlands habitat, there would also be potential benefits for the fisheries and wildlife. With spoil banks gapped and canal plugs removed, fisheries and wildlife species would likely begin to have access to resources and habit areas that were previously inaccessible.

Construction of the foreshore protection would indirectly impact the edge habitat within the 404c along the GIWW but (e.g., increased turbidity, noise, vibrations, etc.) but the impacts would be temporary. As with the previously stated temporary indirect impacts, the adjacent wetlands would stabilize following construction, allowing sediment to settle and vegetation to stabilize the area. Additionally, the foreshore protection would offer protection against damage from barges pushing into the bank.

The foreshore protection could potentially create habitat for fish and shellfish species by creating a complex habitat structure for species to seek refuge and by reducing water velocities behind the structure. This could potentially improve edge habitat conditions in the vicinity and increase fish and shellfish communities. The foreshore protection is not expected to alter hydrologic conditions within the Bayou aux Carpes CWA Section 404(c) area.

Cumulative wetland impacts would be expected due to implementation of the proposed action in concert with additional WBV projects. Construction of the proposed action would contribute to the cumulative losses of BLH and cypress-tupelo swamp within the HSDRRS.

3.2.2.2.3 Alternatives to the Proposed Action

The AG and PP alternatives would not directly impact the Bayou aux Carpes CWA Section 404(c) area. Elements of the AG and PP alternatives utilize levee construction and improvements located on the opposite bank of any waterway that borders the 404c area.
The GIWW A alternative would directly impact 5.1 acres of wetland habitat within the Bayou aux Carpes CWA Section 404(c) area. These impacts would occur due to the construction of a tidal exchange structure that would bifurcate the 404c area. The structure would tie into the V-line Levee to the west and would tie into a newly constructed closure complex on the GIWW to the east. Although the floodwall would be designed to mimic natural hydrological flow between the protected side and flood side by utilizing strategically placed floodgates, it is possible that protected side 404c wetlands would still be impacted if natural hydrological regimes could not be precisely mimicked. Approximately 500 acres of 404c wetland could potentially become hydrologically isolated, leading to changes in the composition of the habitat and its inhabitants and the potential degradation and/or total loss of the flotant marsh in the area. In this scenario, the GIWW A alternative would potentially have the greatest impact to the EPA designated Bayou aux Carpes CWA Section 404(c) area of all of the alternatives.

Foreshore protection would be required but would not directly impact the 404c area. There would be some temporary indirect impacts to the 404c area during construction. Details regarding this measure to reduce erosion and scouring to edge habitat within the 404c area are the same as those described for the proposed action.

The AG and PP alternatives would not directly impact the Bayou aux Carpes CWA Section 404(c) area. All elements of the AG and PP alternatives utilize levee construction and improvements located on the far bank of any canal that borders the 404c area.

Indirect and cumulative wetland impacts would be expected due to the implementation of each alternative to the proposed action in concert with additional WBV projects. Overall indirect and cumulative impacts due to additional flood control measures and levee construction may have a delayed impact on the Bayou aux Carpes wetland habitat due to altered hydrological regimes leading to habitat alterations, changes in water salinity and nutrient load, and increased rates of subsidence. These factors may contribute to long-term wetland loss within the region, potentially impacting diversity, habitat quality, and the overall ecosystem function of the Bayou aux Carpes CWA Section 404(c) area.

3.2.3  Upland Resources

3.2.3.1  Existing Conditions

Terrestrial and upland resources are considered to occur in areas of the project area that are not wetlands or open waters. Non-wetland areas within the project area consist of cleared and drained BLH forest lands used primarily as pasture lands, levees, roads, and commercial or residential use. Although many of these areas within the vicinity of the project area could be classified as wetlands (see figure 12), some areas exhibit upland characteristics.

3.2.3.2  Discussion of Impacts

3.2.3.2.1  No Action

There are uplands in the IER # 12 project area. Most areas that are not wetlands are the result of the deposition of soil fill for construction of levees, roads, railways, commercial development, residential development, golf courses, and the airfield; spoil from excavation of waterways; and landfill material. Other uplands on the west bank are a result of drained BLH habitat.

Impacts to uplands due to building HSDRRS to authorized level would be related to borrow material areas, construction staging areas, and additional ROW that may be needed. Since borrow material is analyzed separately in other IERs it is not included in this upland resources
impact analysis. Some indirect and cumulative impacts from development could occur as a result of the no action being built due to public belief that they are safer today then pre-Katrina. Indirect impacts would be expected to be less then those experienced if the 100-year level of risk reduction were to be constructed.

3.2.3.2.2 Proposed Action

Implementation of the proposed action (figure 4a, 5) would not directly impact any upland habitats with the exception of existing levees (in existing ROW) and cubic yards of earthen material required for borrow, which can be found in the borrow IERs on the www.nolaenvironmental.gov website.

Indirect impacts in the three polders protected by the WCC could occur once the 100-year level of risk reduction is constructed due to renewed confidence in the area, feelings of increased levels of safety, and resulting development. Consequently, cumulative impacts to upland areas in the greater New Orleans area are expected for the same reasons stated for the indirect impacts.

3.2.3.2.3 Alternatives to the Proposed Action

There are naturally occurring uplands found within areas impacted by any of the alternatives (GIWW A, AG, and PP). Impacts to uplands would be due to building HSDRRS to authorized level would be lands acquired for borrow materials, from construction staging areas, and additional ROW that may be needed.

Indirect impacts in the protected polders could occur once the 100-year level of risk reduction is constructed due to development resulting from renewed confidence in the area and the level of safety the public would associate with HSDRRS. Consequently, cumulative impacts to upland areas in the greater New Orleans area are expected for the same reasons stated for the indirect impacts.

3.2.4 Prime and Unique Farmland Soils

3.2.4.1 Existing Conditions

Cancienne silt loam, Cancienne silty clay loam, Shriever clay, Schriever silty clay loam, and Harahan clay are designated prime and unique farmland soils (United States Department of Agriculture, 2007). Areas of prime and unique farmland soils are shown in figure 13. The soils are best used for food, forage, and agricultural production due to their high and sustained yields. Many designated prime and unique farmland soil areas within the study area near proposed action have been previously developed or contain existing levees and ROW; however, some potentially impacted areas fall under jurisdiction of the Farmland Protection Policy Act (FPPA) —Subtitle I of Title XV, Section 1539-1549. United States Department of Agriculture (USDA).

3.2.4.2 Discussion of Impacts

3.2.4.2.1 No Action

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to approximately a 10 ft elevation, and providing higher access gates and modified pumping stations. Foreseeable impacts could occur to prime and unique farmland soils within the project area due to the excavation of the borrow material from the greater New Orleans area.
3.2.4.2.2 Proposed Action

No mapped prime and unique farmland soils exist along the GIWW (figure 13). Therefore, no direct impacts to prime and unique farmland soils would be expected due to the implementation of the proposed action (WCC) to build the levee. However, impacts to prime and unique farmlands are expected as a result of the USACE obtaining 3,125,000 cubic yards of borrow material. Approximately 124 acres of non wetland-area would be required to be excavated to provide the necessary borrow required to construct the proposed action. Indirect impacts in the project area are minimal since there are very few approved borrow sources in the three polders directly protected by the proposed action. Borrow is expected to come from the Lake Catouatche area, the Belle Chasse area or from approved contractor furnished sites in the greater New Orleans area.

Figure 13. Prime and Unique Farmland Soils Within Project Vicinity
The implementation of the proposed action may potentially cause indirect and cumulative impacts to areas of prime and unique farmland soils not directly affected by levee construction and ROW acquisition. Additional flood protection, due to the implementation of the proposed action, and additional WBV projects, would decrease silt deposition and potentially increase drying and subsidence in adjacent areas, thereby, potentially changing soils properties over the long term.

### 3.2.4.2.3 Alternatives to the Proposed Action

The GIWW A alternative could impact up to 10 acres containing mapped prime and unique farmland soils due to the need for 250,000 cubic yards of borrow material. The AG alternative would impact approximately 13 acres of prime and unique farmland soils along the Harvey Canal and could impact an additional 180 acres due to the need for 4,500,000 cubic yards of borrow material. Implementation of the PP alternative (figure 10), would directly impact approximately 33 acres of prime and unique farmland soils along the Algiers and Harvey Canals due to levee expansion and ROW acquisition (table 8). An additional 380 acres could be impacted due to a need for 9,500,000 cubic yards of borrow material. The impacted areas of prime farmland soil are not currently in agricultural production.

The implementation of the AG or PP alternatives would potentially cause indirect and cumulative impacts to areas of prime and unique farmland soils not directly affected by levee construction and ROW acquisition.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Total Prime Farmland Impacts (acres)</th>
<th>Estimated Borrow Needed (cy)</th>
<th>Estimated Borrow Needed (acres)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>WCC (preferred)</td>
<td>0</td>
<td>3,100,000</td>
<td>124</td>
</tr>
<tr>
<td>GIWW A</td>
<td>0</td>
<td>250,000</td>
<td>10</td>
</tr>
<tr>
<td>AG</td>
<td>13</td>
<td>4,500,000</td>
<td>180</td>
</tr>
<tr>
<td>PP</td>
<td>33</td>
<td>9,500,000</td>
<td>380</td>
</tr>
</tbody>
</table>

### 3.2.5 Threatened and Endangered Species

#### 3.2.5.1 Existing Conditions

Although several Federal or state-listed threatened and endangered (T&E) species are dependent on the habitat types present in the study area, no Federally-listed endangered, threatened, or candidate species under USFWS jurisdiction presently occur in the project area. No critical habitat for any T&E species is in the project area. Numerous rare migratory birds utilize project area habitats as stop-over points during migration (e.g., peregrine falcon). Other species specifically utilize the habitat for breeding and raising young (e.g., bald eagle). These species (table 9) are highly dependent on BLH forest habitat found throughout the project area (Louisiana Department of Wildlife and Fisheries 2007). A bald eagle (*Haliaeetus leucocephalus*) nest was documented within the Bayou aux Carpes area in 2007. The bald eagle was removed from the List of Endangered and Threatened Species but recommendations to minimize potential project impacts to the bird and its nest are provided by the USFWS in their National Bald Eagle Management Guidelines publication. The bald eagle continues to be protected under the Bald and Golden Eagle Protection Act and by the Migratory Bird Treaty Act.
Table 9: Federally Listed Threatened and Endangered Species for Plaquemines, Jefferson, and Orleans Parish, Louisiana

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Federal Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acipenser oxyrhynchus desotoi</em></td>
<td>Gulf Sturgeon</td>
<td>Threatened</td>
</tr>
<tr>
<td><em>Charadrius melodus</em></td>
<td>Piping Plover</td>
<td>Endangered</td>
</tr>
<tr>
<td><em>Charadrius melodus</em></td>
<td>Pallid Sturgeon</td>
<td>Endangered</td>
</tr>
<tr>
<td><em>Pelecanus occidentalis</em></td>
<td>Brown Pelican</td>
<td>Endangered</td>
</tr>
<tr>
<td><em>Trichechus manatus</em></td>
<td>Manatee</td>
<td>Endangered</td>
</tr>
</tbody>
</table>

3.2.5.2 Discussion of Impacts

3.2.5.2.1 No Action

The no action alternative would not result in any foreseeable new direct, indirect, or cumulative impacts to any T&E species within the project area. With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to, and providing higher access gates and modified pumping stations (Design Alternatives Report, January 2007). It is the CEMVN determination that no adverse impacts to a threatened or endangered species or its designated critical habitat would occur as a result of the implementation of the no action plan.

3.2.5.2.2 Proposed Action

Under the proposed action, no listed endangered, threatened, or candidate species are known to exist in the potential project impact areas. Therefore, no direct, indirect, or cumulative effects are predicted for protected species or their critical habitat as a result of implementing the proposed actions. The USFWS concurred with the USACE’s determination that project implementation would not adversely affect any threatened and endangered species or their critical habitat in their letter dated 25 June 2008 (appendix D).

3.2.5.2.3 Alternatives to the Proposed Action

The CEMVN has determined that implementation of the GIWW A, AG, or PP alternatives would have no direct impact on any T&E species within the project area. No foreseeable indirect or cumulative impacts would be expected to occur.

3.2.6 Fisheries

3.2.6.1 Existing Conditions

The BLH, cypress-tupelo swamps, marshes, and tidal channels provide habitat for an abundance of amphibians, reptiles, and shellfish as previously discussed (see section 3.1.6). Coastal wetlands provide essential habitat for commercially important marine and freshwater species and game.
species that are wetland-dependent at some stage in their life-cycle. The estimated annual economic input to Louisiana from recreational hunting, fishing, and non-consumptive uses of wildlife (e.g., bird watching, outdoor recreation, ecotourism) exceeds $1.2 billion per year (U.S. Department of Interior, Fish and Wildlife Service and U.S. Department of Commerce, Census Bureau 2001). Harvested commercial fish and wildlife commodities total over $500 million per year (Louisiana State University Agriculture Center 2004). Coastal wetlands, marshes and forests maintain statewide fish and wildlife resources by directly providing permanent habitat or indirectly acting as breeding and rearing refuges necessary to many economically important species.

Areas in and adjacent to the project area are important contributors to the local and regional fisheries. Water bodies within the project area provide habitat for resident populations of numerous species. The canals and surrounding marshes support bowfin (*Amia calva*), spotted gar (*Lepisosteus spatula*), shads (*Alosa spp.*), mosquito fish (*Gambusia affinis*), and channel catfish (*Ictalurus punctatus*), among others. In addition, the project area includes a section of the Bayou aux Carpes CWA Section 404(c) area. The Bayou aux Carpes area was designated a 404c area in 1985 by the EPA according to Section 404c of The Clean Water Act of 1972. Analysis of samples collected in 1985 indicated that forage species (e.g. mosquito fish, threadfin shad, and golden top minnow) were the most abundant fish species in the area. The Bayou aux Carpes CWA Section 404(c) area is primarily BLH, cypress-tupelo swamp, shrub/scrub wetland, and flotant marsh. The habitats within this area provide valuable spawning, feeding, and nursery habitat for recreationally-important freshwater fish such as large-mouth bass (*Micropterus salmoides*), bowfin (*Amia calva*), and sunfish (Centrarchidae sp.), crustaceans such as crawfish (*Procambarus clarkii*), grass shrimp (*Palaemonetes pugio*), and the blue crab (*Callinectes sapidus*). The area has been determined to be a major contributor to the greater Barataria Bay Estuary, providing sensitive habitat for both freshwater and marine species. Consequently, these wetland estuaries are critical to maintaining sustainable populations of commercially important marine and freshwater species, such as speckled trout (*Cynoscion nebulosus*), redfish (*Sciaenops ocellatus*), flounder (Bothidae sp.), croaker (*Micropogonius undulatus*), and numerous shellfish, by functioning as nurseries.

3.2.6.2 Discussion of Impacts

3.2.6.2.1 No Action

No foreseeable new impacts would occur to the existing fisheries resources within the project area due to the implementation of the no action alternative. With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to approximately a 10 ft elevation, and providing higher access gates and modified pumping stations (Design Alternatives Report, January 2007).

3.2.6.2.2 Proposed Action

3.2.6.2.2.1 General Discussion of Fisheries Impacts due to the Proposed Action

The proposed action would primarily impact BLH and cypress-tupelo swamp wetland habitats that function as part of the Barataria Bay Estuary, potentially initially negatively impacting fish populations dependent upon the estuary habitat to maintain locally and regionally sustainable populations. Total expected wetland losses would be approximately 392 acres. However, as previously discussed, the quality of these wetland areas and associated fish habitat have been affected by past development and flood control activities. Best management practices would be used to minimize impacts to water quality and fisheries. Improvements to fisheries populations and habitat would occur as a result of the proposed project augmentations that are being studied.
Temporary direct and indirect impacts on the fisheries and aquatic habitat would be expected. Construction of the project features would disturb wetland biota and sediments in the vicinity and could cause downstream increases in turbidity and sedimentation. Suspended materials could clog fish gills, lower growth rates, and affect egg and larval development (EPA 2003). Fisheries would be impacted as the habitat is cleared and grubbed for new construction. Motile organisms would relocate to adjacent undisturbed waters. Some benthic organisms would be impacted because they cannot vacate the construction area. The utilization of floodwall, as opposed to levee, may act as a dispersal or migration barrier for selected species.

Indirect effects to adjacent waters would consist primarily of effects from increased local turbidity on the surrounding open water areas, decreased dissolved oxygen levels, vibrations, and subsurface noise due to construction activities. Conditions of adjacent waters would return to normal after construction completion, allowing sediment to settle, benthos to repopulate, and fish to return.

Construction of the proposed action would contribute to the cumulative losses of fisheries and aquatic habitat resources within the HSDRRS. Cumulative impacts would include temporary, and construction-related impacts.

3.2.6.2.2 Specific Fisheries Impacts due to the Proposed Action

*Western Earthen Levee Enlargement*

The proposed action consists of raising the existing earthen levee to 14 ft (table 1). The centerline would shift to the protected side as necessary to accommodate footprint expansions, and an additional 125 ft of ROW would be acquired. The drainage canal would be relocated 200 ft to the protected side.

The proposed action would require the relocation of the existing canal further into the protected side of the reach. Fisheries and aquatic life in the existing canal would be adversely impacted as the canal would need to be filled to accommodate the levee expansion. Once filled, the canal would be lost as possible habitat for fish and other aquatic organisms, but would be replaced by the new canal which would re-populate native fisheries and aquatic life. Motile organisms present would attempt to avoid construction activities and seek refuge in adjacent undisturbed waters. Some benthic organisms would be impacted due their inability to vacate the construction area. Construction activities would likely cause indirect effects by increased local turbidity, decreased dissolved oxygen levels, vibrations, and subsurface noise.

*Northern Levee Floodwall Cap and Water Control Structure Construction*

The proposed action consists of providing fronting protection at Old Estelle PS, earthen levee enlargement with a T-wall floodwall cap within existing ROW from the pump station to the Harvey Canal, and construction of a water control structure (gate) where the Old Estelle Outfall Canal meets Harvey Canal.

This action would cause impacts in the Old Estelle Outfall Canal similar to those described for the general proposed action to fisheries in the Estelle Outfall Canal. In addition, when the flow control structure is closed it would prevent the movement of fish from the canal to the GIWW, impacting the quality of the canal for fish habitat.

*Eastern Innovative Floodwall Construction*

The proposed action consists of constructing an innovative T-wall approximately 4,200 ft long and 100 ft wide along the eastern boundary of the GIWW within the Bayou aux Carpes CWA Section 404(c) area.
Implementation of the proposed action (figure 4a, 5) would directly impact approximately 9.6 acres of potential estuary habitat within the EPA designated Bayou aux Carpes CWA Section 404(c) area. This estuary habitat is considered an important fisheries resource within the greater Bayou Barataria Estuary and the loss of this habitat could impact fisheries populations dependent on this area.

Project feature augmentations would have direct impacts to the wetland habitat, fisheries, and wildlife (section 3.2) in the 404c area. These impacts would include some adverse impacts due to the removal of earthen material (gapping or grading down) to restore the hydrology of the area, but the augmentations would be mostly beneficial as they would potentially enhance and/or create wetland habitat. With a potential increase in natural hydrological exchange, water quality, and wetlands habitat, there would also be potential benefits for the fisheries and wildlife. With spoil banks gapped and canal plugs removed, fisheries and wildlife species would likely begin to have access to resources and habit areas that were previously inaccessible.

**Closure Complex Construction**

The proposed action consists of constructing gate(s) and pumping station across and on the east bank of the GIWW.

This would temporarily disrupt 4 acres of open water fish habitat during construction. A surge barrier with reduced pumping capacity would be in place by June 2011, but total construction of all proposed action components would require 4 years. Installation of the structures would disturb wetland biota and sediments in the vicinity during construction. Other impacts would be as described for the general proposed action.

Under normal conditions, the gate structures would be open, channel velocities would remain stable, and the pump station would not be in operation; however, during a storm event, operation of the closure complex on the GIWW would directly impact fisheries. Only during a storm event would the gate structures be closed to fish, and during that time, closing the gates would limit fish movement on one side or the other. The pump station would only operate during a storm event, and at that time fish could be caught in the ancillary structures. Any increased velocities due to the PS during a storm event would be countered by storm surge.

Additional measures proposed to avoid adverse impacts to the 404c area include the construction of foreshore protection (an approximately 2,000 ft rock structure) within the GIWW across from the PS to avoid erosion and scouring and also relocating the Enterprise Pipeline via directional drilling for 4,000 ft past the current ROW inside the 404c to a point west of the V-line levee (See section 2.3 for further details regarding the foreshore protection or pipeline relocation). The foreshore protection would have temporary indirect impacts to adjacent edge habitat during construction; however, the suspended sediments, noise, vibrations, etc, would cease following construction. The foreshore protection could potentially create habitat for fish and shell fish species. This rock structure could potentially create habitat along its outer edge by creating a complex habitat structure for species to seek refuge, and by reducing water velocities behind the structure, this could potentially improve edge habitat conditions in the vicinity and increase the fish and shell fish communities there. The foreshore protection is not expected to alter hydrologic conditions within the Bayou aux Carpes CWA Section 404(c) area.

**Eastern Earthen Levee Construction and Bayou Road realignment**

The proposed action consists of degrading the existing levee on the eastern side of the GIWW and constructing an earthen levee further eastward, moving the levee centerline further into the protected side and putting several acres of land back to the flood side to be exposed to the natural flood regime. Bayou Road would also be realigned on the protected side of the new levee.
As this section is comprised of altered BLH, permanent direct or indirect impacts on the fisheries and aquatic habitat would be expected. Habitat for fisheries species may actually be created by the addition of the acres of wetlands back to the flood side.

**Detention Basin Dredging and Improvements**

The proposed action consists of dredging 700,000 cy in the Algiers Canal. Detention basin improvements along the Harvey Canal and Algiers Canal consist of building fronting protection at pump stations, capping or replacing floodwalls, constructing impact barriers, providing backflow suppression, reshaping existing levees by constructing a berm, and reinforcing existing levees.

Impacts would be similar to those impacts described for the general proposed action. In addition, fisheries in the disposal area would be impacted temporarily due to the discharge of dredged material onto the water bottoms. Fish species would vacate the area during the operations but would return to the general area after completion of work. Discharge of dredged material and the resulting turbidity plume could indirectly affect phytoplankton productivity in adjacent areas, but the overall effect on primary productivity would be negligible. Indirect impacts would be temporary.

The beneficial use that would be provided by the dredged material from this project may benefit fisheries by creating additional habitat (See section 2.3 for further details regarding the disposal plan and beneficial use of dredge material).

**3.2.6.2.3 Alternatives to the Proposed Action**

The GIWW A alternative would impact wetlands adjacent to existing levee ROW and 5.1 acres of wetlands within the Bayou aux Carpes CWA Section 404(c) area due to the proposed construction of the tidal exchange structure that would bifurcate the 404c area. Aside from directly impacting the 5.1 acres of wetlands within the proposed ROW footprint for this alternative, the creation of the tidal exchange structure would have the potential to indirectly impact the fisheries by altering the hydrology, limiting migration and dispersal of fish and shellfish populations, accelerating habitat fragmentation. These indirect impacts could result in long-term habitat recession that would impact the fisheries in the 404c area. A total of 254 acres of wetland would be impacted by this alternative. Approximately 500 acres of wetland habitat would be enclosed by the tidal exchange structure and would be at risk for irreparable indirect impacts, such as habitat degradation, e.g., loss of flotant marsh, which would also decrease fish and shellfish habitat. Impacts from the navigation / gate(s) and pump station complex, eastern earthen levee construction, and detention basin dredging and improvements would be the same as the proposed action.

The AG and PP alternatives would have direct impacts similar to those described for the proposed action. Indirect impacts due to the AG and PP alternatives would be expected and would also be comparable to any indirect or cumulative impacts incurred due to the proposed action. These alternatives do not increase edge habitat, fragmentation, or hydrologic isolation within the study area by utilizing existing habitat edges and levee ROWs thereby minimally impacting fisheries resources.

Indirect and cumulative impacts on fisheries would be similar to those described for the proposed action.

**3.2.7 Wildlife**

**3.2.7.1 Existing Conditions**

BLH, cypress-tupelo swamps, marshes, and tidal channels provide habitat for an abundance of birds, mammals, amphibians, reptiles, and fish as previously discussed (see sections 3.2.1.1, 3.2.2.1,
Coastal wetlands, marshes and forests maintain statewide fish and wildlife resources by directly providing permanent habitat or indirectly acting as breeding and rearing refuges necessary to many economically important species. See appendix I for more information on species names.

The diversity and abundance of wildlife inhabiting the project area is largely dependent on the quality and extent of suitable habitat present. The proposed project area is covered by a natural community of forested wetlands or swamp, with flotant marsh in limited areas. Farther north, the landscape changes to industrial, commercial, and residential use. There are numerous dredged canals that traverse the project corridor. In addition, levees and floodwalls line the existing waterways.

Undeveloped areas near the existing levee system, including the JLNHPP and the Bayou aux Carpes Section 404(c) area, are dominated by freshwater and brackish marsh and varying quality wooded wetlands that provide valuable food and shelter to a wide range of wildlife species. Local wildlife specifically observed within the vicinity of the proposed project included the American alligator (*Alligator mississippiensis*), great blue heron (*Ardea herodias*), gray squirrel (*Sciurus carolinensis*), and white-tail deer (*Odocoileus virginianus*). The wildlife resources found within the project area have significant recreation and commercial uses. Please see sections 3.2.1.1 and 3.2.5.1 for a more detailed discussion of fauna commonly found within the project study area and the impacts of these resources to the local and statewide economies.

Wetland game birds that occur in the study area are the wood duck (*Aix sponsa*), common snipe (*Gallinago gallinago*), and American woodcock (*Scolopax minor*). Non-game birds in the study area include many species of shorebirds, and songbirds (both migratory and non-migratory). Wading birds that utilize the nearby canals and roost in trees include the little blue heron (*Egretta caerulea*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), and snowy egret (*Egretta thula*).

Wildlife that typically inhabit cypress-tupelo swamp and aquatic habitats such as those in the project area include a diverse assemblage of amphibians, reptiles, birds, and mammals. Species from each of these classes that may occur in the habitats within the project area can be identified based on the geographical ranges and habitat preferences of each species. Amphibians likely to occur in these habitats include the southern dusky salamander (*Desmognathus auriculatus*), dwarf salamander (*Eurycea quadridigitata*), central newt (*Notophthalmus viridescens louisianensis*), three-toed amphiuma (*Amphiuma tridactylum*), western lesser siren (*Siren intermedia nettingi*), gulf coast toad (*Bufo valliceps*), and northern cricket frog (*Acris crepitans crepitans*), (Conant and Collins 1998, Felley 1992, Wigley and Lancia 1998).

Reptiles that typically utilize habitats such as those of the project area include the common snapping turtle (*Chelydra serpentina*), green anole (*Anolis carolinensis*), broadhead skink (*Eumeces laticeps*), and western cottonmouth (*Agkistrodon piscivorous leucostoma*) (Conant and Collins 1998, Felley 1992, Wigley and Lancia 1998).

Mammals that may occur in the habitats of the project corridor include the nutria (*Myocastor coypus*), muskrat (*Ondatra zibethicus*), mink (*Mustela vison*), swamp rabbit (*Sylvilagus aquaticus*), cotton mouse (*Peromyscus gossypinus*), fox squirrel (*Sciurus niger*), and raccoon (*Procyon lotor*) (Whitaker 1998, Wigley and Lancia 1998).

Although the bald eagle (*Haliaeetus leucocephalus*) was delisted as a Federally threatened species in August 2007, it continues to be protected under the Bald and Golden Eagle Protection Act, as well as the Migratory Bird Treaty Act. In Louisiana, the bald eagle typically nests from October to mid-May (U.S. Fish and Wildlife [USFWS] 2007a). Following nesting activities in autumn, egg laying/incubation and hatching/rearing of young typically occur between fall and
spring, with fledging of young as early as January and typically by mid-May (USFWS 2007a, USFWS 2007b, USFWS 2007c). Bald eagle nests typically are in bald cypress trees near fresh and brackish marshes or open water in southeastern Louisiana parishes. In its consultation letter the USFWS stated that there is a known bald eagle nest located within the vicinity of the proposed project area. The closest nest site and its associated 660 ft buffer falls well outside the footprint for the proposed action.

The project area supports a variety of game species. White-tailed deer (*Odocoileus virginianus*), the only big game animal found in the study area, utilize project-area forested wetlands. Small game mammals, such as gray squirrel (*Sciurus carolinensis*), also utilize those habitats.

### 3.2.7.2 Discussion of Impacts

#### 3.2.7.2.1 No Action

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to approximately a 10 ft elevation, and providing higher access gates and modified pumping stations. No new impacts to wildlife would occur that have not been previously authorized (Design Alternatives Report, January 2007).

#### 3.2.7.2.2 Proposed Action

##### 3.2.7.2.2.1 General Discussion of Wildlife Impacts due to the Proposed Action

The proposed action (WCC), would directly impact wetland habitat utilized by local wildlife within the project area (figure 4). ROW acquisition would potentially cause edge habitat loss to BLH forest and other wetlands (392 total acres), including 9.6 acres of the Bayou aux Carpes CWA Section 404(c) area. It is likely that local wildlife would disperse from the area during the construction phase of the project; however, it is highly likely that either recolonization of the project area would occur post construction, or that adjacent habitat would be sufficient to absorb and support any wildlife that would be permanently displaced due to habitat alternations.

The greatest potential for effects on wildlife associated with the implementation of the proposed action would occur during the construction period (approximately 4 years). The presence of construction-related activity, machinery, and noise would be expected to cause most wildlife to avoid the area during the construction period. Although birds are highly mobile and able to move to other habitats in the vicinity, local populations of species that nest in colonies could be adversely affected if construction activities caused abandonment of nesting sites. In order to minimize the potential for construction under the proposed action to disturb colonial-nesting wading birds, procedures recommended by the USFWS would be followed (USFWS 2007a, appendix I).

Numerous rare migratory birds utilize project area habitats as stop-over points during migration (e.g., peregrine falcon). Other species specifically utilize the habitat for breeding and raising young (e.g., bald eagle). These species (table 9) are highly dependent on BLH forest habitat found throughout the project area (Louisiana Department of Wildlife and Fisheries, 2007).

The abundance and diversity of species within the project area should remain unchanged. Levees constructed as part of this alignment would not act as a dispersal barrier for the majority of local native species; however, floodwall construction would hinder dispersal and migration of some terrestrial species.
A small number of less mobile and wetland dependent species (i.e., mice, reptiles, amphibians) would be lost during construction; however, most wildlife species would likely avoid the vicinity of the proposed action during the construction period (estimated to be approximately 4 years) and return following the completion of construction.

In order to minimize the potential for construction activities under the proposed action to disturb nesting bald eagles, procedures recommended by the USFWS (USFWS 2007a, appendix I) based on the National Bald Eagle Management Guidelines (USFWS 2007b) would be followed if any new nests are found. The closest nest site and its associated 660 ft buffer falls well outside the footprint for the proposed action including project feature augmentations.

Indirect effects to wildlife species due to construction activities (e.g., noise, vibration) would be temporary. Utilization of floodwall, as opposed to levee may act as a dispersal or migration barrier for selected species.

Project feature augmentations would have direct impacts to the wetland habitat, fisheries, and wildlife (section 3.2) in the 404c area. These impacts would include some adverse impacts due to the removal of earthen material (gapping or grading down) to enhance the hydrology of the area, but the augmentations would be mostly beneficial as they would potentially restore natural hydrology and enhance and/or create wetland habitat. With a potential increase in natural hydrological exchange, water quality, and wetlands habitat, there would also be potential benefits for the fisheries and wildlife. With spoil banks gapped and canal plugs removed, fisheries and wildlife species would likely begin to have access to resources and habit areas that were previously inaccessible.

Disposal of dredged material as beneficial use could create 28 acres of wetland habitat (see section 2.3 for further details regarding the disposal plan and beneficial use of dredged material).

Potential indirect impacts on wildlife from the proposed action include the potential movement of displaced wildlife currently inhabiting the project area into nearby habitats that would not be directly impacted by this alternative. This migration would not be expected to result in exceeding the carrying capacity of the extensive, similar terrestrial and aquatic habitats in the vicinity. Relatively small populations and habitat areas would be affected and the extensive adjacent habitats should be able to support the immigrants.

Potential cumulative impacts on wildlife from the proposed action would involve the combined effects on wildlife of habitat loss and displacement of wildlife populations from the multiple WBV flood control projects in the Jefferson, Orleans, and Plaquemines Parish area. Construction of the proposed action would contribute to the cumulative losses of wildlife resources within the HSDRRS.

3.2.7.2.2 Specific Wildlife Impacts due to the Proposed Action

Western Earthen Levee Enlargement

The proposed action consists of raising the existing earthen levee to 14 ft to 16 ft. The centerline would shift to the protected side as necessary to accommodate footprint expansions, and an additional 125 ft of ROW would be required. The drainage canal would be relocated 200 ft to the protected side.

The levee upgrade and canal relocation would directly impact wildlife in and around the construction area. The wildlife species would relocate during construction activities as the canal would need to be filled to accommodate the levee expansion. The canal would be temporarily lost as possible habitat, but would be replaced by a new canal which would eventually repopulate with wildlife species. Juvenile species of animals that inhabit the project area would
attempt to avoid construction activities and seek refuge in adjacent undisturbed waters, but may be directly impacted by construction activities.

**Northern Levee Floodwall Cap and Water Control Structure Construction**
The proposed action consists of providing fronting protection at Old Estelle Pump Station, earthen levee enlargement with a T-wall floodwall cap within existing ROW from the pump station to the Harvey Canal, and construction of a water control structure (gate) where the Old Estelle Outfall Canal meets Harvey Canal.

This section does not provide high quality wetland habitat for wildlife. Similar and higher quality habitat is available nearby for any wildlife displaced from the proposed project area.

**Eastern Innovative Floodwall Construction**
The proposed action consists of constructing an innovative T-wall no longer than 4,200 ft and 100 ft wide along the eastern edge of the Bayou aux Carpes CWA Section 404(c) area.

This action would result in a loss of 9.6 acres of cypress-tupelo swamp and BLH wetland habitat for wildlife.

The construction of the T-wall within the Bayou aux Carpes CWA Section 404(c) area would directly impact the wildlife. The construction of the wall would directly remove valuable habitat. Wildlife species would likely relocate into adjacent similar habitat. There would also be temporary indirect impacts to wildlife including noise and vibration that could potentially force species farther from the construction area; however, habitat adjacent to the wall would likely stabilize following construction completion. Construction would be expected to take 2 years.

Beneficial impacts to 404c area wildlife would occur due to project feature augmentations as described in section 2.3.

**Closure Complex Construction**
The proposed action consists of constructing gate(s) and a pump station across and on the east bank of the GIWW. The construction of this closure complex along with the required levee and road relocation would directly impact 149 acres of wetlands.

Impacts would be similar to those described for the general proposed action for wildlife.

Under normal conditions, the gate structures would be open, channel velocities would remain stable, and the pump station would not be in operation; however during a storm event, the operation of the gates and pump station on the GIWW would impact wildlife. The gate structures would only be closed during a storm event, and at that time wildlife would be impacted by the noise and vibrations of operation. The pump station would only operate during a storm event, and at that time the noise and vibrations of operation would also impact wildlife.

Adverse impacts to 404c area wildlife would be avoided by relocating the Enterprise Pipeline via directional drilling for 4,000 ft past the current ROW inside the 404c to a point west of the V-line levee. Using this method to relocate the pipeline minimizes surface impacts to wetlands habitats and fisheries and wildlife species because the pipeline would be drilled deep under the ground.

**Eastern Earthen Levee Construction and Bayou Road realignment**
The proposed action consists of degrading the existing levee on the eastern side of the GIWW and constructing an earthen levee farther to the protected side. Bayou Road would be realigned on the protected side of the new levee.
Existing wildlife habitat would be replaced with earthen levee fill and asphalt/concrete. This would result in a total loss of potential wildlife habitat. Wildlife species would likely relocate to adjacent similar habitat.

**Detention Basin Dredging and Improvements**

The proposed action consists of dredging 700,000 cy in the Algiers Canal. Detention basin improvements along the Harvey Canal and Algiers Canal would consist of building fronting protection at pump stations, capping or replacing floodwalls, constructing impact barriers, providing backflow suppression, reshaping existing levees by constructing a berm, and reinforcing existing levees.

Indirect effects from the removal of dredged material from the canal would temporarily increase turbidity and most wildlife would vacate the area to return once the plume settles and construction activities cease.

The beneficial use that could be provided by the dredged material from this project would benefit wildlife by creating additional habitat (See section 2.3 further details regarding the disposal plan and beneficial use of dredge material).

3.2.7.2.3 Alternatives to the Proposed Action

The GIWW A alternative would have more substantial direct impacts on local wildlife due to more significant effects on high quality wildlife habitat along the GIWW and especially across the Bayou aux Carpes CWA Section 404(c) area. This alternative would directly impact cypress-tupelo swamp, BLH habitat and marsh due to ROW acquisition causing 254 acres of habitat loss (5.1 acres within the EPA designated Bayou aux Carpes CWA Section 404(c) area). These impacts would be primarily along existing edge habitat, with the exception of the 5.1 acres of impacts through the Bayou aux Carpes CWA Section 404(c) area. This alternative would include the construction of a tidal exchange structure that would potentially alter and isolate 500 additional acres of the 404c wetlands. The tidal exchange structure would be designed to allow for wildlife passage, but could impede the migration of certain species. Consequently, indirect impacts from the GIWW A alternative would increase habitat fragmentation, limit the movement of wildlife, and has the potential to accelerate long-term high-quality habitat loss. Cumulative impacts would be similar to those described for the proposed action.

The implementation of the AG and PP alternatives would directly impact wetland habitat utilized by wildlife within the project area but not within the Bayou aux Carpes CWA Section 404(c) area. It is likely that local wildlife would disperse from the area during the construction phase of the project; however, it is highly likely that recolonization of the project area would occur post construction, or that adjacent habitat would be sufficient to absorb and support any wildlife that is permanently displaced due to habitat alternations. The AG alternative would impact approximately 287 acres of habitat. Approximately 200 acres of habitat would be impacted by the PP alternative. Overall diversity and abundance of species within the project area would not be expected to be negatively impacted due to the potential habitat loss associated with either the AG or PP alternative.

As with the proposed action and GIWW A alternatives, the utilization of floodwall, as opposed to levee, for both the AG and PP alternatives would act as a dispersal or migration barrier for selected species.

The AG and PP alternatives would be expected to contribute indirect and cumulative impacts similar, but greater, than that described for the proposed action.
3.2.8 Air Quality

3.2.8.1 Existing Conditions

Based on the Clean Air Act of 1963, National Ambient Air Quality Standards (NAAQS) have been established for seven pollutants: carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), ozone (O₃), and two sizes of particulate matter (PM 10 – diameter 10 microns and less, and PM 2.5 - diameter 2.5 microns and less. If the required standards are not met, states are required to prepare a State Implementation Plan (SIP) to attain ambient NAAQS for all airsheds not in “attainment.” Jefferson, Orleans, and Plaquemines Parishes have been classified as attainment for all of the NAAQS (U.S. Environmental Protection Agency 2006) (table 10).

Air quality throughout the project area is good, due to the rural nature of most of the area. Along the GIWW there are no industrial firms and no emissions contributors. The east side of the Algiers Canal is either all open spaces or is in limited residential uses, with a few scattered industrial and commercial uses south of the General Charles De Gaulle Bridge. Few emissions sources are in evidence, other than the nearby Naval Air Station at Belle Chasse. On the southwest side from the Algiers Lock and LA 23, most of the land is in open spaces, with residential nodes around the approach to the General Charles De Gaulle Bridge; no industry or emission sources are located in this section. South of LA 23 between the Algiers Canal and Engineer Drive is a large complex of industrial and commercial enterprises, mostly oriented toward marine enterprises. While small emission sources are in evidence, none constitute a major air emissions source. Both LA 23 and the General Charles De Gaulle Bridge are linear highway facilities that cross the Algiers Canal and carry substantial vehicular traffic, with resultant emissions.

The east side of the Harvey Canal up to Lapalco Boulevard is heavily industrialized. While small emission sources are in evidence, none constitute a major air emissions source. The west side of the Harvey Canal is devoted entirely to open space uses. Lapalco Boulevard is a major highway that crosses the Harvey Canal, adding to vehicular emissions to ambient air quality.

The proposed construction of levees and floodwalls, by their nature, would have no long term effects. Construction impacts would be of short duration. There is a data gap concerning emissions associated with the transportation of construction material that will be addressed in the transportation section of the upcoming CED.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Concentration</th>
<th>Standard Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>0.13 µg/m³</td>
<td>1.5 µg/m³</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>0.009 ppm</td>
<td>0.053 ppm</td>
</tr>
<tr>
<td>Ozone (1-hour)</td>
<td>0.100 ppm</td>
<td>0.12 ppm</td>
</tr>
<tr>
<td>Ozone (8-hour)</td>
<td>0.08 ppm</td>
<td>0.08 ppm</td>
</tr>
</tbody>
</table>

Similar levels are found in Orleans and Plaquemines Parishes.

3.2.8.2 Discussion of Impacts

3.2.8.2.1 No Action

With the no action alternative, the 100-year level of risk reduction would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to approximately a 10 ft elevation, and providing higher access gates and modified pumping stations. These construction actions would
lead to temporary, direct air quality impacts. Long term, there would be no indirect or cumulative impacts from these temporary impacts.

3.2.8.2.2 Proposed Action

Temporary increases in air pollution would occur from the use of construction equipment and vehicles including: haul trucks, bull dozers, cranes, pile divers, excavators, and the possible use of clamshells and tug boats. Construction of levees, flood walls, and gates could temporarily be a source of fugitive dust including 10 and 2.5 micron particulate matter (PM). Local weather patterns and mandatory dust controls implemented during construction would determine the extent of this temporary condition. Construction equipment and vehicles could generate NO₂, CO, O₃, and SO₂ from combustion in diesel engines. Long term, no change would be expected to air quality. Regional air quality standards would not be violated. The proposed project would be in conformance with NAAQS.

No permanent direct impacts are expected; therefore, foreseeable indirect impacts would not be likely to occur. Temporary, direct air quality impacts are expected. Portions of the study area south of the LA 24 Bridge on the west bank of the Algiers Canal and the east bank of the Harvey Canal up to Lapalco Boulevard are heavily industrialized, as is the eastern bank of the Harvey Canal. Cranes, trucks, and other diesel equipment are constantly in use in much of the area. The addition of minor amounts of air pollutants from the temporary construction that would be anticipated from the proposed action would not likely measurably degrade ambient air quality.

During the construction of the proposed project, proper and routine maintenance of all vehicles and other construction equipment would be implemented to ensure that emissions are within the appropriate design standards. Dust suppression methods would be implemented to minimize fugitive dust emissions. Air emissions from the proposed action would be temporary and would not significantly impair air quality in the region.

No permanent direct or indirect impacts would occur.

Cumulative temporary impacts due to the ongoing construction of WBV HSDRRS projects would occur, due to the activities described as having a direct effect on air quality. The principal air quality concern associated with the proposed action would be construction related emissions of priority pollutants and of fugitive dust near construction areas. These impacts would be temporary in nature, and would be expected to occur concurrently or near the same time as other projects for the HSDRRS.

3.2.8.2.2 Alternatives to the Proposed Action

With the implementation of any of the available alternatives, the impacts to air quality would be approximately the same, but greater, as for the proposed action. Of the alternatives to the proposed action, the PP alternative has the longest construction duration, and would have greater impacts than the AG and GIWW A alternatives. Temporary impacts would occur in generally the same amount as identified for the proposed action, but no long-term impacts to air quality would occur. No foreseeable indirect impacts would occur for any alternative.

No permanent direct or indirect impacts are expected.

Cumulatively, the alternatives to the proposed action would contribute to temporary air quality impacts within the HSDRRS.
3.2.9 Noise

3.2.9.1 Existing Conditions

Noise can be identified as unwanted sound. Noise in the study area is sourced from various forms of traffic on LA 23, General De Gaulle Drive, Lapalco Boulevard, Engineers Road, Peters Road, and other local roads. Heavy equipment and manufacturing operations at the many industrial sites in the study area contribute to noise levels. Periodic high noise levels are generated and impact a large zone around the study area by aircraft as they approach and depart the U.S. Naval Air Station at Belle Chasse. Boat traffic on the GIWW, Algiers Canal, and Harvey Canal is another source of noise.

Noises can be evaluated either objectively or subjectively. Objective noise measurements are used by the Federal Highway Administration (FHWA), among others, and usually involve a logarithmic scale with a unit of decibels. Noise is normally computed over a 24-hour period and adjusted for night time when noise can be more of an annoyance to produce a day-night sound level (DNL). Subjective noise can be judged by a person, a group or a community and consists of a noise level that becomes an “annoyance.” Subjective evaluation seems appropriate since, except during the construction period and periodic maintenance, levees and floodwalls are not sound generators. Ambient noise in the project area can be subjectively judged as moderate.

The GIWW area is primarily made up of vacant land with very low noise levels, punctuated periodically with high levels of jet noise sourced from aircraft taking off and landing at the nearby Naval Air Station at Belle Chasse. Boat traffic in the GIWW, Algiers Canal, and Harvey Canal is another intermittent source of noise, mostly low-level.

Three-quarters of the Algiers Canal is in open spaces or residential uses, generating low noise levels. However, the section on the west bank south of LA 23 to the end of the canal, bounded on the east by the canal and the west by Engineers Road, is heavily industrialized, with most oriented toward the maritime industry serving Mississippi River and Gulf of Mexico businesses. Noise of heavy machinery and metal working is common. Again, periodic high noise from the nearby Naval Air Station at Belle Chasse is also common. Traffic on LA 23 and the General Charles De Gaulle Bridge generate additional noise. Similar conditions (and industry) are found along the east side of the Harvey Canal. The west side is nearly all vacant land containing few noise generators.

3.2.9.2 Discussion of Impacts

3.2.9.2.1 No Action

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to approximately a 10-ft elevation, and providing higher access gates and modified pumping stations. Much of the area is industrial or residential. Any associated noise impacts have already been considered.

Long term, there would be no negative indirect or cumulative impacts from these temporary impacts. However, the increase in levee height would incrementally absorb or deflect existing noise, improving conditions for sensitive receptors over the life of the project.

3.2.9.2.2 Proposed Action

With the proposed action, temporary noise would occur during construction, and periodically for maintenance. The noise would affect wildlife during construction causing them to avoid the area and return once the structures are completed. The areas along the GIWW containing the proposed
action (figure 4a, 5) have no sensitive residential receptors in the study area and noise is not an environmental factor of importance. Noise impacts within the less populated areas along the proposed project ROW may be less significant and limited to primarily impacting employees constructing and maintaining the project area (table 11).

No permanent direct or indirect impacts would be expected.

Cumulative impacts from the construction of WBV HSDRRS projects would occur. Noise from increased traffic, pile driving, and other construction activities would be temporary in nature.

3.2.9.2.3 Alternatives to the Proposed Action

With implementation of the GIWW A and AG alternative, noise would be similar to the proposed action. Temporary noise would occur during construction. However, portions of the GIWW, Harvey Canal, and Algiers Canal containing these alternatives have no sensitive receptors in the study area and noise is not an environmental factor of importance. Much of the Harvey Canal and Algiers Canal is industrial and construction noise would not significantly differ from noise generated by the commercial operations already present. Therefore, no permanent direct or indirect impacts would occur if this alternative was utilized. Cumulative impacts would be similar to those described for the proposed action.

Direct noise impacts would occur due to the implementation of the PP alternative at five sensitive receptor areas near possible Algiers Canal levee construction. Proceeding from the north on the east bank, a subdivision is located adjacent to the existing levee just south of the LA 23 Bridge, with another located south of the General Charles De Gaulle Bridge. Proceeding south from the Algiers Lock on the west bank, two residential developments are located adjacent on both sides of the General Charles De Gaulle Bridge, and another is located just north of the LA 23 Bridge. The PP alternative would involve raising levee embankments and floodwalls from the approximate 10-ft authorized level of risk reduction to approximately 16 ft. Higher access gates and modified pumping stations would also be required. These actions would lead to temporary, direct noise impacts for this construction. Table 11 is a listing of noise generating equipment typically used for construction of levees and floodwalls, using data from the FHWA.

<table>
<thead>
<tr>
<th>Noise Generator</th>
<th>50 ft*</th>
<th>100 ft*</th>
<th>200 ft*</th>
<th>500 ft*</th>
<th>1000 ft*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dump Truck</td>
<td>76</td>
<td>70</td>
<td>64</td>
<td>56</td>
<td>50</td>
</tr>
<tr>
<td>Backhoe</td>
<td>78</td>
<td>72</td>
<td>68</td>
<td>58</td>
<td>52</td>
</tr>
<tr>
<td>Front End Loader</td>
<td>79</td>
<td>73</td>
<td>67</td>
<td>59</td>
<td>53</td>
</tr>
<tr>
<td>Concrete Mixer</td>
<td>79</td>
<td>73</td>
<td>67</td>
<td>59</td>
<td>53</td>
</tr>
<tr>
<td>Crane</td>
<td>81</td>
<td>75</td>
<td>69</td>
<td>61</td>
<td>55</td>
</tr>
<tr>
<td>Bull Dozer</td>
<td>82</td>
<td>76</td>
<td>70</td>
<td>62</td>
<td>56</td>
</tr>
<tr>
<td>Auger Drill</td>
<td>84</td>
<td>78</td>
<td>72</td>
<td>64</td>
<td>58</td>
</tr>
<tr>
<td>Pile Driver</td>
<td>91</td>
<td>85</td>
<td>79</td>
<td>71</td>
<td>65</td>
</tr>
</tbody>
</table>

*Distance from receptor.

Source: FHWA 2007. The decibels (dBA) at 50 ft is measured; the others are model estimates.

The PP alternative would have the most noise impact of proposed project alternatives. Construction noise impacts could be expected to temporarily exceed 65 dBA at residential receptors in the five residential areas. However, the noise would be attenuated within the residential structures and the short duration required for construction lessens the overall impact. Restricting hours of operation could limit the impacts to normal working hours. Temporary maintenance noise would also be expected.
Long term, there would be no negative indirect or cumulative impacts from these temporary impacts. Conversely, the increase in levee height would incrementally absorb or deflect existing noise, particularly from boats using the Algiers Canal, improving conditions for sensitive receptors over the life of the project. Temporary cumulative impacts would be expected.

3.2.10 Water Quality

3.2.10.1 Existing Conditions

The EPA Surf Your Watershed data places the project area within the East Central Louisiana Coastal Watershed, U.S. Geological Survey (USGS) Cataloging Unit 08090301 (USEPA 2008). This watershed includes project area channels such as Harvey Canal, Algiers Canal, GIWW (Barataria Bay Waterway), Estelle Pump Station Outfall Canal, and the drainage canal along the V-line levee.

Water quality within the watershed is evaluated throughout several riverine, estuarine, and wetlands/freshwater systems and is reported by the State of Louisiana for inclusion in the EPA’s National Assessment Database. State water quality assessments are typically based on five types of monitoring data: biological integrity, chemical, physical, habitat, and toxicity.

The major systems within the area include listings as non-supporting designated use for recreation and fish and wildlife propagation. No specific impairments are listed for the Barataria Bay Waterway. A Total Maximum Daily Load (TMDL) would be developed for those impairments that are preventing a waterbody from achieving its designated use. TMDLs are prepared by the EPA with input and review by the State of Louisiana. For example, a TMDL to address the nearby assessment unit LA021102_00 (Barataria Basin Coastal Bays and Gulf Waters) was finalized by in 2006. All IER # 12 project area waterbodies are in good status (table 12).

<table>
<thead>
<tr>
<th>Waterbody Name</th>
<th>Waterbody ID</th>
<th>Most Current Data Available</th>
<th>Location</th>
<th>Size</th>
<th>Unit</th>
<th>Status</th>
<th>State TMDL Development Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barataria Basin Coastal Bays And Gulf Waters</td>
<td>LA021102_00</td>
<td>2006</td>
<td>Barataria Basin Coastal Bays And Gulf Waters To The State Three-Mile Limit</td>
<td>211.0</td>
<td>Square Miles</td>
<td>Impaired</td>
<td>TMDL completed</td>
</tr>
<tr>
<td>Barataria Waterway</td>
<td>LA020903_00</td>
<td>2006</td>
<td>Barataria Waterway (Estuarine)</td>
<td>1.0</td>
<td>Square Miles</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Barataria, Caminada, Hackberry Bay, Batiste &amp; Bay Long</td>
<td>LA021101_00</td>
<td>2006</td>
<td>Barataria Bay (Including Caminada Bay, Hackberry Bay, Batiste, And Bay Long) (Estuarine)</td>
<td>150.0</td>
<td>Square Miles</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Bayou Barataria/Barataria Waterway</td>
<td>LA020802_00</td>
<td>2006</td>
<td>Bayou Barataria/Barataria Waterway-Intracoastal Waterway To Bayou Rigolettes (Estuarine)</td>
<td>6.0</td>
<td>Miles</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Intracoastal Waterway - Larose To Bayou Villars &amp; Barataria</td>
<td>LA020801_00</td>
<td>2006</td>
<td>Intracoastal Waterway-Larose To Bayou Villars And Bayou Barataria (Estuarine)</td>
<td>34.0</td>
<td>Miles</td>
<td>Good</td>
<td></td>
</tr>
</tbody>
</table>

Source: USEPA, Watershed Assessment Results
The study area includes water quality resources such as wet bottomland hardwoods, cypress-tupelo swamps, an existing canal on the protected side of the existing levee, and borrow sites on the protected side of the existing Hero Canal levee.

Area wetlands, including wet bottomland hardwoods and cypress-tupelo swamps, perform important water quality functions by removing and/or transforming nutrients, such as nitrogen and phosphorus. The mechanisms by which wetlands perform this function include the storage of nutrients within the sediment or plant material, the transformation of inorganic nutrients to their organic forms, and strategic transformation and subsequent removal of nitrogen as a gas. The ability of wetland vascular plants to remove nutrients from water and sediments during the growing season and release them later when light or temperatures will not support profuse algae growth is a general phenomenon, and important in maintaining water quality in adjoining systems.

3.2.10.2 Discussion of Impacts

Points for assessment of the alternatives are potential for scour, turbidity/suspended sediment impacts, changes in regional salinity values and dissolved oxygen.

3.2.10.2.1 No Action

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. Generally, this would mean raising levee embankments and floodwalls to approximately a 10-ft elevation, and providing higher access gates and modified pumping stations. Much of the area is industrial or residential. Any associated water quality impacts have already been considered.

Long term, there would be no negative indirect or cumulative impacts from these temporary impacts.

3.2.10.2.2 Proposed Action

While the potential for scour around the proposed floodwalls and closure complex exists, proper scour protection is included as part of the design criteria of the structures to prevent this from having a significant impact on water quality. No lasting impacts to water quality as a result of scour would be expected.

Both fill and excavation activities as described in the proposed action would be required to prepare the site for construction of the proposed structures and barriers. The construction and fill activities would result in localized, temporary turbidity impacts. During construction, these suspended sediments would be released into the surrounding waters and wetlands. Most of the earth moving activities (dredging and backfilling) would take place in the first several months of construction and would be minimal after that point. Water quality would be managed utilizing BMPs to the maximum extent practicable.

Additionally, dredged sediment would be disposed of in the designated disposal area as discussed as part of beneficial use efforts discussed in section 3.2. This would increase the potential for suspended sediments to be released into the water column.

Release of sediment into the water column as part of these activities could temporarily decrease oxygen levels in the waters immediately surrounding the construction site by inhibiting photosynthesis or promoting solar heating. Also, some particles could contain chemically reduced substances (e.g., sulfides), which have a high chemical oxygen demand (COD), while
other particles may have microorganisms attached, which could decompose organic matter and create a biological oxygen demand (BOD). Thus, a localized and temporary reduction in dissolved oxygen could occur in the immediate area of discharge. Oxygen levels would be expected to return to normal soon after construction.

Excessive turbidity can also lead to water body temperature increases. Increased suspended solids produced during construction could absorb incident solar radiation and slightly increase the temperatures of water bodies, especially near the surface. However, these effects would be temporary and would occur only during construction.

Because the CWA Section 404(c) authority specifically relates to “unacceptable adverse effects on municipal water supplies, shellfish beds, and fishery areas”, it is important to state that water supply resources do not exist in the Bayou aux Carpes area and would not be adversely impacted by implementation of the proposed action.

Indirect impacts to water quality could occur because of boats having to navigate through the proposed gate structures. With the gate structures present, and a more constricted navigational opening, there is a slight risk for damage to occur to vessels that pass through the gates, which could result in releases of fuels and oils into the water column. The potential for these impacts to occur are minimized, however, through design parameters that require structures to allow for “safe” passage velocities, and navigational aids such as guidewalls, fendering, dolphins, and Coast Guard signage.

The incremental effects of the proposed action would not be expected to have a significant long-term effect on the large-scale water quality conditions in the study area since the water quality would continue to be influenced by industrial and commercial uses. Concurrent construction of other 100-year HSDRRS projects could cause short-term impacts to water quality that could exceed LADEQ’s water quality standards. The cumulative construction impacts of the proposed action would be additive to similar impacts caused by other HSDRRS projects planned. This could lead to increased turbidity and possible reductions in dissolved oxygen levels in the vicinity and downstream of construction activities. These impacts would generally be localized to areas where construction would occur and are anticipated to be temporary. The implementation of BMPs and Stormwater Pollution Prevention Plans (SWPPPs) would minimize cumulative impacts from construction.

Continued industrial activities, urban wastewater discharges, and construction activities contribute to a continued decline in water quality within the study area. However, state and Federal programs are in place to regulate and improve water quality, so the net cumulative impact over time could be the improvement of water quality for the study area. The temporary impacts associated with this alternative would not be expected to detract from these projects and programs.

3.2.10.2.3 Alternatives to the Proposed Action

The GIWWA and AG alternatives generally follow the same alignment as the proposed action. Potential for impacts to water quality as a result of scour, salinity changes, and long term DO would be the same as those of the proposed action.

In contrast, a higher potential for impacts associated with turbidity exists under the PP than the proposed action. The PP alternative would have a longer footprint than the proposed action. Due to constructability constraints, it is anticipated that construction would take significantly longer for the PP alternative than for the proposed action. There would be an increase in the time that ground disturbing activities and potential impacts from turbidity would occur.
Therefore impacts to water clarity, salinity, and DO as described under the proposed action may continue for a longer period of time when compared to the proposed action.

Indirect impacts under these alternatives would be the same as those discussed under the proposed action.

The cumulative effects of these alternatives to water quality would be similar to those described in the proposed action, with the exception that it would take significantly longer to construct the PP alternative and a greater area of disturbance would be necessary due to the length. Therefore, under these alternatives there would be a potential for a greater degree of water quality impact than under the proposed action. These temporary impacts would be minimized through the use of BMPs and SWPPPs. As discussed under the proposed action, it is anticipated that there could still be a net gain in water quality due to regulatory programs in place to improve water quality.

3.2.11 Aesthetic (Visual) Resources

3.2.11.1 Existing Conditions

Visually, the project area’s landscape is dominated by urban development protected by flood control measures that includes earthen levees, drainage canals, pumping stations, and navigation canal locks and dams. Also prevalent within the project area are maritime related industry and residential development occasionally broken up by undeveloped land and recreation venues. Beginning in the southern portion of the project area, the area adjacent to the GIWW is primarily undeveloped, essentially in bottomland hardwoods on the east bank and marsh land and bayous on the west bank. Bayou aux Carpes has been designated a 404c area because of its unique ecological features; see section 3.2.2 (EPA Designated Bayou aux Carpes CWA Section 404(c) Area) for additional information. Moving North East, the Algiers Canal adjacent area begins as vacant land then transitions to a residential area until reaching the LA 23 Bridge; from there, a golf course is first encountered and then mostly vacant land with intermittent industrial/commercial, residential, and public uses until reaching the Algiers Lock. Proceeding southwesterly from the Algiers Lock on the west bank, vacant land is first encountered. Then residential development located adjacent to and on both sides of the Woodland Highway Bridge. Continuing southward, a large section of vacant land is crossed until more residential development is encountered adjacent to and north of LA 23. South of LA 23 to the Harvey Canal is a dense mix of commercial and industrial enterprises, much of it oriented to the marine industry, which includes industrial buildings, manufacturing processes, equipment, and storage. Proceeding north along the east side of the Harvey Canal to LaPalco Boulevard the visual setting is comprised of dense, primarily industrial uses, with barge and tow boat repair and storage predominating. Proceeding south from LaPalco Boulevard on the west bank of the Harvey Canal to the Estelle Pumping Station, nearly all of the land is vacant and is in either bottomland hardwoods or marsh land, except for the existing levee.

3.2.11.2 Discussion of Impacts

3.2.11.2.1 No Action

With the no action alternative, the 100-year level of risk reduction would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. This would involve a combination of levee and floodwall improvements. Visual resources would either (1) change due to future land use, or (2) change as dictated by HSDRRS system maintenance.

3.2.11.2.2 Proposed Action
Visually, the vast majority of the footprint of disturbance necessary to construct the proposed action is in areas where flood protection measures, navigation-related channel improvements, and other civil works projects including roads currently exist. The area along the GIWW is remote and flood protection measures are visually inaccessible to most. The Bayou aux Carpes CWA Section 404(c) area is directly adjacent, and partially within, the proposed project area. It is possible that the Bayou aux Carpes could eventually be incorporated into the Jean Lafitte National Historical Park and Preserve by Congressional action. Currently, there are no designated recreation land uses in the immediate project area, or surveys documenting incidental visitation. Therefore, the viewshed into the project area is insignificant and the direct and indirect impacts to visual resources are minimal. Cumulatively, the visual impacts caused by flood protection measures throughout the WBV and nationwide could be considered significant. Flood prone natural landscape protected by unnatural levees and floodwalls similar to those to be generated by the proposed action may be increasingly converted to developable land. Urbanization of this land may be considered visually distressing depending on the complexity of natural or cultural elements lost.

3.2.11.2.3 Alternatives to the Proposed Action

The indirect and cumulative impacts to visual resources would be similar to the proposed action. Direct impacts to visual resources would be incremental based on the amount of construction-related activity with the GIWW A alternative having the least overall effect and the AG alternative being the most obtrusive; these impacts would be temporary and the negative visual effects to the project area would cease once the flood protection measures are constructed.

3.2.12 Recreational Resources

3.2.12.1 Existing Conditions

There are three recreational resources in the study area that could be affected by project alternatives. These include the Bayou Barriere public golf course on the east side of the Algiers Canal, just north of the LA 23 Bridge; a small parish park under the west approaches to the bridge on the west side of the Algiers Canal; and fishing and recreational boating in the GIWW, Algiers Canal and Harvey Canal. The Bayou Barriere golf course is situated longitudinally along the existing levee system, with several holes that abut the levee. The small, parish park under the western approach of the LA 23 Bridge is intensively used. Additionally, the Bayou aux Carpes CWA Section 404(c) area may be incorporated into the Jean Lafitte National Historical Park and Preserve in the future. Finally, the Audubon Nature Institute is involved in initiating the Parc des Familles project in Crown Point, which would create the metro area's second-largest public park. The proposed park is planned along the western side of the 404c area.

3.2.12.2 Discussion of Impacts

3.2.12.2.1 No Action

With the no action alternative, the 100-year level of risk reduction work would not occur and the HSDRRS system would be built only to the levels authorized prior to Hurricane Katrina. The existing levee system would be raised to approximately 10 ft, which would affect all of the three recreational resources in the project area. Land could be taken from holes at the Bayou Barriere public golf course; however, it would be expected that floodwalls would be constructed in this locale to minimize impacts to the golf course. Still, holes adjacent to the levee would need to be reconfigured, or possibly removed. Land would also be required for the parish park under the LA 23 Bridge; however, the essential functions of the park would remain unimpaired.

No indirect or cumulative impacts would be likely.
3.2.12.2.2 Proposed Action

There are no recreation facilities along the GIWW, in the locale of the proposed action (table 13), other than the waterway itself. The only direct impact due to the proposed action would be sedimentation that escapes from the required erosion and sedimentation controls that would be developed for the construction phase of the project. Additionally, if the project feature augmentations are found to be beneficial (see section 7) recreational opportunities could also increase. If Bayou aux Carpes CWA Section 404(c) becomes part of the National Park Service preserve in the future, the proposed floodwall would not directly hinder any recreational use of the area. No indirect impacts would be likely for the proposed action.

Implementation of the proposed action would have beneficial cumulative impacts on recreational resources throughout the greater New Orleans metropolitan area. This proposed action is part of the ongoing Federal effort to reduce the threat to property posed by flooding. The combined effects from construction of the multiple projects underway and planned for the Lake Pontchartrain and West Bank and Vicinity Hurricane Protection Systems reduce flood risk and storm damage to hundreds of recreation facilities and associated infrastructure and parks. On the other hand, construction of the HSDRRS could have adverse impacts on recreation infrastructure by impeding use of land for recreation or by removal of recreational structures such as volleyball courts, picnic tables, and shelters. Additionally, some proposed actions could also affect fisheries, which would impact recreational fishing opportunities.

3.2.12.2.3 Alternatives to the Proposed Action

The GIWW A alternative could directly and indirectly impact the recreational use of the Bayou aux Carpes CWA Section 404(c) area due to the construction of the tidal exchange structure. Construction of this structure that would cross through the 404c area could potentially impact bird watching, canoeing, kayaking, photography and swamp tours. In addition, this alternative could affect the potential inclusion of the Bayou aux Carpes CWA Section 404(c) area into the national park service refuge due to the floodwall segmenting the park and creating land management issues.

The only direct impact due to the AG alternative would be minor and insignificant. The PP alternative would have similar, but greater, impacts as those described for the proposed action. Implementation of the PP alternative would require levee improvements to elevation 16. Land would be taken from holes number 1 through number 5 at the Bayou Barriere public golf course. Floodwalls would be expected to be constructed in this locale to minimize impacts, but it would still be necessary to reconfigure or remove these five holes (the green for number 9 hole would be bisected, requiring relocation of the green). Floodwalls would also be required at the parish park under the LA 23 Bridge. While land would be required from the park, no functions would be lost to levee construction. The recreational aspects of the local waterways would be little affected. Table 13 identifies the direct impacts to recreational facilities that would occur based on project alternatives.

No indirect impacts would be likely for the AG or PP alternatives. Cumulative impacts would be similar to those for the proposed action.
Table 13: Impacts to Recreation Facilities in Study Area

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Bayou Barriere GC</th>
<th>Parish Park</th>
<th>Bayou aux Carpes 404c area</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Action</td>
<td>Major Impact</td>
<td>Minor Impact</td>
<td>No impact</td>
</tr>
<tr>
<td>WCC (preferred)</td>
<td>No Impact</td>
<td>No Impact</td>
<td>Minor impact*</td>
</tr>
<tr>
<td>GIWW A</td>
<td>No Impact</td>
<td>No Impact</td>
<td>Major Impact</td>
</tr>
<tr>
<td>AG</td>
<td>No Impact</td>
<td>No Impact</td>
<td>No impact</td>
</tr>
<tr>
<td>PP</td>
<td>Major Impact</td>
<td>Minor Impact</td>
<td>No impact</td>
</tr>
</tbody>
</table>

* Temporary, minor impact to recreational fishing and wildlife viewing during construction activities for approximately two years.

3.2.13 Cultural Resources

3.2.13.1 Existing Conditions

Records on file at the Louisiana Division of Archaeology and the CEMVN indicate six previously recorded archaeological sites are located within one mile of the IER # 12 project area. Site forms and archaeological reports on file at the Louisiana Division of Archaeology and the CEMVN describe these known sites. The only two sites recorded within the project corridor (16PL40 and 16PL41) are scatters mixed with modern debris and rip-rap, and are no longer regarded as sites. Another three sites are the ruins of a nineteenth to early 20th century drainage machine (16PL164) and two associated historic period scatters (16PL162 and 16PL163) to the east on the Belle Chasse Naval Air Station property. Only one site, 16PL164 is considered eligible for listing on the National Register of Historic Places (NRHP). The sixth site, 16JE73, is a small prehistoric shell midden of uncertain age well to the west of the current study area. No properties within one mile of the project area are listed on the NRHP and no significant standing structures have been recorded near the area.

Five cultural resources investigations have been previously conducted within portions of the IER # 12 project area. In the first study, conducted by Coastal Environments, Inc., researchers assessed the impact of dredging and spoil disposal along 315 miles of the GIWW. The two archaeological sites mentioned above, 16PL40 and 16PL41, were identified within the current project corridor as shell scatters (Gagliano et al. 1975). In 1991, R. Christopher Goodwin and Associates, Inc. investigated portions of the project area including a tract on the west side of Harvey Canal and a tract in the Gate Option area. No cultural resources were found in the survey. Archaeological sites 16PL40 and 16PL41 were reexamined and determined to be modern shell deposits (Hinks et al. 1991).

Earth Search, Inc. conducted an archaeological survey of a portion of the current project area located on the south bank of Bayou Barataria near the Hero Cutoff in 1999 (Lee et al. 2000). Despite intensive auger testing, no cultural deposits were identified. Earth Search, Inc. conducted another survey along a proposed right of way extension along Peters Road in 2004 (Stanton et al. 2004). This survey crossed the IER # 12 project area at Bayou Barataria and the GIWW. No archaeological sites or significant standing structures were recorded. Earth Search, Inc. conducted a third survey of a proposed borrow site which is partially located in the Gate Option portion of the project area. No cultural resources were identified.

The CEMVN contracted Coastal Environments Inc. to conduct reconnaissance and Phase 1 terrestrial surveys of the IER # 12 project area (Wells 2008). In this study, researchers utilized background research, previous cultural resource investigations review, soil and topographic
analyses, field reconnaissance information, and Phase 1 survey data to identify and investigate high potential areas for archaeological resources and assess historic structures in the project area. Utilizing information provided in previous cultural resources investigation reports, soil and topographic analyses, and recent field reconnaissance information, researchers identified seven parcels of land in the IER #12 project area that exhibited a high potential for archaeological resources. Phase 1 level field investigations were conducted in these high potential areas and no cultural resources were identified. One historic period residential structure was identified just on the edge of the project area at 415 Planters Canal Road. Although the original portion of the house exhibits a colonial period floor plan, the house does not appear on a 1932 USGS quadrangle map and suggests that the house was either moved to its present location, or built sometime after 1932. Structural modifications to the house, including additions and modern windows, were noted. Researchers believe the house is not eligible for listing on the NRHP.

The CEMVN held meetings with State Historic Preservation Office staff and Tribal governments to discuss the emergency alternative arrangements approved for NEPA project review and the development of a Programmatic Agreement (PA) to tailor the Section 106 consultation process under the alternative arrangements. The CEMVN formally initiated Section 106 consultation for the West Bank and Vicinity Hurricane Protection Project (100-year), which includes IER #12, in a letter dated 9 April 2007. This letter emphasized that standard Section 106 consultation procedures would be implemented during PA development. A public meeting was held on 18 July 2007, to discuss the working draft PA. It is anticipated that the PA will be executed in the near future.

In letters sent to the State Historic Preservation Officer (SHPO) and Indian Tribes dated 7 July 2008, the CEMVN provided project documentation, evaluated cultural resources potential in the project area, and found that the proposed actions would have no impact on cultural resources. The SHPO and the Seminole Tribe of Florida concurred with our "no historic properties affected" finding in a letter dated 1 August 2008, and an email dated 8 July 2008, respectively. No other Indian Tribes responded to our request for comments. Section 106 consultation for the proposed action is concluded. However, if any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a CEMVN archaeologist has been notified and final coordination with the SHPO and Indian Tribes has been completed.

3.2.13.2 Discussion of Impacts

3.2.13.2.1 No Action

Under the no action alternative, all activities associated with raising the existing levees and floodwalls up to the originally authorized grade would be conducted within the existing project right of way and would have no impact on significant cultural resources. The existing project right of way has been subjected to severe ground disturbing activities associated with levee, floodwall, and pump station construction. Recent investigations found no cultural resources in high probability areas and the likelihood for intact and undisturbed cultural resources is considered extremely minimal. No further cultural resources investigations are recommended.

3.2.13.2.2 Proposed Action

Based on the review of state records, previous cultural resources studies, and the results of a recent reconnaissance and Phase 1 cultural resources investigation, implementation of the proposed action would have no direct impact on cultural resources. Only two previously recorded cultural resources are located in the boundaries of the proposed action alternative. These two sites (16PL40 and 16PL41) are surface scatters mixed with modern debris and rip-rap.
and are no longer regarded as sites. High probability areas in the proposed action alternative were examined with both terrestrial and bankline survey (Wells 2008). Bankline survey consisted of visual survey supplemented with judgmentally-placed probing to a depth of 1.5 meters along both banks of the distributary channels. Terrestrial survey was accomplished using parallel transects of shovel tests spaced 30 meters apart, with tests dug at 30 meter intervals. No artifacts were noted in any shovel test and no intact deposits were noted. Soil profiles consisted of fill and backswamp clays to a depth of 1.5 meters.

Implementation of the proposed action would have beneficial indirect impacts by providing an added level of flood protection to known and unknown archaeological sites in the project vicinity on the protected side of the levee by reducing the damage caused by flood events. Erosion of ground deposits during flood events can result in severe damage and destruction of archaeological sites. Four previously recorded archaeological sites are within one mile, but are located well outside of the proposed action alternative boundaries and will not be indirectly impacted. Three of these archaeological sites, 16PL162, 16PL163, and 16PL164, are situated on the Belle Chasse Naval Air Station property to the east. The fourth archaeological site, 16JE73, is located to the west.

Implementation of the proposed action would have beneficial cumulative impacts on historic properties in the West Bank metropolitan area. This proposed action is part of the ongoing Federal effort to reduce the threat to property posed by flooding. The combined effects from construction of the multiple projects underway and planned for the West Bank Hurricane Protection System would reduce flood risk and storm damage to significant archaeological sites, individual historic properties, engineering structures and historic districts.

3.2.13.2.3 Alternatives to the Proposed Action

Implementation of the GIWW A, AG, and PP alternatives would have no direct impacts on cultural resources. No previously recorded cultural resources are located within the boundaries of any alternatives to the proposed action. Specific locations within the alternative areas exhibiting a high potential for archaeological deposits were investigated. No cultural resources were identified. Implementation of these alternatives would also have the same beneficial indirect and cumulative impacts as those described for the proposed action.

3.3 SOCIOECONOMICS

3.3.1 General

This section evaluates the relative socioeconomic impacts of construction activities associated with the proposed levee, floodwall, and other alternative improvements adjacent to the GIWW, Harvey Canal, and Algiers Canal. The project area includes portions of Jefferson, Orleans, and Plaquemines Parishes in the state of Louisiana, and is an upgrade of existing flood protection. This analysis relies on data from 2000 as well as updated estimates from various sources. Due to the changed conditions since Hurricanes Rita and Katrina there is a data gap relative to the age of the data.

3.3.2 Population and Housing

Existing Conditions

Public Law 91-611 established by the River and Harbor and Flood Control Act of 1970 states, in part, that project planning should consider whether or not a project might cause “injurious displacement of people” among a variety of other human resources. Population trends are
directly related to the demand for housing. In evaluating these resources, this report includes population and housing data evaluated of impact areas listed as IPET Polders developed after Hurricane Katrina. The project area includes the areas along the Estelle Outfall Canal, Harvey Canal, Algiers Canal, and GIWW on the west bank of the Mississippi River between the V-line levee and Hero Canal, as well as the area on the west bank of the Harvey Canal. Additionally, the Belle Chasse area is included, because this area would benefit from the decreased flood risk that the project would provide. These areas are covered by the Harvey-Westwego, Gretna-Algiers, and Belle Chasse IPET Polders. According to the August 2007 population estimate, the Gretna-Algiers polder has a population of 150,900 and the Belle Chasse polder has a population of 15,900 people, for a total project area population of 166,800. Residential development ranges from upper middle-income to subsidized low-income housing and from single-family to multi-family developments.

Discussion of Impacts

No Action

Under the no action alternative, flood protection along the Algiers Canal, Harvey Canal, and the GIWW would not be raised to the 100-year level of risk reduction. Rather, the existing levees and floodwalls along the GIWW, Algiers Canal, and Harvey Canal would be raised to levels previously authorized. This would be between 4.5 ft to 6.5 ft lower than the 100-year level of risk reduction mandated for the project area. However, this project is integral to the upgrade of the West Bank and Vicinity Project to the 100-year level of risk reduction, and without it the storm surge risk reduction system would not comply with the minimum requirements of the National Flood Insurance Program (NFIP).

There would be no displacement of population or housing under the no action alternative. However, since this alternative fails to provide the 100-year level of risk reduction as required under the NFIP, the actual and perceived risks to population under this alternative would be higher than under the proposed alternative. Floods occurring under the no action plan that would have been avoided under the proposed plan increase the potential for permanent displacement of population and housing.

Proposed Action

Under this alternative flood control features (levees, floodwalls, and ancillary structures) would be constructed from the V-line levee in Jefferson Parish north to the Old Estelle PS, east to the Harvey Canal, south along the Bayou aux Carpes 404c area boundary, and east across the GIWW just north of Hero Canal.

This alternative would have some potential for displacement of population and housing. While construction would occur in areas that are relatively far from dense residential development and construction impacts would be minimal and temporary, there would be impacts to this area consisting of increased traffic, construction noise including pile driving noise, and increased road dust and dirt. Although little could be done to eliminate the noise associated with these activities, they would be scheduled so as to cause the least disruption possible, while still pursuing the need to have surge barrier completion by June 2011. Significant 24-hour construction activities should be expected. Water trucks would be required in an effort to reduce road dust.

Although no residential structures would be directly affected, a small portion of land, less than one half acre, on a single residential property located on East Bayou Road would likely be directly affected by the relocation of East Bayou Road. A dock and access road are situated
there and could be relocated. Attempts are being made to engineer the alignment so as to avoid this impact; however, no final decisions have been made.

Prior to Hurricane Katrina, only a small number of people were living immediately within the vicinity of protection facilities. In the year 2000, there were 78 housing units within this potentially impacted area, with a total population of 129. Typically socioeconomic data for such small populated areas are collected every 10 years by the Census Bureau; and the latest information available was collected in April of 2000. No independent source of information is currently available. Although construction of the project may have limited adverse impacts to houses and population, increased flood and hurricane protection may have relatively greater positive benefits. Preliminary surveys conducted by USACE employees following Hurricane Katrina noted that structures were severely damaged, if not completely destroyed; however, some structures have since been restored as in the case of the larger metropolitan area. The information is relevant because it provides available information conditions occurred prior to the hurricane and how conditions may occur in the future. The potentially adversely impacted area under the proposed action, extending for one 1 mile in all directions, comprises the following geography, according to the 2000 Census:

Jefferson Parish:
- Tract 278.09, Block Group 4, Blocks 4001, 4004
- Tract 278.12, Block Group 1, Blocks 1003, 1004, 1006, 1995

Plaquemines Parish:
- Tract 502: Block Group 2, Block 2043, 2044, 2999
- Tract 503, Block Group 3, Blocks 3001, 3002, 3034, 3996
- Tract 504, Block Group 1, Blocks 1011, 1085, 1984, 1986, 1987

As previously indicated, a much larger population and residential area would receive benefits from increased hurricane protection, none fully quantifiable. For example, the cost of restoring a house damaged by a hurricane can be measured while the personal value of contents may be irreplaceable.

Alternatives to the Proposed Action

Alternative 1 – GIWW A

Socioeconomic impacts under this alternative would be similar to those under the proposed action, since the only difference between the two alternatives is the construction of a modified floodwall through the Bayou aux Carpes Section 404c area 1 mile south of the confluence of the Harvey and Algiers Canals. As such, the potentially impacted area under this alternative is the same as that for the proposed action.

This alternative would have some potential for displacement of population and housing. While construction would occur in areas that are relatively far from dense residential development, and construction impacts would be minimal, a house and a dock along East Bayou Road may be affected by this alternative. Attempts are being made to engineer the alignment so as to avoid this impact; however, no final decisions have been made. Impacts would be similar to the proposed action, including possible adverse impacts as well as improved flood protection. In the year 2000, there were 78 housing units within this potentially impacted area, with a total population of 129.

The potentially impacted area, extending for 1 mile in all directions from the proposed project area, comprises the following geography, according to the 2000 Census:

Jefferson Parish:
As mentioned regarding the proposed plan, a much larger population and residential area would receive benefits from increased flood protection, none fully quantifiable.

**Alternative 2 – Algiers Gate**

This alternative consists of constructing a navigable floodgate and pumping station on the Algiers Canal, just north of the confluence with the GIWW and Harvey Canal. Leves would be raised on the west bank of the Harvey Canal from Lapalco Boulevard to the Estelle Pumping Station Outfall Canal, while existing floodwalls would be utilized on the east bank in order to minimize impacts to existing development. Leves would also be raised on the east side of the GIWW from the proposed floodgate to the Hero Canal Levee.

The potentially impacted area, extending for one mile in all directions from the proposed project area, comprises the following geography, according to the 2000 Census:

**Jefferson Parish:**
- Tracts 278.05, 278.10, 278.11, 278.12

**Plaquemines Parish:**
- Tract 502, Block Group 2, Block 2034, 2035, 2038, 2039, 2041, 2044, 2045

According to the U.S. Census, in 2000 there were 6,520 housing units within this potentially impacted area, with a total population of 20,597.

This alternative would have some potential for displacement of population and housing. While construction would occur in areas that are relatively far from dense residential development, several residences along Bayou Road would be impacted by implementing this alternative.

Additionally, since this alternative exposes a greater amount of the protection system to storm surges, it is considered less reliable than the proposed action. Under this alternative there is a relatively greater amount to potential future displacement of population and housing caused by extreme future storm events.

**Alternative 3 – Parallel Protection**

Under the parallel protection alternative, levees would be raised to the 100 year-level of risk reduction along both banks of the Harvey Canal from Lapalco Boulevard to the Algiers Canal. Leves and floodwalls along the Algiers Canal would be raised to between 14 ft and 16 ft.

This alternative has high potential to displace population and housing. This alternative uses only improvements to existing levees and floodwalls along the GIWW, Harvey Canal, and Algiers Canal to achieve 100-year level of risk reduction. In order to raise these levees, additional ROW would need to be acquired, and structures (homes and businesses) would have to be removed.

The potentially impacted area under this alternative, extending 1 mile in any direction of the project, encompasses a wide area. According to the 2000 U.S. Census:

**Jefferson Parish:**
- Tracts 250.01, 262, 278.04, 278.05, 278.07, 278.10, 278.11, 278.12

**Orleans Parish:**
- Tracts 6.11, 6.12, 6.14.
Plaquemines Parish:
  • Tracts 502, 503

There were 23,337 housing units, with a population of 67,905, within this potentially impacted area in the year 2000 (2000 Census).

This alternative has the potential to severely impact population and housing along the Algiers Canal frontage, which abuts residential areas. There would be potential impacts to approximately 600 housing units and over 1,200 residents if levee improvements are used, which these impacts could be reduced if floodwalls are used instead in critical locations.

Additionally, since this alternative has the highest level of exposure to storm surges of all the alternatives, there is a consequentially a higher potential for future displacement of population due to future storm events.

3.3.3 Impacts to Employment, Business, and Industrial Activity

Existing Conditions

The area of New Orleans within Plaquemines and Jefferson Parishes is a mixture of commercial, industrial, and general business development along with mixed residential development. The Harvey Canal and Algiers Canal are both part of the GIWW system. They provide a route for conveyance of goods and materials for local consumption and distribution. The areas immediately adjacent to the project are typified by industrial, residential, and open space usage. Large amounts of the developed property along the canal’s frontage are in the industrial land-use category. The businesses located within this land use range from shipbuilding/restoration/transportation to automobile salvage and recycling centers. Approximately 9 miles of the levee system primarily along the east bank of the Harvey Canal and the west bank of the Algiers Canal lie within this land use.

Along the north side of the Algiers Canal, industrial and commercial occupy most of the land from LA 23 downstream to the GIWW. Approximately 22 firms occupy land adjacent to the canal, with docks and other marine facilities making use of the canal. Along the east side of the Harvey Canal from the Algiers Canal upstream to Lapalco Boulevard, 15 firms are located adjacent to the canal and have docks and other marine facilities making use of the canal. These businesses are on the flood side of the current HSDRRS protection.

Discussion of Impacts

No Action

Under the no action alternative, flood protection along the Algiers Canal, Harvey Canal, and the GIWW would not be raised to the 100-year level of risk reduction. Rather, the existing levees and floodwalls along the GIWW, Algiers Canal, and Harvey Canal would be raised to levels previously authorized. This would be between 4.5 and 6.5 ft lower than the 100-year level of risk reduction mandated for the project area. However, this project is integral to the upgrade of the West Bank and Vicinity Project to the 100-year level of risk reduction, and without it the storm surge risk reduction system would not comply with the minimum requirements of the NFIP.

There would be no incremental direct impacts to business and industry under the no action alternative. However, under these conditions, the actual and perceived risks to businesses in the vicinity would be directly impacted. Costs associated with business development and
sustainment would likewise be impacted. The lack of enhanced flood protection could be a long term detriment to the economic vitality of the area to be protected.

Additionally, there may be moderate congestion-related impacts to businesses due to an increased presence of construction vehicles.

Under the no action alternative, businesses along the Harvey and Algiers Canals that are outside of the current HSDRRS would remain outside of protection.

Proposed Action

The potentially impacted area under the proposed action contains little development. There would be minimal direct negative impacts to businesses. There may be congestion-related impacts because of construction vehicles using Highway 23, Walker Road, Buccaneer Road, and East Bayou Road. However, these impacts would be temporary.

High Point Shooting Range would be directly affected by this alternative. The proposed alignment would require the acquisition of approximately 34 acres located within this property. While most of this is buffer zone between the actual range and East Bayou Road, it is possible that some observation towers as well as target launching structures would have to be relocated.

In addition to the direct impacts to the range, there would be other impacts to this area consisting of increased traffic, construction noise including pile driving noise, and increased road dust and dirt. Although little could be done to eliminate the noise associated with these activities, they would be scheduled so as to cause the least disruption possible, while still pursuing the need to have surge barrier completion by June 2011. Significant 24-hour construction activities would be expected.

This alternative would provide protection to businesses along the east bank of the Harvey Canal that would be left out of protection under the no action, Algiers gate, and parallel protection alternatives.

Alternatives to the Proposed Action

Alternative 1 – GIWW A

Socioeconomic impacts under this alternative would be similar to those under the proposed action, since the only difference between the two alternatives is the construction of a floodwall through the Bayou aux Carpes CWA Section 404(c) area. As such, the potentially impacted area under this alternative is the same as that for the proposed action. Since the potentially impacted area contains little development, there would be no direct negative impacts to businesses in the area. There may be congestion-related impacts as a result of construction vehicles using Highway 23, Walker Road, Buccaneer Road, and East Bayou Road. However, these impacts would be temporary.

This alternative would provide protection to businesses along the east bank of the Harvey Canal that would be left out of protection under the no action, Algiers gate, and parallel protection alternatives.

There may be impacts to the High Point gun range under this alternative. While buildings on the property would not be affected, access may be impacted due to the Bayou Road relocation.
Alternative 2 – Algiers Gate

There would be direct negative impacts to area businesses under this alternative. On the east bank of the Harvey Canal, floodwall lies along Peters Road, and this floodwall would be upgraded under this alternative. However, businesses that front the canal, or that lie between the canal and Peter’s Road, would receive no flood protection under this alternative.

There would also be congestion-related impacts as a result of construction vehicles using Engineers Road, Concord Road, and Bayou Road, all on the east bank of the Harvey Canal near the confluence with the Algiers Canal and the GIWW. Additionally, there would potentially be added congestion on Peters Road and Lapalco Blvd. Highway 23, Walker Road, Buccaneer Road, and East Bayou Road would also be affected by added congestion. This congestion would have the potential to indirectly affect businesses in the area, but is temporary in nature.

There may be impacts to the High Point gun range under this alternative. While buildings on the property would not be affected, access would be impacted due to the Bayou Road relocation.

Alternative 3 – Parallel Protection

There would also be direct negative impacts to area businesses under this alternative. On the east bank of the Harvey Canal, floodwall lies along Peters Road, and this floodwall would be upgraded under this alternative. However, businesses that lie along the east bank of the canal, or that lie between the canal and Peter’s Road, would receive no flood protection under this alternative.

There would also be congestion-related impacts as a result of construction vehicles using Engineers Road, Concord Road, and Bayou Road, all on the east bank of the Harvey Canal near the confluence with the Algiers Canal and the GIWW. Additionally, there would potentially be added congestion on Peters Road and Lapalco Blvd. This congestion would have the potential to indirectly affect businesses in the area, but it would be temporary in nature.

Since this alternative also includes upgrading flood protection on both banks of the Algiers Canal, additional impacts to businesses due to this construction could potentially occur. If additional ROW needed to be procured to increase flood protection, this would have direct impact on businesses that front the canal, especially on the west bank. These impacts can be reduced if floodwalls are used instead of levees. The same impacts would apply to businesses that front the east side of the Algiers Canal.

In addition to these direct impacts, there may also be temporary, congestion-related impacts to nearby businesses as a result of construction vehicles using Highway 23 and Engineers Road on the west bank of the Algiers Canal, in addition to Highway 23 and Barriere Road on the east bank.

3.3.4 Availability of Public Facilities & Services

Existing Conditions

There is a wide range of public facilities within the project area. As reported by the 2000 U.S. Census, within the Belle Chasse and Gretna-Algiers polders, there are 6 police stations, 11 fire stations, 62 school buildings, and 3 hospitals. There are 44 buildings that function as nursing and assisted living facilities. Additionally, there are 11 utilities facilities, 6 electrical facilities, 1 natural gas distribution facility, 12 telecommunications facilities, and 12 water transportation facilities.
Discussion of Impacts

No Action

Under the no action alternative, flood protection along the Algiers Canal, Harvey Canal, and the GIWW would not be raised to the 100-year level of risk reduction. Rather, the existing levees and floodwalls along the GIWW, Algiers Canal, and Harvey Canal would be raised to levels previously authorized. This would be between 4.5 ft and 6.5 ft lower than the 100-year level of risk reduction mandated for the project area. However, this project is integral to the upgrade of the West Bank and Vicinity Project to the 100-year level of risk reduction, and without it the storm surge risk reduction system would not comply with the minimum requirements of the NFIP.

There would be no direct impacts to the availability of public facilities and services under the no action alternative. However, under these conditions, the actual and perceived risks to public facilities in the vicinity would be directly impacted, and the costs of providing these services would likewise be impacted. The lack of enhanced flood protection could be a long term detriment to the economic vitality of the area to be protected.

Proposed Action

The proposed action would have no direct effect on the availability of public facilities and services. Increased protection from flooding would preserve and enhance the availability of public services in the area.

Alternatives to the Proposed Action

Alternative 1 – GIWW A

This alternative would have no direct effect on the availability of public facilities and services. Increased protection from flooding would preserve and enhance the availability of public services in the area.

Alternative 2 – Algiers Gate

This alternative would have no direct effect on the availability of public facilities and services. Increased protection from flooding would preserve and enhance the availability of public services in the area.

Alternative 3 – Parallel Protection

This alternative would have no direct effect on the availability of public facilities and services. Increased protection from flooding would preserve and enhance the availability of public services in the area. No known police stations, schools, fire stations, hospitals, or nursing care facilities would be displaced or directly affected by the change in ROW under this alternative.

3.3.5 Effects on Transportation

Existing Conditions

The primary transportation network in the project area consists of the following roadways: LA 406, utilizing the bridge over the Algiers Canal at the end of General de Gaulle Drive (Intracoastal Waterway Bridge); LA 23 utilizing the Belle Chasse Bridge and Tunnel over the
Algiers Canal, Lapalco Boulevard and the Lapalco Bridge over the Harvey Canal. Local roads include Engineers Road and Barriere Road parallel to and adjacent to the Algiers Canal; and Peters Road and Destrehan Avenue parallel to the Harvey Canal.

Discussion of Impacts

No Action

Under the no action alternative, levees and floodwalls along the Algiers Canal, Harvey Canal, and the GIWW would not be raised to the 100-year level of risk reduction. Rather, the existing levees and floodwalls along the GIWW, Algiers Canal, and Harvey Canal would be raised to levels previously authorized. This would be between 4.5 ft to 6.5 ft lower than the 100-year level of risk reduction mandated for the project area. However, this project is integral to the upgrade of the West Bank and Vicinity Project to the 100-year level of risk reduction, and without it the storm surge risk reduction system would not comply with the minimum requirements of the NFIP.

Under the no action alternative, there would be congestion related impacts to transportation due to an increased presence of construction vehicles in the vicinity. Potentially affected roadways include Engineers Road, Concord Road, and Bayou Road, all on the east bank of the Harvey Canal near the confluence with the Algiers Canal and the GIWW. Additionally, there may potentially be increased congestion on Peters Road and Lapalco Boulevard Highway 23, Walker Road, Buccaneer Road, and East Bayou Road; as well as on General DeGaulle Drive, Highway 406, Barriere Road, and Destrehan Avenue. However, all congestion-related impacts would be temporary in nature.

Additionally, borrow material would have to be transported to construction sites. Constructing the no action alternative would require an estimated 1,250,000 cubic yards of borrow material, or approximately 62,500 truckloads (based on 20 cubic yards per truck). The increased congestion, in addition to wear and tear on local roadways as a result of transporting borrow material, would be less under the no action alternative than under the proposed action, GIWW A, Algiers gate, and parallel protection alternatives. However, the impacts described previously would be expected to be moderate to severe due to the sheer amount of borrow material that must be transported to construct this alignment.

Due to the increased flood risk under this alternative, the risk of flood damage to transportation resources under this alternative would also increased.

To the extent that work crews would operate from barges in the Harvey and Algiers Canals, congestion to commercial barge transportation may occur. Any delays would be temporary and no complete closures would be expected.

Proposed Action

Under the proposed alternative, congestion-related impacts to transportation due to an increased presence of construction vehicles in the vicinity have the potential to be moderate. Potentially affected roadways include Highway 23, Walker Road, Buccaneer Road, and East Bayou Road. Highway 23 is a well-traveled road, and congestion as a result of the project would add to already substantial amounts of traffic during regular commuting hours. However, the other roads are much less crowded. There is a possibility that congestion from construction vehicles may delay vehicles trying to access the U.S Naval Air Station Reserve Base in Belle Chasse, since both the construction site and the base are accessed from Highway 23. However, all congestion-related impacts would be temporary in nature.
Additionally, borrow material would have to be transported to construction sites. Constructing the proposed action would require an estimated 3,100,000 cubic yards of borrow material, or approximately 155,000 truckloads (based on 20 cubic yards per truck). This volume of material is 1,850,000 cubic yards, or 92,500 truckloads, more than under the no action alternative. Because of the relatively remote location of the construction site compared to the no action alternative and the parallel protection alternative, traffic congestion would generally be limited to through-streets.

The increased congestion, in addition to wear and tear on local roadways, as a result of transporting borrow material would be less under the proposed action alternative than under the Algiers gate and parallel protection alternatives. However, the impacts described previously would be expected to be moderate to severe due to the sheer amount of borrow material that must be transported to construct this alignment.

This alternative would require relocating Bayou Road in order to create a bypass channel on the east bank of the GIWW.

To the extent that work crews would operate from barges in the GIWW, congestion to commercial barge transportation may occur. A bypass waterway would be constructed in order to minimize these impacts.

Realizing the importance of unobstructed waterways to commercial navigation, it is the intent to limit delays to marine traffic attributable to the West Closure Complex both during the construction phase and after the structure is complete and operational.

During Construction: Option 1 and Option 2 have different impacts to navigation interests transiting the area.

Option 1: The main navigation gates would be constructed in segments within the existing channel of the GIWW. Under this method, there would be a period of between 9 months and 18 months when barge traffic would be passing through the secondary navigation structure, 75 ft to 150 ft wide. This would be necessary to facilitate the completion of the main navigation structure in the existing channel.

Option 2: Under option 2, the main navigation structure would be constructed in the dry east of the existing navigation channel. Upon completion of the main navigation structure and excavation of the bypass channel, navigation would be routed through the main navigation structure and the existing navigation channel would be closed for completion of the secondary structure and pumping station.

After construction: The normal operating status of the gates would be in the open position with infrequent closure of the gates for tropical events.

Lastly, under this alternative, approximately 700,000 cubic yards of material would be dredged from the Algiers Canal and removed by barge. This may lead to congestion on the canal, but these impacts would be temporary.
Alternatives to the Proposed Action

Alternative 1 – GIWW A

As with the proposed action, there may be temporary, congestion-related impacts to transportation due to an increased presence of construction vehicles in the vicinity. Because the GIWW A alternative is the same as the proposed action, except for the presence of a floodwall instead of levees, the potential impacts to transportation are approximately the same as those under the proposed action.

The congestion-related impacts to transportation due to an increased presence of construction vehicles in the vicinity have the potential to be moderate.

The potentially affected roadways include Highway 23, Walker Road, Buccaneer Road, and East Bayou Road. Highway 23 is a well-traveled road, and congestion because of the project would add to already substantial amounts of traffic during regular commuting hours. However, the other roads are much less crowded. There is a possibility that congestion from construction vehicles may delay vehicles trying to access the U.S Naval Air Station Reserve Base in Belle Chasse, since both the construction site and the base are accessed from Highway 23. However, all congestion-related impacts would be temporary.

Additionally, borrow material would have to be transported to construction sites. Constructing this alternative would require an estimated 2,900,000 cubic yards of borrow material, or approximately 145,000 truckloads (based on 20 cubic yards per truck). The increased congestion, in addition to wear and tear on local roadways, as a result of transporting borrow material would be less under this alternative than under any other alternative. However, the impacts described previously would be expected to be moderate to severe due to the sheer amount of borrow material that must be transported to construct this alignment.

Because of the relatively remote location of the construction site compared to the no action alternative and the parallel protection alternative, traffic congestion would generally be limited to through-streets.

This alternative would require relocating Bayou Road in order to create a bypass channel on the east bank of the GIWW.

To the extent that work crews would operate from barges in the GIWW, congestion to commercial barge transportation may occur. A bypass waterway would be constructed in order to minimize these impacts.

Realizing the importance of the waterway to commercial navigation, it is the intent to limit adverse effects of the West Closure Complex to the practical minimal amount both during the construction phase and after the structure is complete and operational.

During Construction: Option 1 and option 2 have different impacts to navigation interests transiting the area.

- Option 1: The main navigation gates would be constructed in segments within the existing channel of the GIWW. Under this method, there would be a period of between 9 months and 18 months when barge traffic would be passing thru the secondary navigation structure, 75 ft to 150 ft wide. This would be necessary to facilitate the completion of the main navigation structure in the existing channel.
• Option 2: Under option 2 the main navigation structure would be constructed in the dry east of the existing navigation channel. Upon completion of the main navigation structure and excavation of the bypass channel, navigation would be routed thru the main navigation structure and the existing navigation channel closed for completion of the secondary structure and pumping station.

After construction: The normal operating status of the gates would be in the open position with infrequent closure of the gates for tropical storm events.

Lastly, under this alternative, approximately 700,000 cubic yards of material would be dredged from the Algiers Canal and removed by barge. This may lead to congestion on the canal, but these impacts would be temporary in nature.

**Alternative 2 – Algiers Gate**

There may be temporary, congestion-related impacts to transportation due to an increased presence of construction vehicles in the vicinity. The congestion-related impacts have the potential to be moderate. The potentially affected roadways include Engineers Road, Concord Road, and Bayou Road, all on the east bank of the Harvey Canal near the confluence with the Algiers Canal and the GIWW. Additionally, there may potentially be added congestion on Peters Road and Lapalco Boulevard. Highway 23, Walker Road, Buccaneer Road and East Bayou Road may also be affected by added congestion. However, all congestion-related impacts would be temporary in nature.

Additionally, borrow material would have to be transported to construction sites. Because of the relatively remote location of the construction site compared to the no action alternative and the parallel protection alternative, traffic congestion would generally be limited to through-streets. Constructing this alternative would require an estimated 4,500,000 cubic yards of borrow material, or approximately 225,000 truckloads (based on 20 cubic yards per truck). The increased congestion, in addition to wear and tear on local roadways, as a result of transporting borrow material would be less under this alternative than under parallel protection, but more than under the no action, proposed action, or the GIWWA alternative. However, the impacts described above are expected to be moderate to severe due to the sheer amount of borrow material that must be transported to construct this alignment.

Additionally, increased traffic from transporting borrow on local roads would increase wear and tear on the roadways.

This alternative would require relocating Bayou Road.

To the extent that work crews would operate from barges in the Harvey and Algiers Canal and the GIWW, congestion to commercial barge transportation may occur. Any delays would be temporary and no closures would be expected.

Lastly, under this alternative, approximately 700,000 cubic yards of material would be dredged from the Algiers Canal and removed by barge. This may lead to congestion on the canal, but these impacts would be temporary.

**Alternative 3 – Parallel Protection**

Under this alternative, there would be temporary direct impacts to transportation resources. In order to raise existing levees, it may be necessary to modify supporting piers for two vehicle bridges and one railroad bridge that cross the Algiers Canal.
Additionally, there may be permanent impacts to the Belle Chasse Tunnel under this alternative. The tunnel structure is probably inadequate to support higher embankment of water load for a 100-year level of risk reduction. As a result, there are two options for the tunnel under this alternative.

- Flood closure gates across the highway at either end of the tunnel. This would result in flooding the tunnel during periods of high water, which may be necessary to prevent structural damage from high water.
- Abandon use of the tunnel and reroute the highway to a new high-level bridge. This plan would also require relocating the roadway and the addition of ramps to the bridge, and might also require backfilling the tunnel for structural security.

No other permanent direct impacts to transportation resources would be expected under this alternative. There may be temporary, congestion-related impacts to transportation due to an increased presence of construction vehicles in the vicinity. The congestion-related impacts have the potential to be moderate. The potentially affected roadways include Engineers Road, Concord Road, and Bayou Road, all on the east bank of the Harvey Canal near the confluence with the Algiers Canal and the GIWW. Additionally, there may potentially be increased congestion on Peters Road and Lapalco Boulevard, Highway 23, Walker Road, Buccaneer Road, and East Bayou Road; as well as on General DeGaulle Drive, Highway 406, Barriere Road, and Destrehan Avenue. However, all congestion-related impacts would be temporary.

Additionally, borrow material would have to be transported to construction sites. Constructing this alternative would require the most borrow material of all the alternatives, an estimated 9,500,000 cubic yards, or approximately 475,000 truckloads. In addition to increasing congestion, transporting such a large quantity of borrow material would create severe wear and tear on the roadways.

To the extent that work crews would operate from barges in the Harvey and Algiers Canal and the GIWW, congestion to commercial barge transportation may occur. Any delays would be temporary and no closures would be expected.

Additionally, modifications would need to be made to the Algiers Lock under this alternative, and the Harvey floodgate would need to be closed while it is rebuilt to 100-year elevation. Both would cause congestion on the canals during the construction period.

### Table 14. Estimated Loads of Borrow Material

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Borrow Needed (cy)</th>
<th>Truckloads (20 cy/truck)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Action</td>
<td>1,250,000</td>
<td>62,500</td>
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<tr>
<td>WCC (Proposed Action)</td>
<td>3,100,000</td>
<td>155,000</td>
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<tr>
<td>GIWWA</td>
<td>2,900,000</td>
<td>145,000</td>
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<td>AG</td>
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<tr>
<td>PP</td>
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<td>475,000</td>
</tr>
</tbody>
</table>

### 3.3.6 Disruption of Community and Regional Growth

#### Existing Conditions

Community growth is considered a growth that provides a net increase in benefits to a local or regional economy, social conditions, and the human environment, including water resource development. Similar to other references to social and economic conditions, community and
regional growth has been heavily dependent on reliable flood protection. The proposed project is planned with the result being improved flood and hurricane risk reduction.

Discussion of Impacts

No Action

Under the no action alternative, flood protection along the Algiers Canal, Harvey Canal, and the GIWW would not be raised to the 100-year level of risk reduction. Rather, the existing levees and floodwalls along the GIWW, Algiers Canal, and Harvey Canal would be raised to levels previously authorized. This would be between 4.5 ft to 6.5 ft lower than the 100-year level of risk reduction mandated for the project area. However, this project is integral to the upgrade of the West Bank and Vicinity project to the 100-year level of risk reduction, and without it the storm surge risk reduction system would not comply with the minimum requirements of the NFIP.

There would be no direct impacts to community and regional growth under the no action alternative. However, under these conditions, the actual and perceived risks to businesses and residences in the vicinity would be directly impacted, reducing the potential for community and regional growth. Costs associated with business and residential development and sustainment would likewise be impacted. The lack of enhanced flood protection could be a long term detriment to the economic vitality of the area to be protected.

Proposed Action

The proposed project would advance the growth of communities within the HSDRRS by reducing their flood risk. Without strong storm and flood protection, a community’s growth will necessarily be limited. The limitation in growth is primarily caused by the inability to certify the levee system such that the protected area could comply with the requirements of the NFIP, and consequently would face higher flood risk and insurance premiums. Although improving improvements to flood and hurricane protection would not fully eliminate the threat of storm damages in the future, by advancing the hurricane and storm damage risk reduction system, confidence and investment in the greater New Orleans community would increase. Since this alternative would provide the most reliable flood risk reduction, it would most likely have the greatest effect in increasing community growth although in some cases may require additional right-of-way.

Additionally, construction activities would most likely advance community growth by increasing activity and traffic around the proposed project areas. This increased activity would likely benefit businesses in the area.

Alternatives to the Proposed Action

Alternative 1 – GIWW A

Under this alternative, community growth would be advanced by improving the hurricane and storm damage risk reduction system protecting the community. Without strong storm and flood protection, a community’s growth would necessarily be limited. By advancing the hurricane and storm damage risk reduction system, confidence and investment in the greater New Orleans community would increase. Since this alternative, like the proposed action, would provide the most reliable flood risk reduction, it would also most likely have the greatest effect in increasing community growth.
Additionally, construction activities would most likely advance community growth by increasing activity and traffic around the proposed project areas. This increased activity would likely benefit businesses in the area through the improved flood protection.

**Alternative 2 – Algiers Gate**

Under this alternative, community growth would be advanced by improving the hurricane and storm damage risk reduction system protecting the community. Without strong storm and flood protection, a community’s growth will necessarily be limited. By advancing the hurricane and storm damage risk reduction system, confidence and investment in the greater New Orleans community would increase. Since this alternative provides less reliable flood risk reduction than the proposed action, it would likely not have as great an effect on community growth.

Additionally, construction activities would most likely advance community growth by increasing activity and traffic around the proposed project areas. This increased activity would likely benefit businesses in the area.

**Alternative 3 – Parallel Protection**

Under this alternative, community growth would be advanced by improving the hurricane and storm damage risk reduction system protecting the community. Without strong storm and flood protection, a community’s growth would necessarily be limited. By advancing the hurricane and storm damage risk reduction system, confidence and investment in the greater New Orleans community would increase. Since this alternative provides the least reliable level of flood risk reduction, its potential effect in increasing community growth would be far less likely.

Additionally, construction activities would most likely advance community growth by increasing activity and traffic around the proposed project areas. This increased activity would likely benefit businesses in the area.

### 3.3.7 Impacts to Tax Revenues and Property Values

**Existing Conditions**

The project area includes the areas along the west bank of the Mississippi River between the Harvey Canal and the Algiers Canal. It also includes the area on the west bank of the Harvey Canal. Additionally, the Belle Chasse area is also included, as this area would benefit from the decreased flood risk that the project would provide. These areas are covered by the Gretna-Algiers and Belle Chasse IPET Polders. According to the 2000 U.S. Census map, the project area includes the following:

**Jefferson Parish:**
- Tracts 250.01, 250.02, 250.03, 251.02, 251.03, 251.04, 252.01, 252.02, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 278.03, 278.04, 278.05.

**Orleans Parish:**
- Tracts 1, 2, 3, 4, 6.01, 6.02, 6.03, 6.04, 6.05, 6.08, 6.11, 6.12, 6.14.

**Plaquemines Parish:**
- Tracts 502, 503.

Residential development in the project area ranges from upper middle-income to subsidized low-income housing; and from single-family to multi-family developments. Median values for specified owner-occupied housing units in the project area range from $37,200 to $434,300 (2000 U.S. Census).
Discussion of Impacts

No Action

Under the no action alternative, flood protection along the Algiers Canal, Harvey Canal, and the GIWW would not be raised to the 100-year level of risk reduction. Rather, the existing levees and floodwalls along the GIWW, Algiers Canal, and Harvey Canal would be raised to levels previously authorized. This would be between 4.5 ft to 6.5 ft lower than the 100-year level of risk reduction mandated for the project area. However, this project is integral to the upgrade of the West Bank and Vicinity Project to the 100-year level of risk reduction, and without it the storm surge risk reduction system would not comply with the minimum requirements of the NFIP.

There would be no direct impacts to tax revenues under the no action alternative. Under these conditions, the actual and perceived risks to businesses and residences in the vicinity would be directly impacted. Costs associated with business and residential development and sustainment would likewise be impacted. As a result, tax revenues may be affected by a relative decrease in development. The lack of enhanced flood protection could be a long term detriment to the economic vitality of the area to be protected.

Proposed Action

The proposed action would likely increase property values in the project area. Increased confidence in the HSDRRS providing storm surge protection to the area would have a positive effect on property values in the vicinity. As a result of the higher property values, tax revenues would increase as well.

Alternatives to the Proposed Action

Alternative 1 – GIWW A

This alternative would likely increase property values in the project area. Increased confidence in the HSDRRS providing storm surge protection to the area would have a positive effect on property values in the vicinity. As a result of the higher property values, tax revenues would increase as well.

Alternative 2 – Algiers Gate

This alternative would likely increase property values in the project area. Increased confidence in the HSDRRS providing storm surge protection to the area would have a positive effect on property values in the vicinity. As a result of the higher property values, tax revenues would increase as well. However, since this alternative provides less reliable flood protection than the proposed action, the positive impact on property values and tax revenue may be less pronounced under this alternative than under the proposed action.

Alternative 3 – Parallel Protection

This alternative would likely increase property values in the project area. Increased confidence in the HSDRRS providing storm surge protection to the area would have a positive effect on property values in the vicinity. As a result of the higher property values, tax revenues would increase as well. However, since this alternative provides less reliable flood protection than the proposed action, the positive impact on property values and tax revenue may be less pronounced under this alternative than under the proposed action.
Additionally, since this alternative would require the removal of up to 600 residential units, it may result in decreased tax revenue. However, the overall effect in the project area should be an increase in total tax revenue.

### 3.3.8 Changes in Community Cohesion

#### Existing Conditions

Community cohesion refers to the common vision and sense of belonging within a community that is created and sustained by the extensive development of individual relationships that are social, economic, cultural, and historical in nature. The degree to which these relationships are facilitated and made effective is contingent upon the spatial configuration of the community itself: the functionality of the community owes much to the physical landscape within which it is set. The viability of community cohesion is compromised to the extent to which these physical features are exposed to interference from outside sources.

#### Discussion of Impacts

**No Action**

Under the no action alternative, flood protection along the Algiers Canal, Harvey Canal, and the GIWW would not be raised to the 100-year level of risk reduction. Rather, the existing levees and floodwalls along the GIWW, Algiers Canal, and Harvey Canal would be raised to levels previously authorized. This would be between 4.5 ft to 6.5 ft lower than the 100-year level of risk reduction mandated for the project area. However, this project is integral to the upgrade of the West Bank and Vicinity Project to the 100-year level of risk reduction, and without it the storm surge risk reduction system would not comply with the minimum requirements of the NFIP.

There would be no direct impacts to community cohesion under the no action alternative. However, under these conditions, the actual and perceived risks to businesses and residences in the vicinity would be directly impacted. Costs associated with business and residential development and sustainment would likewise be impacted. The lack of enhanced flood protection could be a long term detriment to the economic vitality of the area to be protected.

Additionally, an increased risk of flooding due to a lower level of risk reduction may have detrimental effects on community cohesion in the area.

**Proposed Action**

The proposed project is intended for the purpose of advancing the HSDRRS to the 100-year level of risk reduction. Storm surge protection measures are designed to protect the community from the catastrophic effects of flooding, preserving the physical integrity of the developed landscape that promotes patterns of social interchange. The proposed action would increase the level of community cohesion because the entire project area is within the HSDRRS and as a result would benefit from its advancement. Additionally, no feature of the construction plan would have a direct, long-term, adverse impact on community cohesion.

**Alternatives to the Proposed Action**

*Alternative 1 – GIWW A*

Since this alternative is almost identical to the proposed action, its effects on community cohesion are likewise similar: the project is intended for the purpose of advancing the HSDRRS
to the 100-year level of risk reduction. Storm surge protection measures are designed to protect the community from the catastrophic effects of flooding, preserving the physical integrity of the developed landscape that promotes patterns of social interchange. The proposed action would increase the level of community cohesion since the entire project area is within the HSDRRS and, as a result, would benefit from its advancement.

Additionally, no feature of the construction plan would have a direct, long-term, adverse impact on community cohesion.

*Alternative 2 – Algiers Gate*

Since this alternative provides less reliable storm surge reduction, its effects on community cohesion are not as assured as under the proposed action. However, any alternative that provides storm surge protection would increase the level of community cohesion by protecting the community from the catastrophic effects of flooding, thus preserving the physical integrity of the developed landscape that promotes patterns of social interchange. Additionally, no feature of the construction plan would have a direct, long-term, adverse impact on community cohesion.

*Alternative 3 – Parallel Protection*

This alternative would have negative impacts on community cohesion. The raising of levees along the Algiers Canal would require the acquisition of addition rights-of-way, and 600 residential units fronting the canal have the potential to be directly impacted. This would likely decrease the level of community cohesion in the neighborhoods in the vicinity of the construction area. However, the overall effect of the project would be an increase in community cohesion, since the project would advance the HSDRRS providing flood risk reduction to the Greater New Orleans area.

Since this alternative would provide less reliable storm surge reduction, its effects on community cohesion are not as assured as under the proposed action. However, any alternative that provides storm surge protection would increase the level of community cohesion by protecting the community from the catastrophic effects of flooding and by preserving the physical integrity of the developed landscape that promotes patterns of social interchange.

### 3.4 ENVIRONMENTAL JUSTICE

#### 3.4.1 General

The Environmental Justice (EJ) input has been developed per requirements of the following:

- "Department of Defense's Strategy on Environmental Justice" (March 24, 1995).

In accordance with these directives, EJ analysis identifies and addresses, as appropriate, disproportionately high, and adverse human health or environmental effects of the IER project on minority and low-income populations. The methodology to accomplish this includes identifying low-income and minority populations within the study area using up to date economic statistics, aerial photographs, the 2000 Census, Environmental Systems Research Institute (ESRI) estimates, as well as conducting community outreach activities such as small neighborhood focus meetings.
For purposes of analyzing disproportionate impacts to minority and/or low income population, the smallest political unit(s) containing an EJ project area is/are considered the reference community of comparison, whose population is therefore considered the reference population for comparison purposes. Disproportionate impact is determined to occur when the percent minority and/or percent low income population in a EJ project area are greater than those in the reference community. Sources explaining this rationale in detail are listed in the References section of this document.

The sources for the data used in the analysis include the 2000 U.S. Census and estimates from Environmental Systems Research Institute, Inc. (ESRI). Despite the 2000 U.S. Census being eight years old, it serves as a logical baseline of information for the following reasons:

- Census 2000 data is the most accurate source of data available due to the sample size of the Census decennial surveys. With one of every six households surveyed, the margin of error is negligible.
- The Census reports data at a much smaller geographic level than other survey sources, providing a more defined and versatile option for data reporting.
- Census information sheds light upon the demographic and economic framework of the area pre-Hurricane Katrina. By accounting for the absent population, the analysis does not exclude potentially low income and minority families that wish to return home.

Due to the considerable impact of Hurricane Katrina upon the New Orleans metro area, and the likely shift in demographics and income, the 2000 Census data is supplemented with more current data, including 2008 estimates and 2013 projections provided by ESRI.

3.4.2 Existing Conditions

For purposes of environmental justice analysis, all Census Block Groups within a one-mile radius of the IER 12 footprint, excluding Census Blocks within St. Bernard Parish, are defined as the IER 12 EJ project area. This IER 12 EJ project area is located along the Intracoastal Waterway that spans from the Mississippi River to the Harvey Canal, on the West Bank of Orleans, Jefferson and Plaquemines Parishes. It abuts several communities, including the Old Aurora, English Turn, and Tall Timbers/Brechtel neighborhoods in New Orleans, and areas of Harvey and Gretna in Jefferson Parish.

The large collection of neighborhoods abutting IER 12, taken together, are very diverse. A significant proportion of New Orleans’ Asian population (most notably, the Vietnamese population) resides within the IER 12 EJ project Area. The IER 12 EJ project area contains a large number of African Americans as well. Minorities comprise a bare majority of the area’s population. Our Lady of Holy Cross College, Timberlane Country Club, Stonebridge Golf Course, and the Harvey Canal are significant landmarks in the area.

The housing stock is mostly modern ranch homes and multi-family garden apartments. Many of the homes in proximity to the IER # 12 project footprint are upscale homes within gated communities.

Per the U.S. Census data, the IER 12 EJ project area was a minority, non-low income community in 2000. According to ESRI estimates, the low-income population decreased and the minority population increased slightly from 2000 to 2008 in this area. Therefore, the IER # 12 EJ project area continues to be a minority, non-low income community. A summary of this data is provided below and detailed data sets are provided at the conclusion of this section.
Table 15. Summary Demographic Data

<table>
<thead>
<tr>
<th></th>
<th>IER 12 EJ Project Area</th>
<th>Orleans, Plaquemines and Jefferson Parishes</th>
<th>Louisiana</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage</td>
<td>Number</td>
</tr>
<tr>
<td>Minority Population, 2000</td>
<td>41,031</td>
<td>53.0%</td>
<td>524,791</td>
</tr>
<tr>
<td>Estimated Minority Population, 2008</td>
<td>47,522</td>
<td>56.7%</td>
<td>399,738</td>
</tr>
<tr>
<td>Low Income Population, 2000</td>
<td>9,572</td>
<td>12.5%</td>
<td>197,186</td>
</tr>
<tr>
<td>*Estimated Low Income Population, 2008</td>
<td>2,925</td>
<td>10.6%</td>
<td>56,567</td>
</tr>
</tbody>
</table>

*Note: 2008 does not use the equivalent definition for "low income" due to the limited information available in 2008 at the Block Group level. In 2000, the definition is equivalent to all populations living below the poverty line, whereas in 2008, the definition uses all households earning less than $15,000 per year.

Orleans, Jefferson, and Plaquemines Parishes are considered the reference communities for disproportionate impact analysis. This is reflected in the data in the summary table above as well as in the detailed data sets presented at the conclusion of this document. The 2000 census data is utilized as the primary deciding variable per data accuracy and reliability as described above. The 2008 estimates are utilized for reference purposes only. Maps depicting low income and minority Block Groups in 2000 and 2007, respectively, in the IER #12 EJ project area have been prepared and are available for review.

3.4.3 Analysis of Environmental Justice Impacts

3.4.3.1 Environmental Justice Impact – No Action Alternative

With the no action alternative, the proposed 100-year level of risk reduction construction would not occur, although construction would occur to build the HSDRRS system to previously authorized level of risk reduction. The resulting level of risk reduction would not protect against the 100-year flood or storm surge events, thus continuing the potential occurrence of negative impacts affecting property, public safety, and local economic stability from 100-year storm surge events in the IER 12 EJ project area. Construction for previously authorized level of risk reduction are planned so that major impacts are avoided, e.g. installing floodwalls in lieu of levees in locations where space is limited. No structural improvement alignments would be shifted and no community is excluded from the HSDRRS that was not already within the previously authorized project area. No other public safety or environmental impacts would occur in the IER 12 EJ project area that has not already been evaluated for the existing, authorized projects.

The status quo for this area is the absence of 100-year level of risk reduction. The no action alternative leaves the status quo intact. Therefore, the no action alternative would not exert any impact on the IER 12 EJ project area. Thus, no direct, indirect or cumulative adverse
disproportionate impacts to minority and/or low income population would result from the no action alternative.

3.4.3.2 Environmental Justice Impact – Proposed Action (West Closure Complex/WCC)

Following are the demographic and land use characteristics along the various levee reaches:

- The "western" section (south of Old Estelle Pump Station) is located on uninhabited land. No minority and/or low income community is located within 1 mile of this section. Construction in this section would require additional right-of-way on the protected side, which would mean taking of property. This taking would occur in 'unpopulated' area per Census data.

- The "northern" section (Old Estelle Pump Station eastwards to Harvey Canal) is located on uninhabited land. A minority community is located within one mile (to the North) of this section. Construction in this section would occur within existing right-of-way on the protected side, which would mean no property would be taken.

- The "eastern" section (southwards from Harvey Canal, cross GIWW, end just north of Hero Canal) runs along uninhabited land. Constructing of new levee east of GIWW is planned south of human establishments along East Bayou Road. A low income community is located within 1 mile (to the East) of this section. Construction in this section would require additional right-of-way on the protected side, which would mean taking of property. The taking would occur in a low income, non-minority area.

Direct Impacts
Direct adverse impact from the proposed action would include taking of low income property to the east of GIWW ("eastern" section) where East Bayou Road would be relocated to make space available for a new levee. Direct adverse impact from construction activities such as air quality, noise, traffic, etc. would be exerted in the "northern" and "eastern" sections on minority community and low income community, respectively, within 1 mile of project area. However, all of these direct adverse impacts would occur on a minority and/or low-income population whose percentage presence is lower in the IER # 12 EJ project area than in the reference community as shown in the summary table previously. Therefore, adverse human health and environmental impacts are not disproportionate to minority and/or low income population. Thus, the proposed action would not exert any direct adverse environmental justice impact.

Indirect Impacts
This proposed action would enhance Federal hurricane protection in an area with existing lower level protection. Indirect impacts from this action may include residential and commercial growth within the protected area. This indirect impact would not be anticipated to exert disproportionately high indirect, adverse human health and environmental impacts on minority and/or low-income communities from the proposed action.

Cumulative Impacts
The proposed action would enhance Federal hurricane protection in the project via construction of features in the general vicinity of existing hurricane protection features. Therefore, no incremental adverse impact is anticipated from the completion of this proposed action. Thus, disproportionate adverse cumulative human health and environmental impacts are not anticipated on minority and/or low income communities from the proposed action.
3.4.3.3 Environmental Justice Impact – Alternative 1 (Southern Closure Option/GIWW-A)

Following are the demographic and land use characteristics along the various levee reaches, including the detention basin:

- The levee on the west side of Harvey Canal is located on uninhabited land. Minority and/or low income communities are located within 1 mile of this section.
- The levee on the east side of Harvey Canal is located along a commercial/heavy industrial area. A minority community is located within 1 mile of this section.
- The levee on the north side of Algiers canal runs along commercial/heavy industrial area in its western half (west of Hwy. 23) and along residential areas in its eastern half (east of Hwy. 23). These residential areas are minority and/or low income in character.
- The levee on the south side of Algiers Canal runs through uninhabited area in its western half, along a residential area immediately west of Hwy. 23, and along a golf club and uninhabited area to the east of Hwy. 23. This residential area is not minority and/or low income in character, although low income community is located within 1 mile (to the East) of this section.
- The levee along the eastern side of GIWW is located mostly along uninhabited area. Low income community is located within 1 mile (to the East) of this section.

**Direct Impacts**
The specific tie-in locations of the GIWW-A alternative project elements would provide 100-year level of risk reduction to the study area without raising the parallel protection above that currently authorized along the Harvey and Algiers Canals. Therefore, construction in the above sections would not require any additional right-of-way, which would mean no property would be taken, and no direct adverse impact would occur. Direct adverse impact from construction activities such as air quality, noise, traffic, etc. would occur on minority and low income communities within one mile of project area. However, all of these direct adverse impacts would occur on a minority and/or low-income population whose percentage presence is lower in the IER # 12 EJ project area than in the reference community as shown in the summary table previously. Therefore, adverse human health and environmental impacts are not disproportionate to minority and/or low income population. Thus, construction of the GIWW-A alternative would not exert any direct adverse environmental justice impact.

**Indirect Impacts**
Construction of the GIWW-A alternative would enhance Federal hurricane protection in an area with existing lower level protection. Indirect impacts from this action may include residential and commercial growth within the protected area. This indirect impact would not be anticipated to exert disproportionately high indirect, adverse human health and environmental impacts on minority and/or low-income communities from construction of the GIWW-A alternative.

**Cumulative Impacts**
Construction of the GIWW-A alternative would enhance Federal hurricane protection in the project via construction of features in the general vicinity of existing hurricane protection features. Therefore, no incremental adverse impact is anticipated from the completion of this alternative. Thus, disproportionate adverse cumulative human health and environmental impacts are not anticipated on minority and/or low income communities from construction of the GIWW-A alternative.
3.4.3.4 Environmental Justice Impact – Alternative 2 (Algiers Gate/AG)

Following are the demographic and land use characteristics along the various levee reaches:

- The levee on the west side of the Harvey Canal is located on uninhabited land. Minority and/or low income communities are located within 1 mile of this section.
- Floodwall on the east side of Harvey Canal is located along a commercial/heavy industrial area. Minority and low income communities are located within 1 mile of this section.
- The levee along the eastern side of GIWW is located mostly along uninhabited area. Low income community is located within one mile (to the East) of this section.

Direct Impacts

Enlargement of levee to the west of Harvey Canal would require additional right-of-way and taking of property in uninhabited area. Construction of floodwall to the east of Harvey Canal would not require any taking of property. Enlargement of levee along the eastern side of the GIWW would require taking of property in low income area, which is a direct adverse impact. Direct adverse impact from construction activities such as air quality, noise, traffic, etc. would occur on minority and low income communities within one mile of project area. However, all of the above direct adverse impacts would occur on a minority and/or low income population whose percentage presence is lower in the IER # 12 EJ project area than in the reference community as shown in the summary table previously. Therefore, adverse human health and environmental impacts are not disproportionate to minority and/or low income population. Thus, construction of the Algiers gate alternative would not exert any direct adverse environmental justice impact.

Indirect Impacts

Construction of the Algiers gate alternative would enhance Federal hurricane protection in an area with existing lower level protection. Indirect impacts from this action may include residential and commercial growth within the protected area. This indirect impact would not be anticipated to exert disproportionately high indirect, adverse human health and environmental impacts on minority and/or low income communities from construction of the Algiers gate alternative.

Cumulative Impacts

Construction of the Algiers gate alternative would enhance Federal hurricane protection in the project via construction of features in the general vicinity of existing hurricane protection features. Therefore, no incremental adverse impact would be anticipated from the completion of this alternative. Thus, disproportionate adverse cumulative human health and environmental impacts are not anticipated on minority and/or low income communities from construction of the Algiers gate alternative.

3.4.3.5 Environmental Justice Impact – Alternative 3 (Parallel Protection/PP)

Following are the demographic and land use characteristics along the various levee reaches:

- The levees along V-Line Levee, Estelle Outfall Canal and west bank of Harvey Canal are located on uninhabited land. Minority and/or low income communities are located within 1 mile of this section.
- The levee on the east side of Harvey Canal is located along a commercial/heavy industrial area. Minority communities are located within one mile of this section.
- The levee on the north side of Algiers Canal runs along commercial/heavy industrial area in its western half (west of Hwy. 23) and along residential areas in its eastern half (east of Hwy. 23). These residential areas are minority and/or low income in character.
The levee on the south side of Algiers Canal runs through uninhabited area in its western half, along a residential area immediately west of Hwy. 23, and along a golf club and uninhabited area to the east of Hwy. 23. This residential area is not minority and/or low income in character, although low income community is located within one mile (to the East) of this section.

The levee along the eastern side of GIWW is located mostly along uninhabited area. Low income community is located within 1 mile (to the East) of this section.

**Direct Impacts**
The parallel protection alternative has high potential to displace residents. Approximately 600 housing units would be displaced by this alternative if levee improvements are used and less than 600 if floodwalls are used in critical locations. Many of these takings and relocations would create direct adverse impacts on minority and/or low income areas. Direct adverse impact from construction activities such as air quality, noise, traffic, etc. would occur on minority and low income communities within 1 mile of project area. However, all of the above direct adverse impacts would occur on a minority and/or low-income population whose percentage presence is lower in the IER # 12 EJ project area than in the reference community as shown in the summary table previously. Therefore, adverse human health and environmental impacts are not disproportionate to minority and/or low income population. Thus, construction of the Algiers gate alternative would not exert any direct adverse environmental justice impact.

**Indirect Impacts**
Construction of the parallel protection alternative would enhance Federal hurricane protection in an area with existing lower level protection. Indirect impacts from this action may include residential and commercial growth within the protected area. This indirect impact would not be anticipated to exert disproportionately high indirect, adverse human health and environmental impacts on minority and/or low-income communities from construction of the parallel protection alternative.

**Cumulative Impacts**
Construction of the parallel protection alternative would enhance Federal hurricane protection in the project via construction of features in the general vicinity of existing hurricane protection features. However, many takings and relocations would occur in minority and/or low income areas, which would exert incremental adverse impact from the completion of this alternative. However, this incremental adverse impact would occur on a minority and/or low-income population whose percentage presence is lower in the IER # 12 EJ project area than in the reference community as shown in the summary table previously. Thus, disproportionate adverse cumulative human health and environmental impacts would not be anticipated on minority and/or low income communities from construction of the parallel protection alternative.
3.5 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

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

An American Society of Testing Materials (ASTM) E 1527-05 Phase I Environmental Site Assessment (ESA) was completed for the project area. Copies of the Phase I ESA reports will be maintained on file at the CEMVN and are incorporated herein by reference. The reports can also be found at www.nolaenvironmental.gov. The Phase I ESAs documented numerous Recognized Environmental Conditions (RECs) for the study area (appendix M). Most of the RECs found in the study area are located along the Harvey and Algiers Canals in areas of commercial industry.

The Harvey Canal and Algiers Canal areas have been heavily industrialized since World War II. There is widespread low-level contamination of soil throughout the area, and it is often better not to disturb such material; it poses less risk when left in place than when it is disturbed. For this reason, the Algiers Canal sediment is being tested for contamination in the proposed areas for dredging as well as other sample sites. The dredge plan, disposal plan, and testing results for Algiers Canal can be found in section 2.3 and in appendix L.

Unlike the parallel protection or Algiers gate alternatives, the proposed action avoids the most problem-prone areas, and decreases the probability of encountering HTRW during the course of construction. In contrast to the other alternatives, within the proposed action footprint the probability of encountering a REC is very low. The proposed action is in a relatively uninhabited location. The project footprint is bordered by man-made canals, natural waterways, pasture, low-density residential areas, and forested habitat.

If a REC cannot be avoided, due to construction requirements, the Coastal Protection and Restoration Authority, acting as the non-Federal sponsor for this project, may further investigate the REC to confirm the presence or absence of contaminants, and may recommend actions to avoid, sequester, or remove possible contaminants. Federal, state, or local coordination may be required. Because the CEMVN plans to avoid RECs, the probability of encountering HTRW in the project area is low. Copies of the reports are available by requesting them from the CEMVN, or accessing them at www.nolaenvironmental.gov.
CHAPTER 4  CUMULATIVE IMPACTS

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. A cumulative impact is defined as the “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR §1508.7).” Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. These actions include on- or off-site projects conducted by government agencies, businesses, or individuals that are within the spatial and temporal boundaries of the actions that are considered in this IER.

As indicated previously, in addition to this IER, the CEMVN is preparing a draft CED that will describe the work completed and the work remaining to be constructed. The purpose of the draft CED will be to document the work completed by the USACE on a system-wide scale. The draft CED will describe the integration of individual IERs into a systematic planning effort. Additionally, the draft CED will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review. Overall cumulative impacts and future operations and maintenance requirements will also be included. The discussion provided below describes an overview of other actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed.

4.1  STUDY METHODS

Cumulative impact analyses require defining the area of impact, the range of activities that are “cumulative,” and a time period. Generally, the following guiding principles have been used to establish cumulative impacts for the proposed action:

- Proximity – within the same general land and hydrological area.
- Effect on resources – other actions will affect the same general resources as the proposed action.
- Timeliness – the actions will likely occur within the selected time period.
- Progression – the proposed action and other actions considered could lead to other actions (land development) that could affect the same resources.
- Reasonableness – are future actions likely to occur and reasonably foreseeable.

The HSDRRS is divided into three USACE authorized projects: the West Bank and Vicinity (WBV), the Lake Pontchartrain and Vicinity (LPV), and the New Orleans to Venice projects. Only the WBV actions are included in this cumulative impact consideration since the others are removed geographical and are hydrologically disconnected from the WBV project. A total of approximately 250,000 people in metro New Orleans live in the protected area west of the Mississippi River and seven projects are included. In addition, cumulative effects on urban development are expected in the vicinity of the seven federal actions and may include improvements to the transportation network, medical facilities, residential development and economic growth in the area. These will be evaluated where known or are reasonably foreseeable. Cumulative effects are projected for a 50-year period, from 2007 through 2057 (USACE 2007).
In addition to this proposed action, CEMVN actions that could have cumulative impact implications and are considered and addressed include the following WBV hurricane protection projects:

- The Hero Canal Project
- Harvey to Westwego Levee
- Lake Cataouatche Levee
- Western Terminal Levee
- Company Canal Floodwall
- Borrow Areas, Multiple Sites
- West Bank Vicinity Mitigation Pools

The CEMVN anticipates generating and implementing two large-scale IERs to provide for mitigation for impacts caused by the improvements to the HSDRRS for metropolitan New Orleans. These will be a compilation of the mitigation found in the individual IERs, including IER # 12.

4.2 PROJECTS WITH CUMULATIVE IMPACT POTENTIAL

Rebuilding efforts as a result of Hurricane Katrina are taking place throughout southeast Louisiana and along the Mississippi and Alabama Gulf Coast. The Insurance Information Institute (III) has estimated that the total insured losses from Hurricane Katrina were $40.6 billion in six states, and in Louisiana the insured losses are estimated at $25.3 billion (III 2007); much of those insured losses would be a component of the regional rebuilding effort. Although the full extent of construction in Orleans, Jefferson, and Plaquemines Parishes and throughout the Gulf Coast over the next 5 years to 10 years is unknown, a large-scale rebuilding effort is underway.

The Water Resources Development Act of 2007 (WRDA 07) became law in November 2007. WRDA 07 included authorization of the LPV and WBV HSDRRS projects to raise risk reduction levels to 100-year levels, as well as coastal restoration projects, Morganza-to-the-Gulf hurricane protection, hurricane protection in Jean Lafitte and lower Jefferson Parish, a study of coastal area damage that could be attributable to the USACE of Engineers, the MRGO deep-draft deauthorization, an EIS for the IHNC lock, and the formation of a Coastal Louisiana Ecosystem Protection and Restoration Task Force (Alpert 2007). The majority of these projects or studies still require specific appropriations. The WRDA does not guarantee financing of these projects, but does allow Congress to allocate money for them in future spending bills (Alpert 2007). These additional projects could contribute to resource impacts, either adversely or with long-term positive impacts.

As indicated previously, in addition to this IER, the CEMVN is preparing a draft CED that will describe the work completed and the work remaining to be constructed. The purpose of the draft CED will be to document the work completed by the USACE on a system-wide scale. The draft CED will describe the integration of individual IERs into a systematic planning effort. Overall cumulative impacts, a finalized mitigation plan, and future operations and maintenance requirements will also be included. The following discussion describes an overview of other actions, projects, and occurrences that may contribute to the cumulative impacts previously discussed.

Cumulative impacts include past, present, and future actions.
4.2.1 CEMVN HSDRRS Projects

- **IER # 13** – Hero Canal and Eastern Terminus, Plaquemines Parish, LA - Includes improvements to the Hero Canal Levee, running from the GIWW to the community of Oakville; with seven alternatives for protecting Oakville running from the Hero Canal to the Mississippi River Levee. The project is likely to incorporate new levee and floodwalls. Existing flood protection will generally be raised. The proposed action would be based on the NEPA environmental documentation and the public coordination process.

- **IER # 14** - Harvey to Westwego Levee, Jefferson Parish, LA - Includes improvements extending from the old Westwego Pumping Station to the line levee east of Vertex (near the Estelle Pump Station). It will incorporate approximately 12 miles of levee, construction of 7,013 linear ft of floodwalls, and modifications to three pump stations.

- **IER # 15** - WBV, Lake Cataoutache Levee, Jefferson Parish, LA - Includes improvements extending from Highway 90 to near Segnette State Park and incorporates approximately 8 miles of levee and fronting protection and modifications for one pump station.

- **IER # 16** – Western Terminus Levee, Jefferson Parish, LA - Includes improvements extending to connect to IER # 17 near Segnette State Park. It would incorporate construction of a new levee section to complete the western terminus of the WBV Hurricane Storm Damage Risk Reduction System.

- **IER # 17** – Company Canal Floodwall, Jefferson Parish, LA - Includes improvements extending from near the Company Canal to Segnette State Park, and would incorporate approximately 133,442 linear ft of floodwalls and fronting protection and modifications to two pump stations.

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

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

- **IER # 22** - 30 May 2008, the CEMVN signed a Decision Record on IER # 22 entitled “Government Furnished Borrow Material # 2, Jefferson and Plaquemines Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE while excavating borrow areas for use in construction of the HSDRRS.

- **IER # 23** - 5 May 2008, the CEMVN signed a Decision Record on IER # 23 entitled “Pre-Approved Contractor Furnished Borrow Material # 2, St. Bernard, St. Charles, Plaquemines Parishes, Louisiana, and Hancock County, Mississippi.” The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors while excavating borrow areas for use in construction of the HSDRRS.
• IER # 25 - Government Furnished Borrow Material #3, Orleans, Jefferson, and Plaquemines Parishes, Louisiana - evaluates the potential impacts associated with the actions taken as a result of excavating borrow areas for use in construction of the HSDRRS.

• IER # 26 - Pre-Approved Contractor Furnished Borrow Material, Jefferson, Plaquemines and St. John Parishes, Louisiana, and Hancock County, Mississippi – evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS

4.2.2 Additional Previously Authorized Projects - Jefferson Parish

The following projects had been authorized prior to Hurricane Katrina or are in the planning stage as hurricane recovery projects and are located in Jefferson Parish.

• Sector-Gate/Cousins Pump Station - A 2,000 cfs pumping station is being constructed to direct interior drainage to a point south of the Lapalco flood gate. The Lapalco flood gate has been constructed in the Harvey Canal to halt potential flood waters from encroaching into the canal north of Lapalco Boulevard.

• Harvey Canal New Estelle to Cousins - An earthen level segment approximately 2.6 miles long will be built to + 10 ft.

• Old to New Estelle Pump Station Floodwall - The existing floodwall will be reconstructed as an earthen levee to an elevation of approximately 10 ft.

• V-Line East of the Vertex - This earthen levee reach will be raised to the authorized elevation of 10-ft along this 4.0 mile segment.

• Orleans Village to Highway 45 - This 3.4 mile earthen levee segment is being raised to the authorized elevation of 10 ft by adding about 1 to 1½ ft of earthen material from a levee district borrow pit.

• Westwego Floodwall - This 2,800 ft floodwall has been determined to be deficient and will be replaced or strengthened at a later date. Interim measures include a seepage cut-off wall at the two gas pipelines.

• Company Canal Floodwall - Approximately 1,600 ft of this concrete capped I-wall has been determined deficient. The project is currently under planning as a navigable gate and ancillary pump station to handle interior drainage.

• Bayou Segnette State Park - The flood protection along this 1.5 mile segment of I-wall/earthen levee has experienced separation at the floodgate transitions. Interim protection measures have been completed that will strengthen the system until permanent corrections can be installed.

• Lake Cataouatche Pump Station - Approximately 3.9 miles of the earthen levee from the pump station to Bayou Segnette State Park is under construction to raise the elevation to authorized levels. The levee district performed emergency repair work in 2005 and the USACE awarded a new contract in 2007.

• Pump Station to Highway 90 - Approximately 2.7 miles of earthen levee from the pump station to Highway 90 is currently being raised to authorized elevations. Approximately
3,500 ft of earthen levee from Lake Cataouatche Station 160+00 to Highway 90 will be stabilized by the installation of a tandem culvert to adjacent to the levee.

Recovery Projects

- Construct the Churchill Technology and Business Park.
- Stabilize Lafitte/Barataria shoreline.
- Dredge Barataria Basin Landbridge.
- Improvements to the Mississippi River Levee

4.2.3 Additional Previously Authorized Projects - Orleans Parish (South of Mississippi River)

The following projects had been authorized prior to Hurricane Katrina or are in the planning stage as hurricane recovery projects and are located in Orleans Parish, south of the Mississippi River.

- Algiers Canal - Fronting Protection and Modifications - This project involves the installation of fronting protection for the pumping station and modification to the existing facilities upgrade them to the 100-year level of risk reduction. The fronting protection will include the installation of sluice gates and modifications will include the construction of higher floodwalls at the discharge point.

Recovery Projects

- Restore wetlands through improved wastewater treatment.
- Stabilize New Orleans East Landbridge Highway 90 Bank.
- Relocate and expand Port of New Orleans terminals.
- MS River work

4.2.4 Additional Previously Authorized Projects - Plaquemines Parish

The following projects had been authorized prior to Hurricane Katrina or are in the planning stage as recovery projects and are located in Plaquemines Parish. The Plaquemines Parish includes long, narrow strips of land on both sides of the Mississippi River between New Orleans and the Gulf of Mexico. The parish has a total of 169 miles of levees and floodwalls and 18 pump stations. A total of 150 miles of levees and floodwalls were damaged along with 18 pump stations. Currently there are 26 authorized projects to repair and rebuild levees and floodwalls damaged by Hurricane Katrina in Plaquemines Parish.

These include:

- New Orleans to Venice East Bank - Levee repairs
- Mississippi River Levee East Bank – Levee repairs
- Mississippi River Levee, City Price to Port Sulphur – Levee repairs
- Mississippi River Levee, Port Sulphur to Fort Jackson – Levee and floodwall repairs
- Mississippi River Levee, Fort Jackson to Venice – Levee repairs
- New Orleans to Venice Levee, Port Sulphur Area – Levee enlargement
- New Orleans to Venice Levee, Empire/Buras Area – Levee enlargement
- New Orleans to Venice Levee, Empire Floodgate – Floodgate repairs
- New Orleans to Venice Back Levee – Levee repairs
- New Orleans to Venice Levee, Buras Area – Levee enlargement
- New Orleans to Venice Back Levee – Levee repairs
- New Orleans to Venice Levee, West Back Levee – Floodwall repairs
- New Orleans to Venice Levee, West Back Levee – Scour and miscellaneous repairs
• Mississippi River Levee, Woodland – Levee repairs
• New Orleans to Venice Levee, Port Sulphur Area – Levee enlargement
• Mississippi River Levee, West Pointe A La Hache – Levee repairs
• Mississippi River Levee – Slope pavement repair Recovery Projects
• Plaquemines Parish non-Federal Levee
• Enhance LA 23 Highway for flood protection.
• Develop mixed-use town center in Belle Chasse.
• Extend Peters Road.
• Replace Belle Chasse Highway (LA 23) Tunnel

*More borrow sites are being investigated.

4.2.5 Habitat Restoration, Stabilization, and Creation Projects

4.2.5.1 Coastal Impact Assistance Program

The Energy Policy Act of 2005 (Public Law 109-58) was signed into law by President Bush on 8 August 2005. Section 384 of the Act establishes the Coastal Impact Assistance Program (CIAP) which authorizes funds to be distributed to Outer Continental Shelf (OCS) oil and gas producing states to mitigate the impacts of OCS oil and gas activities. Pursuant to the Act, a producing state or coastal political subdivision can use all amounts received for projects and activities for the conservation, protection, or restoration of coastal areas, including wetlands and for mitigation of damage to fish, wildlife, or natural resources. Amounts awarded under the provisions of the Act can also be used to develop a comprehensive conservation management plan.

The state worked with the coastal parishes to prepare a draft Louisiana Coastal Impact Assistance Plan that identifies restoration, conservation, and infrastructure projects to be supported by the State and each coastal parish for the four years of CIAP funding. This plan included projects for the enhanced management of Mississippi River water and sediment, protection and restoration of critical land bridges, barrier shoreline restoration and protection, interior shoreline protection, marsh creation with dredged material and a coastal forest conservation initiative.

4.2.5.2 State Coastal Planning and Restoration

The State of Louisiana has initiated a series of programs to offset the catastrophic loss of coastal wetlands. The Louisiana State and Local Coastal Resources Management Act was passed in 1978 to regulate the developmental activities that affect wetland loss. The resulting Louisiana Coastal Resources Program became a federally approved coastal zone management program in 1980. The Louisiana Legislature passed Act 6 in 1989 (R.S.49:213-214), and a subsequent constitutional amendment which created the Coastal Restoration Division within the LADNR, as well as the Wetlands Conservation and Restoration Authority (Wetlands Authority).

In the First Extraordinary Session, 2005 of the Louisiana Legislature, which ended on 22 November 2005, Senate Bill No. 71 (Act No. 8), which provided for the new 16-member panel, called the Coastal Protection and Restoration Authority, which is a broader version of the previous board that was named the Wetlands Conservation and Restoration Authority. In addition, Senate Bill No. 71 also provided for the establishment of the Coastal Protection and Restoration Fund, previously named the Wetlands Conservation and Restoration Fund. The Fund is used for coastal wetlands conservation, coastal restoration, hurricane and storm damage risk reduction, and infrastructure impacted by coastal wetland losses.
The Louisiana Coastal Protection and Restoration (LACPR) project, a joint project between the Coastal Protection and Restoration Authority and the CEMVN, was established to identify risk reduction measures that can be integrated to form a system that will provide enhanced protection of coastal communities and infrastructure, as well as for restoration of coastal ecosystems. The project will address the full range of flood control, coastal restoration, and hurricane and storm damage risk reduction measures available, including those needed to provide comprehensive Category 5-Hurricane protection. This project is a study that will produce a technical document with recommendations related to enhanced hurricane protection and restoration of coastal ecosystems.

Though congress authorized the USACE to conduct a study to be known as Louisiana Coastal Protection and Restoration (LACPR) to determine viable projects to be considered for providing a higher level of risk reduction (Category 5) and coastal restoration for southern Louisiana, the USACE is not authorized by Congress to incorporate adaptations for LACPR when planning and designing the 1 percent risk reduction projects. However, the USACE is carefully considering the impacts that could occur if Congress authorized a larger project.

Of the alternatives investigated to reduce risk during a 100-year storm event, the GIWW WCC alternative (the proposed action) has the greatest adaptability to accommodate an enlargement. The USACE proposes that the upgrade to the floodwall and earthen berm be constructed via water access as currently proposed. In addition, all upgrades to levee and floodwall stretches that border the eastern and northern side of the 404 (c) area would be shifted to the protected side of the risk reduction system and would not impact the 404 (c) area. It is also not likely that a Category 5 upgrade to the risk reduction system would require movement of the navigation gate(s) structure.

The GIWW A alternative which would bisect the 404 (c) area would require additional construction impacts to cross the 404 (c) area, potentially compounding the ecological and hydrologic impacts to the area.

If the Algiers gate alternative were constructed it would require further upgrades to the Harvey Canal and levees west of Harvey Canal, which would result in more business relocations, leaves Harvey Canal business on the flood side of the protection system, and has more direct environmental impacts. This would pose serious design considerations and costs given the length of the system (45,720 LF or 9 miles), the instability of the western side of the Harvey Canal, and the amount of upgrades to floodgates and pump stations required to reach the prescribed elevations.

The parallel protection alternative poses even more serious design and cost issues. Upgrading approximately 27 miles of the risk reduction system would include the upgrades and impacts listed above for the Harvey Canal and upgrades for all of the levees, floodwalls, and floodgates along the Algiers Canal, and the Belle Chasse tunnel. If upgrading the current alignment along the Algiers and Harvey canals for the 1 percent storm risk reduction system requires the relocation of approximately 700 people and 55 businesses, upgrading the system for a Category 5 system would potentially directly impact 1,000s of people and hundreds of businesses.

The LADNR Office of Coastal Restoration and Management is responsible for the maintenance and protection of the state's coastal wetlands. The Coastal Restoration and Engineering Divisions are responsible for the construction of projects aimed at creating, protecting and restoring the state's wetlands. These divisions are divided further and provide ongoing management and restoration of resources in the Louisiana coastal zone. The LADNR is involved in several major programs that are working to save Louisiana’s coastal wetlands. These programs include the Breaux Act, Coast 2050, the Louisiana Coastal Area (LCA) Ecosystem.
Restoration Plan, and the Coastal Impact Assistance Plan of 2005. Other programs include state restoration projects, Parish Coastal Wetlands Restoration Program, Vegetation Plantings, Section 204/1135, and WRDA.

The LCA Ecosystem Restoration Study (2004) was a comprehensive report that identified the most critical human and natural ecological needs of the coastal area. The study presented and evaluated conceptual alternatives for meeting the most critical needs; identified the kinds of restoration features that could be implemented in the near-term (within 5 years to 10 years) that address the most critical needs, and proposed to address these needs through features that would provide the highest return in net benefits per dollar of cost. The study also established priorities among the identified near-term restoration features, described a process by which the identified priority near-term restoration features could be developed, approved, and implemented, identified the key scientific uncertainties and engineering challenges facing the effort to protect and restore the ecosystem, and proposed a strategy for resolving them and identified, assessed and recommended feasibility studies that should be undertaken within the next 5 years to 10 years to fully explore other potentially promising large-scale and long-term restoration concepts. The study concluded by presenting a strategy for addressing the long-term needs of coastal Louisiana restoration beyond the near-term focus of the LCA Plan.

4.3 SUMMARY OF CUMULATIVE IMPACTS

The cumulative impact analysis is meant to establish a general magnitude and extent of cumulative impacts resulting from the proposed action in combination with other anticipated Federal, state and local public and private actions over the next 50 years. Construction of levees, gates, and pump stations for the HSDRRS in the WBV could cause direct impacts to marsh, wetland, upland, hydrology, terrestrial habitats, and to wildlife. The magnitude and significance of cumulative impacts were evaluated by comparing the existing environment with the expected impacts of the proposed action when combined with the impacts of other proximate actions. Projects that occur within the greater New Orleans area, within the West Bank and Vicinity, and within the designated coastal zone for Louisiana were considered collectively (as appropriate) for the evaluation of cumulative impacts.

HSDRRS projects are currently in the construction, planning and design stages, and impacts from these component projects will be addressed in separate IERs. Construction of levees, gates, and onshore breakwaters throughout the region could cause direct wetland, upland, and terrestrial habitat loss. The beneficial use of dredged material for nearby wetlands could eventually offset some of the damages to wetlands from construction. However, construction damage as part of the 100-year hurricane and storm damage risk reduction projects to other quality habitats would be fully mitigated through formal mitigation planning.

Wetlands would be expected to show substantial cumulative impacts since much of the levee and floodwall work for the HSDRRS in the WBV could be expected in these land use areas. To resolve this issue, the USACE is generating mitigation IERs to serve all of the anticipated WBV work, with replacement wetlands expected to be placed in locations that best serve as wildlife habitat, and where hurricane surge can be positively affected.

The main hydrological impact from the HSDRRS on the WBV is that protected low-lying areas would experience reduced storm surge inundation, protecting life and property. Some temporary sedimentation could result during the construction period from fugitive sediments that escape the erosion and sedimentation control measures for each project. This sedimentation would be expected to be minor, and adjacent water quality should remain as it had been prior to project construction. No recognizable effect on salinity would be expected as water levels would remain as they are today.
and no large-scale flow diversions are anticipated.

Project feature augmentations for the Bayou aux Carpes CWA Section 404(c) area are being developed in conjunction with the NPS and the EPA. These augmentations would allow flows from nearby waterways into wetlands with minimal impact to existing natural channels. Depending on design and maintenance, project feature augmentations could improve existing habitat.

Impacts to wildlife and fisheries could occur because of construction activities, project feature augmentation work, and dredging but should return to pre-construction levels once those activities have ceased. The enhancements provided by the CEMVN could greatly benefit wetlands, wildlife, fisheries, and aquatic resources in the long-term.

Construction of these projects could cause temporary and localized decreases in air quality that would mainly result from the emissions of construction equipment during dredging and construction. However, these changes in air quality should return to pre-construction conditions shortly after construction completion and these changes in air quality would not be expected to change the areas attainment status.

Any impacts to utilities or community facilities would also be resolved upon completion of construction. Environmental Justice issues are protected by Executive Order 12898 and, while a number of minority areas could be impacted, such as areas near the Woodland Highway Bridge adjacent to the Algiers Canal, cumulative effects are not expected since efforts will be used to minimize impacts through the use of flood-walls in areas where urban impacts could occur.

Cumulative impacts to the human population in the WBV would not be expected to be permanent. However, temporary impacts would be expected from noise and air pollution associated with construction activity, and from detours, road closures and increased traffic that could occur almost continuously for several years while HSDRRS improvements in the WBV are underway. It would be expected that temporary impacts would return to pre-construction conditions shortly after construction is completed on the HSDRRS.

The proposed action would have cumulative beneficial impacts to socioeconomic resources in the New Orleans Metropolitan area. It is part of the ongoing Federal effort to reduce the threat to life, health, and property posed by flooding. The WBV project would be improved to provide additional hurricane, storm, and flood damage protection, reducing the threat of inundation of infrastructure due to severe tropical storm events. The combined effects from construction of the multiple projects underway and rebuilding the HSDRRS in the area would reduce flood risk and storm damage to residences, businesses, and other infrastructure from storm-induced and tidally-driven flood events and, thereby, would encourage recovery. Providing 100-year level of risk reduction within all reaches of the WBV allows for FEMA certification of that level of protection.

The proposed action would provide additional hurricane surge and flood damage reduction reducing the threat of inundation and providing a sense of security to residents. This would provide a benefit to all residents, regardless of income or race, increasing the feeling of well-being, providing optimism, reducing insurance rates, and allowing for redevelopment and development of the study area and region. It is expected that the accumulated projects would provide long-term and sustainable benefits to the communities within the WBV by reducing the risk of damage within flood-prone areas and by generating economic growth that could attract displaced residents and new workers, and encourage repopulation within metropolitan New Orleans.

The extent of private development that would add to cumulative impacts is difficult to anticipate...
due to the fluid investment situation brought about by Hurricane Katrina reclamation. Rebuilding efforts, including the region around the study area, are taking place throughout southeastern Louisiana, and along the Mississippi and Alabama Gulf Coast. In Louisiana, the Insurance Information Institute has estimated that the total insured losses from Hurricane Katrina are estimated at $25.3 billion (Insurance Information Institute 2007). Although it is unknown how much will affect the region of the proposed action, a large-scale effort is underway in Plaquemines, Jefferson, and Orleans Parishes. Replacement of insured losses will be a major component of regional growth over the next decade and beyond.

In conclusion, although there are many ongoing and planned projects that would similarly impact resources in the West Bank and Vicinity portion of Louisiana, most of the resulting impacts would be temporary. Those adverse impacts that would not be temporary in nature would be directly mitigated or would be indirectly mitigated by other projects in the region that would provide positive long-term impacts to the same resource (e.g., wetlands or EFH). Cumulative impacts to social and economic resources would not only be beneficial, but are considered essential.

There are no long-term HTRW cumulative impacts anticipated, since any HTRW issues encountered in any public or private projects would be expected to be addressed and resolved by the CPRA as they are encountered. No HTRW impacts are expected with the proposed action.

Table 16 shows the cumulative compensatory mitigation that would be completed by the CEMVN. This table will be updated as potential impacts are assessed in forthcoming IERs.

Cumulative impacts for the actions considered in all of the IERs will be incorporated into the CED.
### Table 16. HSDRRS Impacts and Compensatory Mitigation to be Completed

<table>
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<tr>
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<th>Non-wet BLH (acres)</th>
<th>Non-wet BLH AAHUs</th>
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</table>

* Impacts not related to Federal action – already mitigated for through the 404 program (Section 404 of the Clean Water Act [33 USC 1344]).
- Not applicable to the IER or number impacted is 0.

AAHU – average annual habitat unit, BLH – bottomland hardwood, CFBM – contractor-furnished borrow material, GFBM – government-furnished borrow material
CHAPTER 5 SELECTION RATIONALE

On the basis of the assessment of potential environmental impacts presented in this IER and the evaluation of project feasibility based on the engineering effectiveness, economic efficiency, and environmental and social acceptability criteria, the proposed action is selected and is environmentally preferred. None of the proposed actions preclude any future enhancements to the HSDRRS.

The CEQ regulations for implementing NEPA require that the Record of Decision (ROD) for an environmental impact statement specify "the alternative or alternatives which were considered to be environmentally preferable" (40 CFR §1505.2(b)). This alternative has generally been interpreted to be the alternative that would promote the national environmental policy as expressed in NEPA's Section 101 (CEQ's "Forty Most-Asked Questions," 46 Federal Register, 18026, March 23, 1981). Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. All the alternatives evaluated in this IER # 12 would meet the purpose and need (chapter 1 and 2).

The planning objective of this proposed action is to provide 100-year level of risk reduction for the GIWW, Harvey, and Algiers Canals project area. Another planning objective is to minimizing environmental impacts while providing improvements that generate the most engineeringly feasible reduction in risk to the residents, communities, commercial interest, and industrial enterprises in and near the study area.

The WCC alternative was selected for construction because it simultaneously (1) minimizes impacts to residential, commercial, and industrial properties with no Environmental Justice issues, (2) minimizes the amount of storm frontage decreasing risk while improving reliability, and (3) minimizes overall environmental impacts (specifically to the EPA designated Bayou aux Carpes CWA Section 404(c) area) as compared to other alternatives.

In order to clearly demonstrate the selection rational for the IER 12 project, provided below are evaluations of the preferred alternative alignment along with the three other alternative alignments. Each alternative was evaluated with respect to risk and reliability, adverse environmental impacts, and schedule. Tables detailing the alternative comparisons can be found in appendix K.

When the WCC alternative was evaluated with respect to system reliability, adverse environmental impacts, time and cost, it was determined the construction of this alternative alignment would dramatically increase system reliability. This proposed action reduces the primary line of defense by 25 miles and would be comparable in system reliability to GIWW A alternative, the other southern alignment, but would be much more reliable than the Algiers Gate or PP alternatives (see alternative descriptions below). The WCC alternative would have the fewest adverse environmental impacts. Even though proposing to impact the Bayou aux Carpes CWA Section 404(c) area, this proposed alignment would minimize all direct and indirect adverse impacts to both the natural and human environments. In addition, the proposed action would have a surge barrier in place, with reduced pumping capacity, by 2011, and would be more economical to construct than the AG or PP alternatives (appendix K).
When the GIWW A alternative was evaluated with respect to system reliability, adverse environmental impacts, time and cost, the GIWW A alternative had comparable system reliability, schedule and cost to the proposed action (WCC); however, the adverse environmental impacts for the GIWW A alternative would be much greater than the proposed action. Although alternatives would impact the Bayou aux Carpes CWA Section 404(c) area, the tidal exchange structure floodwall in GIWW A proposes to bifurcate the Bayou aux Carpes CWA Section 404(c) area and could potentially result in irreparable direct and indirect impacts to the unique area (i.e., potential degradation or loss of flotant marsh located in the northern region of the 404c area). In addition, this GIWW A alternative could preclude the possibility of including a portion of the Bayou aux Carpes CWA Section 404(c) area in the adjacent JLNHPP, where as the proposed action would create a more manageable situation for the NPS. While the WCC alternative also proposes a floodwall structure within the 404c area, construction would be confined to a narrow footprint within a previously disturbed dredge material bank along the west bank of the GIWW. The GIWW A alternative would also have a surge barrier in place, with reduced pumping capacity, by 2011, and would be much more economic to construct than the AG or PP alternatives (appendix K).

When the AG alternative was evaluated for system reliability, adverse environmental impacts, schedule and cost, it was determined this alternative would be less reliable than the proposed action (WCC) and GIWW A alternative but more reliable than the PP alternative. The AG alternative would reduce the primary line of defense by 18 miles. Though this alternative proposes to reduce the extent of parallel protection in the system along the Algiers Canal, there would still be areas with parallel protection serving as the primary line of defense along the Harvey Canal industrial reach. In addition, the line of parallel protection along the Harvey Canal industrial reach is situated behind the businesses and would not serve as a flood barrier to those industrial areas. The proposed action (WCC) would create a primary line of defense that would also reduce risk to those industrial areas and prevent flooding of the businesses. Construction of the proposed action would place the existing floodwalls and levees along the Harvey and Algiers canals as the secondary line of defense in the event of canal flooding due to system overtopping. In addition, upgrading levee stretches west of the Harvey Canal would greatly increase the levee footprint and would impact both the human and natural environment. Adverse environmental impacts for this alternative would be greater than those of the proposed action (WCC). See the alternative comparison tables (appendix K) for specific details on system reliability, environment and schedule.

When the PP alternative was evaluated with respect to system reliability, adverse environmental impacts, schedule and cost, it was determined this alternative would have the lowest system reliability, have the most adverse socioeconomic impacts, have significant environmental impacts, require the most time to construct and be least economic. This alternative that keeps the approximately 27 miles of existing risk reduction system as the primary line of defense would be the least reliable because this alignment contains numerous potential failure points. In addition to reduced reliability, upgrading the current alignment would require large scale residential and commercial relocations and would have serious environmental implications (i.e. HTRW issues discussed in section 3.5). See the alternative comparison tables (appendix K) for specific details on system reliability, environment and schedule.

In summary of the documentation provided in this IER regarding the process of developing this unique project, the WCC alternative, which would alter the current system alignment, is the USACE’S proposed action for this segment of the HSDRRS because this alternative would provide the most reliable, time sensitive, and cost effective solution with the least adverse environmental impacts. Though this alternative would
have unavoidable impacts to the Bayou aux Carpes CWA Section 404(c) area, the USACE would employ final design efforts would utilize all feasible engineering and construction practices to reduce impacts to these nationally significant wetlands. In order to minimize the footprint of the surge barrier component to no greater than 4,200 LF by 100 LF along the western side of the GIWW within the Bayou aux Carpes CWA Section 404(c) area, the USACE would investigate and utilize innovative techniques to design and build a structure that incorporates a floodwall and earthen berm rather than an earthen levee. The USACE would also locate the GIWW floodgate(s) as close to the Harvey and Algiers canals confluence as engineeringly feasible in order to minimize impacts to the 404c area. To further ensure the minimization of adverse impacts within the 404c area, construction of the floodwall and earthen berm / access road would occur from the GIWW side of the construction area. In addition, project feature augmentations, such as allowing Old Estelle effluent into the 404c area by gapping the spoil bank and removing the shell plug at Bayou aux Carpes, are being studied and would be incorporated if the results of the environmental studies demonstrate that this proposed action would augment the USACE actions to minimize effects to the 404c wetland habitat. Additional project feature augmentations, such as the gapping of other canal banks in the 404c area are also being studied and would be incorporated into the project if it is found that the features further minimize impacts as a result of the USACE proposed action.

The USACE would mitigate for all unavoidable adverse impacts to the Bayou aux Carpes CWA Section 404(c) area on site within the Bayou aux Carpes CWA Section 404(c) area and/or JLNHPP. Mitigation projects would be designed and implemented concurrently with the design and construction of the floodwall and earthen berm / access road. Full mitigation within this unique environment may require mitigation in addition to acres indicated by the Wetland Value Assessment. The USACE further agrees to work in collaboration with the Interagency team to monitor the area to ensure mitigation is successful in reaching its targeted goal and to utilize adaptive management efforts to ensure the project feature augmentations are assisting to minimize adverse impact within the 404c area. The total funding required for the entire HSDRRS, $16.8 billion dollars, has been appropriated by Congress. This funding includes funds for the design and construction of all HSDRRS mitigation measures and project feature augmentations. The USACE would ensure that all impacts due to upgrading structures currently outlining the Bayou aux Carpes CWA Section 404(c) area would occur on the protected side and would not impact the 404c area. Lastly, the WCC proposed action would have the greatest adaptability to accommodate an enlargement associated with future system upgrades such as the Louisiana Coastal Protection and Restoration.

The proposed action would primarily utilize new ROW directly adjacent to existing ROW corridors. Utilizing existing ROW corridors limits habitat fragmentation and generally concentrates the areas of direct environmental impact, which in turn limits the potential indirect negative impacts that may occur. Wetland acreage would be directly impacted by the proposed action; however, there are no wetland areas that would be indirectly hydrologically isolated.

There are no current problems that would prohibit the construction of the proposed action. The project is in compliance with the Coastal Zone Management Plan and 401 Certification requirements. It is consistent with the Dispute Resolution Objectives of the USACE. The proposed action would provide the opportunity for future enhancement of the hurricane protection system, should this be desired.
CHAPTER 6  COORDINATION AND CONSULTATION

6.1 PUBLIC INVOLVEMENT

Extensive public involvement has been sought in preparing this IER. The projects analyzed in this IER were publicly disclosed and described in the Federal Register on 13 March 2007 and on the website www.nolaenvironmental.gov. Scoping for this project was initiated on 12 March 2007 through placing advertisements and public notices in USA Today and The New Orleans Times-Picayune. Nine public scoping meetings were held throughout the New Orleans Metropolitan area to explain scope and process of the Alternative Arrangements for implementing NEPA between 27 March 2007 and 12 April 2007, after which a 30-day scoping period was open for public comment submission. Additionally, the CEMVN is hosting monthly public meetings to keep the stakeholders advised of project status. The public is able to provide verbal comments during the meetings and written comments after each meeting in person, by mail, and via www.nolaenvironmental.gov.

Specific to IER # 12 and the borrow areas for the project, the following public meetings were held to discuss scoping, planning, alternatives, project issues, and scheduling:

1. 5 June 2007, at Holy Cross College in Algiers
2. 17 July 2007, at the Belle Chasse Auditorium in Belle Chasse
3. 19 September 2007, at the Westwego City Hall in Westwego
4. 23 October 2007, at the Belle Chasse Auditorium in Belle Chasse
5. 23 November 2007, at the Westwego Community Center in Westwego
6. 13 March 2008, at Holy Cross College in Algiers
7. 22 May 2008, at Holy Cross College in Algiers
8. 21 August 2008, at Holy Cross College in Algiers
9. 9 December 2008, at Harvey Fire Station in Harvey
10. 16 December 2008, at Mi-Swaco in Harvey
11. 11 February 2009, at District Headquarters in New Orleans

At these meetings, USACE presentations were made on the project and comments were received from the general public and local officials. The key concerns that were expressed during these meetings include the following:

- Get the project work done now
- Feasibility of avoiding all impacts to the Bayou aux Carpes CWA Section 404(c) area by moving the floodwall into the GIWW
- Scheduling of the IER # 12 project work.
• Vulnerability along Peters Road from Boomtown to Lapalco Boulevard
• Taking residences and businesses
• Minimizing impacts to the 404c Bayou aux Carpes site
• Providing augmentations to enhance the hydrology of the Bayou aux Carpes site
• Analyzing potential hydrological and ecological impacts to the Bayou aux Carpes site
• Interim protection until the entire levee system is up to 100-year level of risk reduction
• Relationship between 100-year risk reduction and categories of storms (1-to-5) with respect to the level of risk reduction that needs to be provided (“we need Category 5 Protection”)
• Relocations questions
• Non-structural alternatives questions
• Criteria for 100-year risk reduction and recent storm data incorporation into the criteria and models
• Lack of better models to address coastal restoration and wetlands preservation

In addition to public meetings, local governmental and non-governmental stakeholders were identified:

• Congressional Delegations
• Louisiana Governor’s Office
• Coastal Protection and Restoration Authority
• Louisiana Department of Transportation and Development
• Jefferson Parish
• Orleans Parish
• Plaquemines Parish
• Southeast Louisiana Flood Protection Authority – West
• West Jefferson Levee District
• New Orleans Mayor’s Office
• US Coast Guard
• Federal Principles Group
• Harvey Canal Industrial Association
• Navigation Industry
• Belle Chasse Naval Air Station
• Non-Governmental Organizations (NGO)
A recurring stakeholder group meeting was established to discuss HSDRRS work on the Harvey Canal and Algiers Canal and to enhance understanding of issues and/or impacts of the proposed action. The stakeholder group met at the CEMVN office on the following dates:

- 29 May 2008
- 26 June 2008
- 30 July 2008
- 2 October 2008
- 20 November 2008

NGO meetings were held to give updates on IER # 12 milestones and to receive input on alternative development, alternative selection, and proposed action impacts.

Although the primary purpose of the GIWW West Closure Complex is to provide the 100-year level of risk reduction, it is located within the GIWW, a major inland waterway serving the gulf coast and the nation. An average of 30 commercial barge tows pass thru this location on the GIWW each day with cargoes vital to the nation’s economy. Interests of the navigation industry have been considered since the inception of this project.

Extensive coordination and collaboration with the navigation industry including the USCG, Gulf Intracoastal Waterway user groups, and other navigation interests began over two years ago and continues today via regular stakeholder meetings, working group meetings, and telephone and e-mail correspondence with the executive director of the Gulf Intracoastal Canal Association (GICA).

Through coordination with GICA, tow boat pilots have been and continue to be involved with the ongoing SHIPS simulator, a simulator tool used to verify the ability of navigation interest to safely pass thru the gate structures. As design options are refined, continued involvement of the industry pilots will be necessary to ensure the navigation safety aspects of the project. Additional refinements will include the optimization of structure features, final gate opening width, final gate location, alignment aids and the development of emergency mooring features.

Additionally, the operating plan for the West Closure Complex including the operation of the navigation gates will be developed during construction with primary emphasis on hurricane risk reduction and consideration of the importance of the navigation channel to the barge industry and the nation.

Since this project includes unavoidable adverse impacts to jurisdictional wetlands under Section 404 of the Clean Water Act, a 404(b)(1) public notice was made available to the public and other interested parties on the www.nolaenvironmental.gov website. The 404(b)(1) public notice will be advertised for the 30-day period concurrent to the public review of draft IER # 12.

After extensive collaborative efforts with the EPA, the NPS and other Federal and state resource agencies, the CEMVN formally requested a modification to the Bayou aux Carpes CWA Section 404(c) Final Determination on 4 November 2008 (See appendix K) in order to move forward with construction of the WCC, specifically the floodwall proposed to be constructed within the 404c area. A draft of this IER was distributed to
the EPA, NPS, and USFWS prior to this public comment period to ensure all environmental concerns associated with this project are clearly laid out and thoroughly explained for the public.

The draft IER # 12 was distributed for a 30-day public review and comment period. In addition to the public meetings regarding the proposed action, a joint public was held on 11 February 2009 in cooperation with the EPA. Any comments received during this public hearing are considered part of the official record (appendices B and G).

After the 30-day comment period for the IER, and public hearing, the CEMVN Commander reviewed all comments received during the review period and make a decision on the proposed action. This decision is documented in the IER # 12 Decision Record.

The EPA is has published a Federal Register notice of the CEMVN Request for Modification of the Bayou aux Carpes CWA Section 404(c) Final Determination and announced the joint public hearing within the Federal Register. An EPA comment period for the public to be able to submit their concerns regarding the proposed Modification to the Bayou aux Carpes CWA Section 404(c) Final Determination and impacts within Bayou aux Carpes CWA Section 404(c) area ran after this notice and ended on 13 February 2009. The CEMVN/EPA public hearing was held on 11 February 2009. The CEMVN letter to the EPA formally requesting a modification to the Bayou aux Carpes CWA 404 (c) Final Determination can be accessed at www.nolaenvironmental.gov and in appendix K.

After the EPA public comment period for the 404(c) Final Determination Modification Request and the CEMVN/EPA public hearing, the EPA will review all comments received concerning the 404(c) Final Determination during the review period and make a determination if they rise to the level of being substantive in nature. If the EPA decides to modify the Bayou aux Carpes CWA Section 404 (c) Final Determination, a Federal Register notice will be published and the modification would be effective 30 days following that notice. After the EPA issues the Final Determination modification, the CEMVN Protection and Restoration Branch Chief will make a finding that the proposed action complies with the Section 404(b)(1) guidelines, pursuant to the CEMVN Section 404(b)(1) Evaluation, which was be released for public comment concurrent with the draft IER # 12.

6.2 AGENCY COORDINATION

Preparation of this IER has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. An interagency environmental team was established for this project in which Federal and state agency staff played an integral part in the project planning and alternative analysis phases of the project (members of this team are listed in appendix C). This interagency environmental team was integrated with the CEMVN PDT to assist in the planning of this project and to complete a mitigation determination of the potential direct and indirect impacts of the proposed action. Monthly meetings with resource agencies were also held concerning this and other IER projects (see section 6.3 for Interagency and 404c coordination information). The following agencies, as well as other interested parties, received copies of the draft IER:

- U.S. Department of the Interior, Fish and Wildlife Service
- U.S. Department of the Interior, National Park Service
The Louisiana Department of Environmental Quality (LADEQ) reviewed the proposed action. CEMVN received Water Quality Certification by letter dated 16 December 2008 (appendix F).

A Section 404(b)(1) evaluation was released for public comment concurrently with the draft IER # 12.

The U.S. Fish and Wildlife Service (USFWS) reviewed the proposed action to see if it would affect any threatened and endangered (T&E) species under its jurisdiction, or their critical habitat. The USFWS concurred with the CEMVN in a letter dated 25 June 2008 that the proposed action would not have adverse impacts on T&E species under its jurisdiction (appendix D).

Consultation with National Oceanic and Atmospheric Administration (NOAA) NMFS was initiated to ensure compliance with Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Coordination Act. NMFS concurred on 7 October 2008 with the CEMVN that the proposed action would not have adverse impacts on T&E species under its jurisdiction.

The Louisiana Department of Natural Resources (LADNR) reviewed the proposed action for consistency with the Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The proposed action was found to be consistent with the LCRP, as per a letter dated 17 December 2008 (appendix E).

Section 106 of the National Historic Preservation Act, as amended, requires consultation with the Louisiana State Historic Preservation Office (LASHPO) and Native American tribes. LASHPO reviewed the proposed action and determined that it would not adversely affect any cultural resources in a letter dated 1 August 2008 (appendix H). Federally recognized tribes that have an interest in the region were given the opportunity to review the proposed action (appendix J).

The USFWS reviewed the proposed action in accordance with the Fish and Wildlife Coordination Act and prepared a draft Coordination Act Report for IER # 12 dated 24 December 2008. The USFWS also provided programmatic recommendations, in the “Draft Fish and Wildlife Coordination Act Report for the Individual Environmental Reports (IER), Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4)” in November 2007. The uncertainties in the design of several projects prohibited a complete evaluation of the impacts to fish and wildlife species and the reporting responsibilities under Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended: 16 U.S.C. 661 et seq.). Therefore, a subsequent final supplemental report would be provided by the USFWS at a later date. The draft (programmatic) Fish
and Wildlife Coordination Act Report for the IERs dated November 2007 can be accessed through the www.nolaenvironmental.gov website.

The CEMVN received a draft programmatic Coordination Act Report from the USFWS on 26 November 2007 (appendix I). The USFWS’ programmatic recommendations applicable to this project would be incorporated into project design studies to the extent practicable, consistent with engineering and public safety requirements. The USFWS’ programmatic recommendations, and the CEMVN’s response to them, are listed below:

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

**CEMVN Response 1:** The project would utilize the existing ROW footprint as much as practicable and minimize impacts to wetlands.

**Recommendation 2:** Minimize enclosure of wetlands with new levee alignments. When enclosing wetlands is unavoidable, acquire non-development easements on those wetlands, or maintain hydrologic connections with adjacent, un-enclosed wetlands to minimize secondary impacts from development and hydrologic alteration.

**CEMVN Response 2:** Concur.

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

**CEMVN Response 3:** Concur.

**Recommendation 4:** Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

**CEMVN Response 4:** This recommendation would be considered in the design of the project to the greatest extent practicable.

**Recommendation 5:** The project’s first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation features.

**CEMVN Response 5:** USACE Project Partnering Agreements (PPA) do not contain language mandating the availability of funds for specific project features, but require the non-Federal Sponsor to provide certification of sufficient funding for the entire project. Further, mitigation components are considered a feature of the entire project. The non-Federal Sponsor is responsible for Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) of all project features in accordance with the OMRR&R manual that the USACE provides upon completion of the project.
Recommendation 6: Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the USFWS, NMFS, LADWF, EPA, and LADNR. The USFWS shall be provided an opportunity to review and submit recommendations on all the work addressed in those reports.

CEMVN Response 6: Concur.

Recommendation 7: The CEMVN should avoid impacts to public lands, if feasible. If not feasible, the CEMVN should establish and continue coordination with agencies managing public lands that may be impacted by a project feature until construction of that feature is complete and prior to any subsequent maintenance. Points of contact for the agencies overseeing public lands potentially impacted by project features are: Kenneth Litzenberger, Project Leader for the USFWS’ Southeast National Wildlife Refuges, and Jack Bohannan (985) 822-2000, Refuge Manager for the Bayou Sauvage National Wildlife Refuge (NWR), Office of State Parks contact Mr. John Lavin at 1-888-677-1400, National Park Service (NPS) contact Superintendent David Luchsinger, (504) 589-3882, extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management David Muth (504) 589-3882, extension 128 (david_muth@nps.gov) and for the 404c area contact the previously mentioned NPS personnel and Ms. Barbara Keeler (214) 665-6698 with the EPA.

CEMVN Response 7: The project would utilize the existing ROW footprint as much as practicable and would avoid adverse impacts as practicable to JLNHPP and the 404c area.

Recommendation 8: If applicable, a General Plan should be developed by the CEMVN, the USFWS, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

CEMVN Response 8: Concur.

Recommendation 9: If mitigation lands are purchased for inclusion within a NWR, those lands must meet certain requirements; a summary of some of those requirements is provided in appendix A (refers to the Draft Fish and Wildlife Coordination Act Report.) Other land-managing natural resource agencies may have similar requirements that must be met prior to accepting mitigation lands; therefore, if they are proposed as a manager of a mitigation site, they should be contacted early in the planning phase regarding such requirements.

CEMVN Response 9: Concur.

Recommendation 10: If a proposed project feature is changed significantly or is not implemented within one year of the date of the Endangered Species Act consultation letter, the USFWS recommended that
the USACE reinitiate coordination to ensure that the proposed project would not adversely affect any federally-listed threatened or endangered species or their habitat.

CEMVN Response 10: Concur.

Recommendation 11: In general, larger and more numerous openings in a protection levee better maintain estuarine-dependent fisheries migration. Therefore, as many openings as practicable, in number, size, and diversity of locations should be incorporated into project levees.

CEMVN Response 11: Concur.

Recommendation 12: Flood protection water control structures in any watercourse should maintain pre-project cross-sections in width and depth to the maximum extent practicable, especially structures located in tidal passes.

CEMVN Response 12: Concur.

Recommendation 13: Flood protection water control structures should remain completely open except during storm events. Management of those structures should be developed in coordination with the USFWS, NMFS, LADWF, and LADNR.

CEMVN Response 13: Concur.

Recommendation 14: Any flood protection water control structure sited in canals, bayous, or a navigation channel which does not maintain the pre-project cross-section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

CEMVN Response 14: Concur.

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

CEMVN Response 15: Concur.

Recommendation 16: Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered.

CEMVN Response 16: Concur

Recommendation 17: To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 ft per
second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

CEMVN Response 17: Concur.

Recommendation 18: To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts selected should maintain sufficient flow to prevent siltation.

CEMVN Response 18: Concur.

Recommendation 19: Culverts should be installed in construction access roads unless otherwise recommended by the natural resource agencies. At a minimum, there should be one 24-inch culvert placed every 500 ft and one at natural stream crossings. If the depth of water crossings allow, larger-sized culverts should be used. Culvert spacing should be optimized on a case-by-case basis. A culvert may be necessary if the road is less than 500 ft long and an area would hydrologically be isolated without that culvert.

CEMVN Response 19: Concur.

Recommendation 20: Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

CEMVN Response 20: Concur.

Recommendation 21: Levee alignments and water control structure alternatives should be selected to avoid the need for fisheries organisms to pass through multiple structures (i.e., structures behind structures) to access an area.

CEMVN Response 21: Concur.

Recommendation 22: Operational plans for water control structures should be developed to maximize the cross-sectional area open for as long as possible. Operations to maximize freshwater detention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible and such actions are recommended by the natural resource agencies.

CEMVN Response 22: Concur.

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

CEMVN Response 23: Concur.

Recommendation 24: Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible
for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the CEMVN shall provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

CEMVN Response 24: Construction of the project features are cost shared between the Government and the non-Federal sponsor. However, costs for operation, maintenance, repair, replacement, and rehabilitation will be the responsibility of the non-Federal sponsor.

Recommendation 25: Any proposed change in mitigation features or plans should be coordinated in advance with the USFWS, NMFS, LADWF, EPA, and LADNR.

CEMVN Response 25: Mitigation for the impacts caused by this project would be coordinated through a mitigation IER. Any material changes to the mitigation plan in this IER would be coordinated in advance.

Recommendation 26: A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the CEMVN, USFWS, NMFS, EPA, LADNR, and LADWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan. CPRA is the managing agency.

CEMVN Response 26: Concur.

The USFWS’ project-specific recommendations in their draft FWCA report, by letter dated 24 December 2008, and CEMVN’s response to the recommendations, are listed below:

Recommendation 1: To the greatest extent possible, design and position flood protection features so that destruction of wetlands and non-wet BLHs are avoided or minimized.

CEMVN Response 1: The CEMVN will take all measures to ensure all risk reduction features are constructed within pre-existing ROW before acquiring additional ROW within adjacent wetlands and non-wet BLHs. In addition, the engineering and design of the new construction risk reduction components within the proposed action will incorporate innovative techniques to construct a floodwall along a navigable waterway, and the gate structure will be placed within the GIWW as close to the Harvey and Algiers confluence as practicable (considering navigation hazards) to reduce the floodwall length and further environmental impacts in the Bayou aux Carpes CWA Section 404(c) area.

Recommendation 2: The USACE shall fully compensate for any unavoidable losses of wetland habitat or non-wet BLHs caused by project features.

CEMVN Response 2: The CEMVN will fully mitigate for any unavoidable losses of wetlands or non-wet BLHs incurred due to the proposed action.
In addition, any unavoidable adverse impacts within the Bayou aux Carpes CWA Section 404(c) area will be fully mitigated within the 404c area or the adjacent JLNHPP. Project feature augmentations to offset unavoidable adverse impacts are under investigation and would be implemented in addition to mitigation to ensure full compensation for wetland impacts within the Bayou aux Carpes CWA Section 404(c) area.

Recommendation 3: Minimize enclosure of wetlands with new levee alignments. When enclosing wetlands is unavoidable, acquire non-development easements on those wetlands, or maintain hydrologic connections with adjacent, un-enclosed wetlands to minimize secondary impacts from development and hydrologic alteration.

CEMVN Response 3: Acknowledged. The CEMVN selected against the GIWW A alternative to avoid enclosing nearly 500 acres of wetlands within the Bayou aux Carpes CWA Section 404(c).

Recommendation 4: Material removed during project construction (i.e., dredging Algiers Canal, repositioning the WBV, levee landward to accommodate the GIWW gate, and dredging along the GIWW bank line to install the flow control structure) should be tested to determine suitability as borrow material for levee construction and the presence of contaminants. The USACE should continue to coordinate with the natural resource agencies to determine the best use of that material.

CEMVN Response 4: The CEMVN has had the Algiers dredge material tested for borrow suitability and contaminants and may beneficially use the material within the JLNHPP. The CEMVN will continue to coordinate with the natural resource agencies to determine the best use of the remaining dredge material.

Recommendation 5: A maintenance dredging management plan for material dredged from the Algiers Canal should be developed for the life of the project.

CEMVN Response 5: Concur.

Recommendation 6: The USACE should avoid impacts to the Bayou aux Carpes CWA Section 404(c) area, if feasible. If not feasible the USACE should continue coordination with the NPS and EPA regarding any proposed project feature that may impact that area. Points of contacts for the agencies potentially impacted by project features are: National Park Service (NPS), contact Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov) and Ms. Barbara Keeler (214) 665-6698 with the EPA.
CEMVN Response 6: Acknowledged. The CEMVN selected against the GIWW A alternative to avoid bifurcating the Bayou aux Carpes CWA Section 404(c) area and the irreparable direct and indirect impacts that could have occurred within the area due to implementing the alternative. In addition, the CEMVN will continue to coordinate with the EPA and NPS with regards to any risk reduction component or project feature augmentation that may impact the 404c area.

Recommendation 7: Hydrologic, nutrient, and contaminant modeling should be conducted to determine the best arrangement of environmental augmentation features (i.e., location of gaps and water control structures), if any, in the Bayou aux Carpes CWA Section 404(c) area.

CEMVN Response 7: The CEMVN has initiated hydrologic modeling efforts for the Bayou aux Carpes CWA Section 404(c) area to determine appropriated locations to gap spoils banks to allow for uniform sheet flow and appropriate water velocities that would resemble natural storm runoff and tidal exchange. Environmental surveys are ongoing to determine baseline data for water quality and water and soil conditions. Once the baseline conditions have been determined, the CEMVN along with the Interagency team will determine the best arrangement of project feature augmentations, if any, within the 404c area.

Recommendation 8: Environmental augmentation features developed through the EPA 404c modification procedures should be incorporated as project features, and the IER should be supplemented to address any additional augmentation features proposed through that process.

CEMVN Response 8: Concur.

Recommendation 9: If hydraulic modeling demonstrates that environmental augmentation features are beneficial, operational plans to maximize freshwater detention or redirect freshwater flows into the Bayou aux Carpes CWA Section 404(c) area should be coordinated with the natural resource agencies, especially EPA and NPS. To accommodate changing goals and restoration needs, water control structures should be designed to incorporate operational flexibility through an adaptive management program.

CEMVN Response 9: Concur.

Recommendation 10: The project’s first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational,
monitoring, and maintenance funds for mitigation and augmentation features. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of the shoreline protection features, the USACE should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.

CEMVN Response 10: USACE Project Partnering Agreements (PPA) do not contain language mandating the availability of funds for specific project features, but require the non-Federal Sponsor to provide certification of sufficient funding for the entire project. Further, mitigation components are considered a feature of the entire project. The non-Federal Sponsor is responsible for Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) of all project features in accordance with the OMRR&R manual that the USACE provides upon completion of the project.

Recommendation 11: To facilitate that adaptive management program, the USACE in coordination with the natural resource agencies, should develop a monitoring plan. That monitoring plan should address hydrologic, nutrient, and contaminant changes throughout the system. The performance and funding of the monitoring of mitigation and augmentation features should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the USACE should provide the necessary funding to ensure that local cost share obligations are met on behalf of the public interest.

CEMVN Response 11: USACE Project Partnering Agreements (PPA) do not contain language mandating the availability of funds for specific project features, but require the non-Federal Sponsor to provide certification of sufficient funding for the entire project. Further, mitigation components are considered a feature of the entire project. The non-Federal Sponsor is responsible for Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) of all project features in accordance with the OMRR&R manual that the USACE provides upon completion of the project.

Recommendation 12: Because of the sensitivity and significance of the Bayou aux Carpes CWA Section 404(c) area every effort should be made to minimize impacts during construction of the floodwall and navigational gate. Construction activities within the Bayou aux Carpes CWA Section 404(c) area should adhere to the following guidelines to avoid adverse impacts to the Bayou aux Carpes CWA Section 404(c) area:

A. Construction should be preformed from the water side (i.e., Bayou Barataria/GIWW side) rather than from the 404c side;

B. Construction of the floodwall within the Bayou aux Carpes
CWA Section 404(c) area should be constructed within a 100-ft corridor width from the GIWW into the 404c area. No additional area within the 404c area would be required for the floodwall or any other construction;

C. The USACE should investigate and utilize innovative techniques to design and build a structure with the narrowest footprint possible; and,

D. Should existing oil and gas pipeline ROWs require relocation, impacts associated with those relocations should be avoided and minimized to the greatest extent possible.

CEMVN Response 12: The CEMVN concurs with the recommendations listed in this comment (A-D). In addition, to further minimize impact to the Bayou aux Carpes CWA Section 404(c) area, the CEMVN will minimize the length of the floodwall by moving the GIWW closure complex close to the Harvey and Algiers canals confluence as practicable (considering navigation hazards). The floodwall footprint will impact an area approximately 4200 ft in length by 100 ft in width.

Recommendation 13: If a proposed project feature is changed significantly or is not implemented within one year of the date of this report, we recommend that the USACE reinitiate coordination with each office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

CEMVN Response 13: Concur.

Recommendation 14: Avoid adverse impacts to bald eagle nesting locations and wading bird colonies through careful design of project features and timing of construction. A qualified biologist should inspect the proposed work site for the presence of undocumented wading bird nesting colonies and bald eagles during the nesting season (i.e., 16 February through 31 October for wading bird nesting colonies, and October through mid-May for bald eagles).

CEMVN Response 14: Concur.

Recommendation 15: To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 ft of a rookery should be restricted to the non-nesting period (i.e., 1 September through 15 February, exact dates may vary within this window depending on species present). In addition, we recommend that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests, and should avoid affecting them during the breeding season.

CEMVN Response 15: Concur.
Recommendation 16: If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.USFWS.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary and those results should be forwarded to this office.

CEMVN Response 16: Concur.

Recommendation 17: Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

CEMVN Response 17: Concur.

Recommendation 18: Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the USACE should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

CEMVN Response 18: Construction of the project features are cost shared between the Government and the non-Federal sponsor. However, costs for operation, maintenance, repair, replacement, and rehabilitation will be the responsibility of the non-Federal sponsor.

Recommendation 19: Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the Service, NMFS, LADWF, EPA, NPS, and LADNR. The Service shall be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

CEMVN Response 19: The CEMVN concurs with this recommendation. In addition to reports associated with further detailed plans of project features, the CEMVN will coordinate with the Service, NMFS, LADWF, EPA, NPS, and LADNR for further detailed planning and implementation of project feature augmentations, i.e., spoil bank gapping throughout the Bayou aux Carpe 404c area and finalizing monitoring and mitigation plans for the Bayou aux Carpes CWA Section 404(c) area.

Recommendation 20: If mitigation lands are purchased for inclusion within Federally or State managed lands, those lands must meet certain requirements; therefore the land manager of that management area should be contacted early in the planning phase regarding such requirements.

CEMVN Response 20: Concur.
Recommendation 21: If applicable, a General Plan should be developed by the USACE, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

CEMVN Response 21: Concur.

Recommendation 22: Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable.

CEMVN Response 22: Concur.

Recommendation 23: Any flood protection water control structure sited in a canal, bayou, or navigation channel that does not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

CEMVN Response 23: The CEMVN proposes to construct a closure complex within the GIWW to allow for navigation and current reduction. This complex would include a 150-ft to 300-ft main channel gate, a 75-ft to 150-ft bypass channel closure gate, and a 20,000+ cfs pump station. Hydrologic modeling, navigation simulation modeling, and engineering design efforts are still underway to determine the exact location of the closure complex. This comment will be considered during the final engineering and design efforts.

Recommendation 24: Flood protection water control structures should remain completely open except during storm events, unless otherwise determined by the natural resource agencies.

CEMVN Response 24: Concur. This comment will be considered during the final engineering and design efforts for the 150-ft to 300-ft navigation/gate(s), the 75-ft to 150-ft bypass channel closure gate, and pump station to be constructed within the GIWW.

Recommendation 25: Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered, and coordination should continue with the natural resource agencies to ensure fish passage features are incorporated to the fullest extent practicable.

CEMVN Response 25: Concur. This comment will be considered during the final engineering and design efforts for the the 150-ft to 300-ft navigation/gate(s), the 75-ft to 150-ft bypass channel closure gate, and pump station to be constructed within the GIWW.

Recommendation 26: To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow
velocities during peak flood or ebb tides do not exceed 2.6 ft per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

CEMVN Response 26: Concur. This comment will be considered during the final engineering and design efforts for the 150-ft to 300-ft navigation / gate(s), the 75-ft to 150-ft bypass channel closure gate, and pump station to be constructed within the GIWW.

Recommendation 27: To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.

CEMVN Response 27: Concur.

Recommendation 28: Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

CEMVN Response 28: Concur. This comment will be considered during the final engineering and design efforts for the 150-ft to 300-ft navigation / gate(s), the 75-ft to 150-ft bypass channel closure gate, and pump station to be constructed within the GIWW.

Recommendation 29: Any proposed change in mitigation or augmentation features or plans should be coordinated in advance with the Service, NMFS, LADWF, EPA, and LADNR.

CEMVN Response 29: Concur.

Recommendation 30: A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the USACE, the Service, NMFS, EPA, LADNR, and LADWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.

CEMVN Response 30: Concur.

6.3 INTERAGENCY AND SECTION 404c COORDINATION

In addition to public meetings regarding the alternative selection process, the CEMVN has worked with both governmental and non-governmental organizations during the preliminary stages of project development. The CEMVN acknowledged that this project would require innovative thinking from both the engineering and environmental standpoint. Official meetings to present the CEMVN’s most up-to-date information regarding system reliability, time, cost, and environmental impacts were conducted for the sole
purpose of collaborating with the Interagency team (EPA, LADEQ, LADNR, NOAA/NMFS, LADWF, and USFWS) prior to finalizing project designs and prior to submitting a formal request for modification of the Bayou aux Carpes CWA Section 404(c) Final Determination to ensure the minimization of adverse and environmental impacts within the WBV IER # 12 project area.

Initially, the CEMVN PDT, in cooperation with Federal and state resource agencies and interested members of the public, identified possible alignments in the area. All the alternatives were then evaluated according to various criteria, and all non-reasonable alternatives, i.e., those alternatives with overwhelming engineering challenges, were eliminated. In general, assessing a wide range of possible alignments demonstrated two things: system reliability increases as the actual length of the surge barrier decreases (deeming a further south, more streamlined alignment as most reliable) and this further southern alignment, which offers the most system reliability and protection, proposes to impact the Bayou aux Carpes CWA Section 404(c) area.

There were five surviving alternatives brought forward from a preliminary alternative evaluation process conducted in early 2007. Two of those five alternatives were further analyzed and then eliminated due to non-constructability. The three surviving alternatives were then brought forward and further evaluated according to system reliability, environmental impacts, schedule and cost. These three surviving alternatives and the evaluation process were presented to the Interagency team to solicit input.

The CEMVN worked closely with the EPA due to possible project impacts to the Bayou aux Carpes CWA Section 404(c) area (section 3.1.7). Section 404c authorizes the EPA to prohibit, restrict, or deny the discharge of dredged or fill material at defined sites in waters of the United States (including wetlands) whenever it determines, after notice and opportunity for public hearing, that use of such sites for disposal would have an unacceptable, adverse impact on one or more of various resources, including fisheries, wildlife, municipal water supplies, or recreational areas.

In collaboration with the Interagency team the CEMVN PDT revisited and substantially revised a previous alternative from the original proposed southern alignment that would maintain system reliability and additionally would minimize adverse environmental impacts to the Bayou aux Carpes CWA Section 404(c) area. This fourth alternative (WCC) was then evaluated against the same four criteria.

On 14 May 2008, the CEMVN met with the EPA and other Federal and state resource agencies to bring forward the fourth alternative, the WCC. This meeting consisted of a detailed presentation followed by extensive conversation among CEMVN and Federal and state resource agencies to ensure all concerns were incorporated and unclear issues were thoroughly explained. The EPA and other Federal and state resource agencies were in disagreement of the environmental scores given to each alternative, and asked to have an environmental significant resources evaluation conducted in which they could offer insight.

A meeting was then conducted on 26 May 2008 so that the Interagency team could further collaborate and provide input on the appropriate format and scoring for environmental impacts, i.e., offer a professional opinion on environmental issues, such as direct and indirect impacts, in order to accurately score the alternatives with regards to environmental impacts. The alternative environmental scores determined within that meeting were then strongly considered by the PDT during the IER # 12 Alternative Evaluation Process.
Another meeting was conducted on 30 June 2008 to present to the Mr. Lawrence E. Starfield, EPA Region 6 Acting Regional Administrator, Mr. Bill Honker, Water Quality Protection Division Deputy Director, EPA Region 6 Ms. Barbara Keeler, Coastal & Wetlands Planning Coordinator, EPA Region 6, Mr. David Luchsinger, Superintendent of JLNHPP, National Park Service, and Mr. David Muth, National Park Service the necessity to modify the existing system alignment and the need to construct a segment of the system within the Bayou aux Carpes CWA Section 404(c) area. The meeting consisted of a morning presentation that discussed the project area, followed by a helicopter fly over of the WBV project and other areas with structures similar to those in the proposed action. Following the helicopter flyover, a full interagency team meeting was held during which a presentation was given to EPA Region 6 that discussed the WCC alternative. All in attendance were then asked to provide input. The 30 June 2008 meeting was a successful partnering session in which the EPA and other resource agencies brought forward issues that may have seemed unclear and needed to be addressed, and brought forward concerns that the agency wanted addressed in writing (i.e. issues regarding the need to modify the alignment, engineering and design specifics, site specific mitigation, etc).

Following the 30 June 2008 meeting, the CEMVN worked closely with the EPA and the Interagency team to address all issues and concerns associated with the proposed action, specifically work within the 404c area. To ensure the process was completely transparent and that no issues were left unresolved, the CEMVN submitted to EPA multiple draft letters addressing their concerns. The CEMVN continued to conduct Interagency team meetings the first Monday of each month, to continue to provide updates to the resource agencies and to solicit input on various projects, including IER # 12.

On 3 November 2008, the CEMVN met with the Interagency team and agreed on stipulations for claiming mitigation credits for IER # 12 impacts via beneficial use of dredged material from Algiers Canal. Baseline data needs and assessment parameters for Bayou aux Carpes CWA Section 404(c) area impacts were outlined. A consensus on the priority of potential project feature augmentations for the Bayou aux Carpes CWA Section 404(c) area was reached. Mitigating on-site was discussed, and the agencies’ preference for invasive species control was documented. Finally, a monitoring plan for the Bayou aux Carpes CWA Section 404(c) area was outlined featuring quarterly water quality sampling and surveys for flotant characteristics, eagles, wading birds, species of concern, and indicator vegetation (including Cypress).

Major comments and discussion during the 3 November 2008 meeting centered on potential borrow suitability of WCC excavated material; recommendations for monitoring during a 50-year period; and clarification that the current agreements on augmentations and mitigation are subject to modification by the interagency team after feasibility, benefits, and relation to project implementation is determined.

Please see appendix K for detailed documentation of the:

- Need to modify the original HSDRRS alignment;
- Need to modify the Bayou aux Carpes CWA Section 404(c) Final Determination;
- Measures taken to ensure the avoidance and/or minimization of all adverse impacts to the Bayou aux Carpes CWA Section 404(c) area;
• Planning and design considerations to avoid additional impacts from any reasonable foreseeable future flood protection measures (i.e., the Louisiana Coastal Protection and Restoration (LACPR) Study);

• Plans for monitoring the Bayou aux Carpes site to insure impacts from the CEMVN construction are not detrimental to the unique habitat.

• Plans for adequate site specific mitigation for all unavoidable adverse impacts to the Bayou aux Carpes CWA Section 404(c) area;

• Review of projected wetland impacts as per USACE 404 (b)(1) guidelines and the EPA 404 (b)(1) and 404c procedures found in 40 CFR Parts 230 & 231; and

After months of collaboration, a final version of the letter that addressed the EPA concerns and contained the requested level of detail was completed. A formal request for modification of the Bayou aux Carpes CWA Section 404(c) Final Determination was then issued to Mr. Lawrence E. Starfield, EPA Region 6 Deputy Regional Administrator on 4 November 2008.

The CEMVN is still working very closely with the EPA and Interagency team as the IER 12 and modification of the 404c Final Determination process progresses. The EPA and Interagency team has provided integral input that assisted the CEMVN throughout this alternative evaluation process and will continue to provide input that is crucial to minimizing adverse environmental impacts throughout the duration of this IER # 12 project.
CHAPTER 7   MITIGATION AND MONITORING

7.1 Mitigation

Mitigation for unavoidable impacts to the human and natural environment described in this and other IERs will be addressed in a separate mitigation IER as per the alternative NEPA arrangements implemented in March 2007. The CEMVN has partnered with Federal and state resource agencies to form an interagency mitigation team that is working to assess and verify these impacts, and to look for potential mitigation sites in the appropriate hydrologic basin. This effort is occurring concurrently with the IER planning process in an effort to complete mitigation work and construct mitigation projects expeditiously. As with the planning process of all other IERs, the public will have the opportunity to give input about the proposed work. These mitigation IERs will be available for a 30-day public review and comment period.

Mitigation would be required for wetlands impacted by the proposed action (WCC). A total of 329 acres of compensatory mitigation would be required, due to new construction and upgrades to existing levees and structures within the proposed action alignment. Approximately 255 acres of impacted wetland acreage is forested and 74.9 acres is swamp (table 7b). Impacted forested wetland acreage would require in-kind mitigation.

The V-line levee upgrade and pipeline relocation along the western border of the Bayou aux Carpes CWA Section 404(c) area would impact approximately 27.5 acres of wetlands (including impacts within approximately 12 acres of existing ROW and 17 acres of new required ROW). Additionally, 9.6 acres of wetland habitat would be impacted within the EPA 404c Bayou aux Carpes site and would require special mitigation arrangements. Mitigation would not be required for project feature augmentation work.

Dredged material from the Algiers Canal could be used beneficially as a mitigation project at the JLNHPP “Geocrib” site in Lake Salvador. Approximately 28 acres of wetland could be created with the dredged material if the Geocrib was filled and planted. The created wetlands would count as credit for HSDRRS wetlands impact mitigation.

Mitigation procedures and requirements regarding impacts within the 404c area are being coordinated with the EPA, USFWS, and the National Park Service. Mitigation for all unavoidable adverse impacts to the Bayou aux Carpes CWA Section 404(c) area would occur within the Bayou aux Carpes CWA Section 404(c) area and/or JLNHPP as per agreement with the resource agencies. Initial agency preferred mitigation for the Bayou aux Carpes site includes Chinese tallow tree removal and marsh creation in JLNHPP, but additional coordination is required to determine the best possible mitigation actions. Mitigation projects would be designed and implemented concurrently with the design and construction of the project. Full mitigation within this unique environment may require mitigation in addition to the basic average annual habitat unit method as determined by Wetland Value Assessment (WVA) models used by the USACE in cooperation with the resources agencies (see table 7b). Project feature augmentations would be considered by the mitigation team as they develop a full plan to compensate for any unavoidable impacts. The CEMVN has agreed to work in collaboration with state and Federal agencies to ensure a successful mitigation effort.
Direct impacts to bottomland hardwood and swamp habitat were quantified by acreage and habitat quality (i.e., average annual habitat units or AAHUs). The USFWS used the Louisiana Department of Natural Resources Habitat Assessment Methodology (HAM) to quantify the impacts of proposed project features on upland and wetland bottomland hardwood habitat and used the WVA methodology quantify the impacts on swamp habitat. The habitat assessment models for bottomland hardwoods within the Louisiana Coastal Zone utilized in this evaluation were modified from those developed in the USFWS Habitat Evaluation Procedures (HEP). For each habitat type, those models define an assemblage of variables considered important to the suitability of an area to support a diversity of fish and wildlife species. The HAM, however, is a community-level evaluation instead of the species-based approach used with HEP. The WVA is used to evaluate proposed CWPPRA projects, and is similar to the USFWS HEP, in that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. As with HEP, the WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for fresh/intermediate marsh, brackish marsh, and saline marsh. Further explanation of how impacts/benefits are assessed with the HAM and WVA and an explanation of the assumptions affecting habitat suitability (i.e., quality) index (HSI) values for each target year for impacts to bottomland hardwood and swamp habitat are available for review at the USFWS Lafayette, Louisiana, field office.

Interagency field trips were conducted to obtain raw field data for the IER # 12 project on 7 July 2007, 8 August 2007, and 10 October 2007. The methodology being utilized in determining appropriate mitigation, which would include no net loss of wetland values, is the WVA that was developed by the Environmental Work Group for the Coastal Wetlands Planning, Protection, and Restoration Act to evaluate projects proposed to be constructed pursuant to that Act. The WVA computes the AAHUs lost by project implementation. The AAHUs (table 6) are converted to acres needed to meet the nation’s no-net-loss of wetlands policy once the mitigation site is selected. Approximately 1.9 AAHUs of BLH, 177.3 AAHUs of altered BLH, and 38.5 AAHUs of cypress-tupelo swamp have been computed by the interagency team as the AAHUs that would be unavoidably impacted as a result of the construction of the proposed action (appendix I).

Distinct habitats are represented within the boundaries of proposed construction area within the IER # 12 project area, namely flotant marsh, BLH forests, and cypress-tupelo swamps. Proposed actions within the existing ROW avoid and minimize wetland impacts to the greatest extent practicable. Existing ROW areas are generally previously impacted, mowed, and maintained grassy areas that provide minimal food or shelter for fish and wildlife resources. Because the 100-year level of risk reduction would require new construction and upgrades to existing footprints to ensure engineering effectiveness and safety, some impacts to BLH and swamp areas are unavoidable.

Though mitigation for unavoidable adverse impacts due to the proposed action presented within this IER is only briefly discussed, mitigation for unavoidable impacts to the human and natural environment described in this and other IERs will be addressed in a separate mitigation IER as per the alternative NEPA arrangements implemented in March 2007. The CEMVN has partnered with Federal and state resource agencies to form an interagency mitigation team that is working to assess and verify these impacts, and to look for potential mitigation sites in the appropriate hydrologic basin. This effort is occurring concurrently with the IER planning process in an effort to complete mitigation work and construct mitigation projects expeditiously. As with the planning process of all other IERs, the public will have the opportunity to give input about the proposed work. These mitigation IERs will, as described in chapter 1 of this IER, be available for a 30-day public review and comment period.
A complementary comprehensive mitigation IER or IERs will be prepared documenting and compiling these unavoidable impacts and those for all other proposed actions within the HSDRRS that are being analyzed through other IERs. Mitigation planning is being carried out for groups of IERs, rather than within each IER, so that large mitigation efforts could be taken rather than several smaller efforts, increasing the relative economic and ecological benefits of the mitigation effort.

The forthcoming mitigation IER will implement compensatory mitigation as early as possible. All mitigation activities will be consistent with standards and policies established in appropriate Federal and state laws, and the CEMVN policies and regulations.

Table 16 shows the cumulative compensatory mitigation requirements identified by the CEMVN so far. This table will be updated as potential impacts are assessed in forthcoming IERs.

7.2 Monitoring Plan

The project feature augmentations recommended by the EPA include, in order of priority:

- Gapping the dredge material bank along the southern side of the Estelle outfall canal to provide even sheet flow into the Bayou aux Carpes CWA Section 404(c) area
- Modifying the dredge material bank along the Southern Natural Gas Pipeline Canal to provide hydrological exchange
- Modifying the shell plug at Bayou aux Carpes to provide hydrological exchange
- Closing the Southern Natural Gas Pipeline Canal
- Gapping or grading down drill hole access canal banks
- Gapping or grading down oil well access roads

To determine which project augmentations would be most beneficial to the Bayou aux Carpes CWA Section 404(c) area an interagency study effort is being completed to establish existing soil and water-quality conditions in the Bayou aux Carpes CWA Section 404(c) wetlands, as well as prevailing patterns of inundation within and adjacent to the 404c area. The wetlands in the Bayou aux Carpes CWA Section 404(c) area are currently isolated from direct inflow of storm water runoff and natural tidal exchange in some locations because of levees and dredge material banks. Upon completion of the interagency study storm water runoff may be directed from the Old Estelle Pump Station through and across the wetlands and some tidal exchange may be permitted in certain areas to restore the natural hydrology. It is unknown what impact this change in water quality and hydrology may have on the wetlands. The wetlands consist of floating marshes, with a predominately organic substrate, and forested wetlands, some of which occur within the floating marshes (see the Bayou aux Carpes CWA Section 404(c) area description in section 3.2.2).

Studies are underway at the USACE Engineering Research and Development Center (ERDC) in Vicksburg, Mississippi, the Vicksburg USACE District, and at the United
States Geological Survey in Baton Rouge, Louisiana to determine the best possible design to allow for maximized benefit of this work in the Bayou aux Carpes CWA Section 404(c) area. Hydrologic and environmental surveys are ongoing within and adjacent to the 404c to determine the appropriate areas for the proposed dredge material bank gapping within the Old Estelle discharge canal and dredge material bank gapping in other canals and for the removal of plugs or portions of the plugs in Bayou aux Carpes and other canals. In addition, the surveys will determine the appropriate water flow velocities within the Bayou aux Carpes CWA Section 404(c) area so creating the gaps and removal of canal plugs can be properly designed. Additional design work would take into consideration the appropriate nutrient loading levels. These studies will be integrated into the efforts of the Interagency resource team that was formed early in the analysis phase to ensure that the national interest placed on the Bayou aux Carpes site meets the wisest and best use of the area. All actions would be fully coordinated with the EPA and the interagency team and the public before being implemented.

The monitoring of preexisting conditions has three components:

**Floating marsh:**
Pore water quality will be documented at four locations, near and at some distance from the project area (Figure 14). The two northern most sites are located approximately 50 yards to 100 yards off the dredge material bank. At each marsh sampling site, pore water will be sampled at 15 cm and 45 cm depth for a suite of parameters including low-level nutrients including dissolved inorganic N, ions and dissolved organic carbon. Samples will be taken quarterly, in November of 2008, and in February, late April and August/September 2009.

At these same sites, soil quality (degree of decomposition) will be documented at 5 cm and 15 cm depth (root zone) using the NRCS fiber analysis (see Swarzenski and others, 2005; Figure 14). In addition, soils will be cored with a McAuly auger to a clay layer or 2 meters (whichever is nearer the surface), to evaluate the thickness of the peat layer. Floating marsh type will be determined following the Sasser et al (1996) classification.

**Estelle Pumping Station**
At the pumping station, one sample of surface water will be collected for analysis of a suite of herbicides, including fipronil and atrazine (Figure 14). Similarly, a surface water-quality sample will be taken in the main canal. These samples will be collected 1-2 days after a major rainfall event.

**Inundation, hydraulic gradient**
Two stations continuously measuring water level will be established on the property, as per figure 14. An attempt to establish hydraulic gradients will be made by matching up peaks in the water surface during major inundation events, and hydraulic gradients established based on floor elevation.
Figure 14. Proposed water quality monitoring stations within the Bayou aux Carpes CWA Section 404(c) area.

The data collected throughout these ongoing studies would be compared to similar, pristine, nearby marshes, and would also provide baseline data against which to evaluate future change.

Once the baseline data set is completed and the results are presented to the Interagency team, the CEMVN in cooperation with the EPA, NPS, USFWS and other members of the Interagency team would determine which project feature augmentations would be beneficial to the 404c area. The ongoing studies to determine the existing hydrology and water and soil conditions within the Bayou aux Carpes CWA Section 404(c) area are considered to be adequate to determine which augmentations would be beneficial. Those beneficial project feature augmentations would then be implemented in partnership with the EPA and the NPS. Though these data are not available within this document, the data and project augmentation implementation plans will be disclosed in future environmental reports prior to any decision being made by the CEMVN District Engineer.

In addition to the ongoing environmental studies, the Interagency team also suggested cypress tree surveys along with eagle, wading bird, and other indicator species surveys should be conducted to indicate habitat quality. Baseline Bald Cypress and wildlife data would also be required. The cypress tree and wildlife surveys are under consideration, and survey plans, including specific indicator species surveys, survey frequency, etc., would be determined by the CEMVN in collaboration with the Interagency team and disclosed in future environmental reports.
Following construction of any of the proposed project augmentations and mitigation efforts, water quality, soil and water conditions, along with wildlife monitoring would continue throughout the life of the project. If at anytime throughout the implementation of the proposed project augmentation, monitoring efforts reveal a feature augmentation having adverse environmental impacts, appropriate steps would be taken by the CEMVN, the EPA, and NPS to diminish the adverse impacts and remove the feature augmentation if required (i.e., closing the gaps in the Old Estelle outfall canal and opening the gate structure at the end of the canal). Monitoring data and results on the constructed project feature augmentations would be disclosed in future environmental reports.

CHAPTER 8 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Construction of the proposed action would not commence until the proposed action achieves environmental compliance with all applicable laws and regulations, as described below.

Environmental compliance for the proposed action would be achieved upon coordination of this IER with appropriate agencies, organizations, and individuals for their review and comments; USFWS and NMFS confirmation that the proposed action would not be likely to adversely affect any T&E species, or completion of Endangered Species Act Section 7 consultation (appendix D and E); LADNR concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LCRP (appendix E); coordination with the LASHPO (appendix H); receipt and acceptance or resolution of all FWCA recommendations (appendix I); and receipt and acceptance or resolution of all (Louisiana Department of Environmental Quality) LADEQ comments on the water quality and air quality impact analysis documented in the IER.

Executive Order (E.O.) 11988. E.O. 11988, Floodplain Management, addresses minimizing or avoiding adverse impacts associated with the base floodplain unless there are no practicable alternatives. It also involves giving public notice of proposed actions that may affect the base floodplain. The proposed action would not accelerate development of the floodplain for the following reasons: development of the study area is more closely related to access routes and the need for affordable housing space than flooding potential and conditions conducive for development were established initially when the area was leveed and forced drainage was initiated in the middle 1960s.

Executive Order 11990. E.O. 11990, Protection of Wetlands, has been important in project planning. It is acknowledged that a portion of the area enclosed by the existing levee consists of wetlands. However, by following the existing alignments and working in developed areas, there would be direct adverse impacts to wetlands for this project. Any increased size of the interior borrow/drainage canal as a result of levee enlargement would result in increased capacity; however, this would have essentially no indirect effect on the rate of drainage from the basin. Increased pumping station capacities are not a part of this action.

Consistency with Coastal Zone Management (CZM) Program. The CEMVN has determined that construction and maintenance of 100-year level of risk reduction along the WBV, Westwego to Harvey Levee Project is consistent, to the maximum extent practicable, with the guidelines of the State of Louisiana's approved Coastal Zone Management Program. A CZM consistency determination, C20080483, was dated 17
December 2008. The consistency letter of approval from the LADNR completes the consistency requirements.

**Clean Air Act.** The original 1970 CAA authorized EPA to establish NAAQS to limit levels of pollutants in the air. The EPA has promulgated NAAQS for six criterion pollutants: sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), ozone, lead, and particulate matter (PM-10). All areas of the United States must maintain ambient levels of these pollutants below the ceilings established by the NAAQS; any area that does not meet these standards is considered a "non-attainment" area (NAA). The 1990 Amendments require that the boundaries of serious, severe, or extreme ozone or CO non-attainment areas located within MSAs or Consolidated Metropolitan Statistical Areas (CMSAs) be expanded to include the entire MSA or CMSA unless the governor makes certain findings and the Administrator of the EPA concurs. Consequently, all urban counties included in an affected MSA or CMSA, regardless of their attainment status, would become part of the NAA. The project is located primarily in Jefferson Parish, which is classified as an attainment area; therefore NAAQS are not applicable to this project.

**Clean Water Act.** The Clean Water Act (CWA; 33 U.S.C. 1251-1387; Act of 30 June 1972, as amended) is a very broad statute with the goal of maintaining and restoring waters of the United States. The CWA authorizes water quality and pollution research, provides grants for sewage treatment facilities, sets pollution discharge and water quality standards, addresses oil and hazardous substances liability, and establishes permit programs for water quality, point source pollutant discharges, ocean pollution discharges, and dredging or filling of wetlands. The intent of the CWA's §404 program and it's §404(b)(1) "Guidelines" is to prevent destruction of aquatic ecosystems including wetlands, unless the action would not individually or cumulatively adversely affect the ecosystem. For the purposes of IER # 12, all potential dredge material will be tested to determine contamination levels (appendix L).

Section 404(b)(1) guidelines were used to evaluate the discharge of dredged or fill material for adverse impacts to the aquatic ecosystem. The following actions would be taken to minimize the potential for adverse environmental impacts. The existing levee alignment would be followed in construction of the proposed levee. All sloped areas would be seeded. Non-forested wetlands, consisting of mown levee grasses or grazed pasture, were not mitigated because of their low value to fish and wildlife resources. The proposed project complies with the requirements of the guidelines. The LADEQ Water Quality Certification letter, WQC 080825-02/AI 160206/CER 20080001, dated 16 December 2008, completes the certification process.

**Endangered Species Act.** The Endangered Species Act (ESA; 16 U.S.C. 1531-1543; Pub. L. 93-205, as amended) was enacted in 1973 for the purpose of providing for the conservation of species which are in danger of extinction throughout all or a significant portion of their range. "Species" is defined by the ESA to mean either a species, a subspecies, or, for vertebrates (i.e., fish, reptiles, mammals, etc.) only, a distinct population. No threatened or endangered species or their critical habitat would be impacted by the proposed action. The USFWS concurred with our determination in their letter dated 26 November 2007.

**Fish and Wildlife Coordination Act.** The Fish and Wildlife Coordination Act (16 U.S.C. 661-666c; Act of 10 March 1934, as amended) requires that wildlife, including fish, receive equal consideration and be coordinated with other aspects of water resource development. This is accomplished by requiring consultation with the USFWS and NMFS whenever modifications are proposed to a body of water and a Federal permit or
license is required. This consultation determines the possible harm to fish and wildlife resources, as well as the measures that are needed to prevent the damage to and loss of these resources and to develop and improve the resources, in connection with water resource development. NMFS submits comments and recommendations to Federal licensing and permitting agencies and to Federal agencies conducting construction projects on the potential harm to living marine resources caused by the proposed water development projects, and submits recommendations to prevent harm. The USFWS provided the “Draft Fish and Wildlife Coordination Act Report for the Individual Environmental Reports (IER), Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4)” in November 2007. To fulfill the responsibilities of the Fish and Wildlife Coordination Act, the USFWS will provide a post-authorization final supplemental 2(b) report to the draft programmatic report. A draft project-specific Coordination Act Report was received from USFWS by letter dated 27 October 2008. A final report would be prepared after the 30-day public review period and all comments regarding USFWS trust resources have been resolved, and before a final IER has been completed.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act of 1918 (MBTA) is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests. The take of all migratory birds is governed by the MBTA's regulation of taking migratory birds for educational, scientific, and recreational purposes and requiring harvest to be limited to levels that prevent over-utilization. Section 704 of the MBTA states that the Secretary of the Interior is authorized and directed to determine if, and by what means, the take of migratory birds should be allowed and to adopt suitable regulations permitting and governing take. The MBTA prohibits the take, possession, import, export, transport, sale, purchase, barter, or offer for sale, purchase or barter, of any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR §21.11). The USFWS addressed compliance with this Act in the “Draft Fish and Wildlife Coordination Act Report for the Individual Environmental Reports (IER), Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4)” in November 2007. To fulfill the responsibilities of the Fish and Wildlife Coordination Act, the USFWS will provide a post-authorization final supplemental 2(b) report to the draft programmatic report.

National Environmental Policy Act. The National Environmental Policy Act (NEPA; 42 U.S.C. 4321-4347; Pub. L. 91-190, as amended) requires Federal agencies to analyze the potential effects of a proposed Federal action that would significantly affect historical, cultural, or natural aspects of the environment. It specifically requires agencies to use a systematic, interdisciplinary approach in planning and decision-making, to insure that environmental values may be given appropriate consideration, and to provide detailed statements on the environmental impacts of proposed actions including: (1) any adverse impacts; (2) alternatives to the proposed action; and (3) the relationship between short-term uses and long-term productivity. The agencies use the results of this analysis in their decision-making process. The preparation of this IER is a part of complying with NEPA.

National Historic Preservation Act. Congress established the most comprehensive national policy on historic preservation with the passage of the National Historic Preservation Act of 1966 (NHPA). In this Act, historic preservation was defined to include "the protection, rehabilitation, restoration and reconstruction of districts, sites,
buildings, structures, and objects significant in American history, architecture, archaeology, or culture." The Act led to the creation of the National Register of Historic Places, a file of cultural resources of national, regional, state, and local significance. The act also established the Advisory Council on Historic Preservation (the Council), an independent Federal agency responsible for administering the protective provisions of the act. The major provisions of the NHPA are Sections 106 and 110. Both sections aim to ensure that historic properties are appropriately considered in planning Federal initiatives and actions. Section 106 is a specific, issue-related mandate to which Federal agencies must adhere. It is a reactive mechanism that is driven by a Federal action. Section 110, in contrast, sets out broad Federal agency responsibilities with respect to historic properties. It is a proactive mechanism with emphasis on ongoing management of historic preservation sites and activities at Federal facilities. Coordination of this project with SHPO fulfills the requirements to comply with the NHPA, and the SHPO letter dated 01 August 2008 concludes this process.
CHAPTER 9  CONCLUSIONS

9.1  FINAL DECISION

The primary elements of the proposed action consist of:

1. Degrading the existing levee on the east bank of the GIWW and building a new levee to the 100-yr level of risk reduction to the protected side. Relocating Bayou Road to travel on the protected side of the new levee.

2. The construction of a closure complex and a by-pass channel on the GIWW.

3. The construction of a 20,000 cfs or greater pump station on the GIWW.

4. 4,200 ft of levee/floodwall construction along the WCC bordering the EPA 404c area.

5. 100-year risk reduction effort involving a floodwall along the northern boundary of the Estelle discharge canal, at the Estelle pump station and a closure structure where the Estelle Outfall Canal meets Harvey Canal.

6. 100-year risk reduction effort involving a protected side shift built levee on the east bank of the V-line canal.

7. Use of 700,000 cubic yards of dredge material beneficially as a mitigation effort in the JLNHPP.

8. Evaluating project feature augmentations, and the monitoring plan, for benefits and feasibility to enhance the Bayou aux Carpes CWA Section 404(c) area.

The CEMVN has assessed the environmental impacts of the proposed action and has determined that the proposed action would have the following impacts:

1. Permanent impacts to 329 total acres of wetland (9.6 acres of the EPA 404c wetland).

2. Permanent impacts to the Bayou aux Carpes CWA Section 404(c) area due to habitat loss, and possible hydrological impacts due to construction.

3. Potential beneficial impacts to the 404c area due to the implementation of project feature augmentations to offset any hydrological impacts.

4. Impacts to fisheries and aquatic organisms in the EPA 404c area and other wetland habitat areas due to construction.

5. Temporary impacts to wildlife due to habitat loss including BLH wetland habitat and the EPA 404c acreage (9.6 acres).

6. Temporary and localized impacts to air quality and noise during the construction phase of the project due to heavy equipment use and transport of materials.
7. Impacts to aesthetics and viewsheds due to the location of project elements on the GIWW.

8. Socioeconomic impacts are largely beneficial, though temporary transportation route impacts are expected.

9. Temporary impacts to navigation during construction would be expected. This includes barge traffic being rerouted through a closure complex on the GIWW. Use of the 225 ft gate would minimize permanent impacts to navigation.
9.2 PREPARED BY

The point of contact and responsible manager for the preparation of this IER is Getrisc Coulson, CEMVN. The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Planning, Programs, and Project Management Division, CEMVN-PM; P.O. Box 60267; New Orleans, Louisiana 70160-0267. Table 17 provides detailed list of the preparers for the various sections and topics in this IER.

Table 17. Detailed List of Preparers

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Ning, Z. E., R. E. Turner, T. Doyle and K.K. Abdollahi. 2003. Integrated Assessment of the Climate Change Impacts on the Gulf Coast Region. Detailed report (236 pages), published by the Gulf Coast Climate Change Assessment Council (GCRCC) and Louisiana State University (LSU) Graphic Services.

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CHAPTER 10 APPENDICES

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## Appendix A: List of Acronyms and Definitions of Common Terms

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<th>Acronym</th>
<th>Definition</th>
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<tr>
<td>ACB</td>
<td>Articulated Concrete Block</td>
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<td>CED</td>
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<td>Acronym</td>
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</table>
USDA - United States Department of Agriculture
USFWS - United States Fish and Wildlife Service
USHUD - United States Department of Housing and Urban Development
WBV - West Bank and Vicinity of New Orleans
WRDA - Water Resources Development Act
From: Owen, Gib A MVN on behalf of MVN Environmental  
Sent: Monday, May 26, 2008 6:03 AM  
To: Coulson, Getrisc MVN  
Subject: FW: NOLA Environmental Comment - Gretna-Algiers

Gigi,  
IER 12 Comment  
Gib  

Gib Owen  
US Army Corps of Engineers  
Chief, Ecological Planning and Restoration Section GNOHSDRRS Environmental Team  
Leader New Orleans District  
504 862-1337

-----Original Message-----
From: grimes08@yahoo.com [mailto:grimes08@yahoo.com]  
Sent: Friday, May 23, 2008 4:33 PM  
To: MVN Environmental  
Subject: NOLA Environmental Comment - Gretna-Algiers

I wish to submit a comment for the record on IER-12. The Corps is evaluating alternatives for 100 year flood protection in the Algiers and Harvey Canal Area.

I am very concerned with the alternatives being considered that would allow encroachment into the Bayou Aux Carpes 404c area, where wetlands are supposed to be protected from all dredge or fill activities.

I attended the public hearing on May 23 and incorrectly stated that I would like the Corps to strongly consider Alternatives 2-4. I later learned that alternative 2 would also destroy wetlands in the Bayou Aux Carpes area. I request that the Corps focus only on alternatives 3 and 4 that do not encroach into the 404c area.

We would all like to see hurricane protection for the area upgraded as soon as possible. In the interest of ensuring that these projects are completed in a timely manner, I hope the Corps avoids the inherent controversy and time that would be lost in selecting an alternative that destroys even a part of the 404(c) area.

Sincerely,  
Jeff Grimes
From: Owen, Gib A MVN on behalf of MVN Environmental  
Sent: Thursday, June 05, 2008 7:37 PM  
To: Labure, Linda C MVN; Connell, Timothy J MVN  
Cc: Coulson, Getrisc MVN  
Subject: FW: STATUS OF DISCUSSIONS CONCERNING TERMINUS STRUCTURES ON ALGIERS CANAL PROJECT NEAR HERO CANAL/INTRACOASTAL WATERWAY IN BELLE CHASSE

Linda,  
Can you assign some one to forward an answer back to Gigi Coulson about this comment below.  

Tim,  
Please provide an answer back also for issues relevant to PM. 

Gigi,  
Please put together a response that we can send bad to Ms. Coyne.  

Thanks  
Gib

Gib Owen  
US Army Corps of Engineers  
Chief, Ecological Planning and Restoration Section GNOHSDRRS Environmental Team  
Leader New Orleans District  
504 862-1337

-----Original Message-----
From: Jody Coyne [mailto:jcoyne@bkiusa.com]  
Sent: Wednesday, June 04, 2008 11:23 AM  
To: MVN Environmental  
Subject: STATUS OF DISCUSSIONS CONCERNING TERMINUS STRUCTURES ON ALGIERS CANAL PROJECT NEAR HERO CANAL/INTRACOASTAL WATERWAY IN BELLE CHASSE

MR. OWEN, I MET YOU AT THE PREVIOUS PUBLIC MEETING AT OUR LADY OF HOLY CROSS COLLEGE IN ALGIERS. AS I MENTIONED, MY FAMILY OWNS A TRACT OF LAND FRONTING ON THE INTRACOASTAL WATERWAY JUST SOUTH OF THE INTRACOASTAL’S INTERSECTION WITH THE HARVEY CANAL. BASED ON PRELIMINARY SKETCHES WHICH I HAVE SEEN WE APPARENTLY WILL BE IMPACTED BY EITHER OF THE PROPOSALS FOR A GATE/PUMPING STATION STRUCTURE IN THE CANAL WHICH ARE BEING STUDIED AT THIS TIME. WILL WE AS LANDOWNERS, BE GIVEN AN OPPORTUNITY TO OFFER SUGGESTIONS TO MINIMIZE IMPACT ON OUR PROPERTY? WILL WE BE COMPENSATED FOR LOSS OF THE USE OF OUR PROPERTY DURING THE TIME IT IS NEEDED FOR CONSTRUCTION IN THE EVENT IT IS TAKEN, EITHER TEMPORARILY OR PERMANENTLY? WILL THE CORPS MAINTAIN (IN A SAFE CONDITION) WALKER ROAD AND EAST BAYOU ROAD DURING THE ENTIRE CONSTRUCTION PHASE OF THE PROJECT. WALKER ROAD AND EAST BAYOU ROAD IS A SCHOOL BUS ROUTE FOR OUR KIDS AS WELL AS THE MAIN ROUTE FOR OUR FAMILY’S DAILY ROUTE TO GET HOME. AS YOU CAN SEE, THERE ARE MANY CONCERNS AND QUESTIONS.

IT WAS A PLEASURE TO SPEAK WITH YOU AT THE PREVIOUS MEETING.  

JODY P. COYNE
Gigi and Tim,

Below is comment that came in via nolaenvironmental.gov concerning Industrial Pipe/IER 13.

Gib

Gib Owen
US Army Corps of Engineers
Chief, Ecological Planning and Restoration Section GNOHSDRRS Environmental Team
Leader New Orleans District
504 862-1337

-----Original Message-----
From:
Sent: Tuesday, August 19, 2008 4:52 PM
To: MVN Environmental
Subject: Comments for IER 13 re Industrial Pipe Landfill

Dear Mr. Owen,

Attached are comments that were submitted by the Oakville Community Action Group, Louisiana Environmental Action Network, and Gulf Restoration Network to LDEQ regarding a permit modification application that Industrial Pipe submitted seeking to expand its landfill operations to include waste by barge. These comments highlight many of the problems with the landfill and the fact that it is operating in violation of Parish zoning laws. We maintain that Industrial Pipe’s operations do not constitute a legitimate business concern that should be accommodated by the Corps’ levee plans. The comments explain the violations in detail.
DECEMBER 10, 2008

USACE NEW ORLEANS

ATTN: MR. TIM CONNELL, PROJECT MANAGER, WEST CLOSURE COMPLEX

DEAR TIM,


I WOULD LIKE TO SUBMIT THE ATTACHED ADDITIONAL COMMENTS, SUGGESTIONS AND QUESTIONS FOR INCLUSION IN THE FINAL REPORT:

1. WHERE WILL THE POWER LINE THAT CURRENTLY SERVES OUR RESIDENCES BE RELOCATED? CAN THIS BE PLACED ALONG THE NEWLY RELOCATED ROAD RIGHT-OF-WAY TO PREVENT HAVING TO TAKE OUT MORE TREES FOR ANOTHER LARGE POWER LINE RIGHT-OF-WAY?
2. JUST TO MAKE YOU AWARE, ALL RESIDENCES ALONG EAST BAYOU ROAD GET THERE WATER SOURCE FROM WELLS ON THEIR PROPERTIES. IS THERE ANY POSSIBLE DETRIMENTAL IMPACT TO THE WATER QUALITY OF THESE WELLS AS A RESULT OF ANY CONSTRUCTION OR OPERATIONAL ACTIVITIES? ARE FUEL STORAGE REQUIREMENTS FOR THE PUMP STATION GOING TO BE STRINGENT ENOUGH TO PREVENT ANY POSSIBLE SPILL FROM CONTAMINATING THE WELL WATER WHICH WE RELY ON? THESE WELLS ARE TYPICALLY 260 FEET TO 325 FEET DEEP.
3. PLEASE CONSIDER MITIGATION EFFORTS TO SOFTEN THE IMPACT OF THE OVERALL PROJECT ON THE RESIDENTS OF EAST BAYOU ROAD.
4. PLEASE CONSIDER RESTRICTING ALL CONSTRUCTION VEHICLES TO WAKER ROAD AND THE IMMEDIATE AREA OF THE CONSTRUCTION SITE.
5. IF POSSIBLE PLEASE CONSIDER HARD SURFACING (ASPHALT) AND IMPROVING WALKER ROAD AND EAST BAYOU ROAD UP TO AND INCLUDING IN FRONT OF THE RESIDENCES WHICH WILL BE IMPACTED BY THE 4-5 YEARS OF CONSTRUCTION ACTIVITIES. KEEP IN MIND THAT WALKER ROAD AND EAST BAYOU ROAD SERVE AS SCHOOL BUS ROUTES, GARBAGE DELIVERY ROUTES, AND AS A RURAL MAIL DELIVERY ROUTE. EAST BAYOU ROAD IS CURRENTLY SOMEWHAT NARROW IN SECTIONS WITH SUBSTANDARD SHOULDERS. WALKER ROAD ALSO HAS A POWER LINE RUNNING ALONG IT’S SOUTH EDGE WHICH IS QUITE CLOSE TO THE ROADWAY EDGE.
6. WE WOULD SUGGEST THAT BUCANEER ROAD BE IMPROVED AND MAINTAINED AS THE ONLY VIABLE ALTERNATIVE ROUTE FOR THE RESIDENTS.
7. PLEASE RECONSIDER AND EXPLORE THE POSSIBILITY OF UTILIZING THE “SPOIL” MATERIAL TO REBUILD THE AREA OF WETLANDS ALONG THE SOUTH SHORE OF HERO CANAL AS WAS SUGGESTED BY AN AUDIENCE MEMBER DURING THE MEETING LAST NIGHT. THE SAVINGS TO THE CORPS ON TRANSPORTATION (BOTH TIME AND FUEL) ALONE SHOULD JUSTIFY FURTHER CONSIDERATION OF THIS ALTERNATIVE DISPOSAL SITE. THE ADDITIONAL PROTECTION GAINED FOR THE NEW LEVEE ON THE NORTH EDGE OF HERO CANAL BY HAVING VIABLE WETLANDS ALONG THE SOUTH EDGE SHOULD ALSO BE A FACTOR. THE “CRIB AREA” IN LAFITTE IS A GREAT PROJECT BUT THERE IS DEFINITELY A NEED FOR THE SPOIL RIGHT IN THE VICINITY OF THE CONSTRUCTION.

THANKS AGAIN FOR YOU CONSIDERATION

JODY P. COYNE, SR. (486-5901 EXT. 131)
Mr. G. B. Owens
US Army Corps of Engineers

Sir: Please send IER #12 entitled "Gulf, Harvey, and Algiers Levees, Floodwalls", and note the comments below, etc.

Comment

The people of this New Orleans area have chosen by their own free will and volition to build homes and businesses upon land that is at or below sea level and susceptible to periodic and foreseeable future tropical cyclones. Not one penny of tax dollars generated by those outside the area should be expended on any further projects involving levees, walls, pumps and alike, and perhaps all efforts will fail in any case should New Orleans be hit directly by any hurricane with strong storm surge and heavy rain.

My feeling is that tax money would be better spent on investigating cases of injustice, where persons who are innocent languish in prisons as the result of obvious police and prosecutorial misconduct.

Therefore, in addition to having my opinion made part of the record regarding further future flood control efforts in New Orleans, I respectfully ask that this letter be referred to the U.S. Attorney's Office for further investigation and pursuit of justice for those wronged. The remedy for crimes committed in our system can only be brought to justice, restoring confidence in our system we nation as a whole.

Thank you.

George W. [Signature]
George W. Loeb Jr. 7/2/09
1/7/08

Dear Mr. Gil Owen:

I am requesting a copy of IER #12 and supporting documents.

My mailing address is - Carl Brad Ward
1645 87 - N 8
100 Warrior Ln.
Bessemer, AL 35023

Thanks for your help.

Sincerely,

[Signature]

Brad Ward
Mr. Owen,

Hello. I'd like a copy of report be enclosed.

Also, who could I send drawings to concerning new levers construction. Please reply.

Regards to above.

Thanks much.
January 8, 2009

U.S. Army Corps of Engineers
c/o Gib Owen, PM-RS
P.O. Box 60267
New Orleans, LA 70160-0267

To Whom It May Concern:

I wish to write and express my company's concerns in regards to the new 100 year flood protection for the Algiers and Harvey Canals. As you know the Corps of Engineers is progressing with construction of the Harvey Floodwall along Peters Road and look to finish that project in 2010. When you move forward to construct the lower lock and pumping station, you will create a bowl affect for those companies trapped between the floodwall and the Harvey Canal.

As a business, we appreciate the efforts being put forward by the Army Corps of Engineers to protect property along the Algiers and Harvey Canals. We feel that protection should include funding and maintenance of the rear levees along all Peters Road businesses. Without maintenance the rear levee will be venerable to failure during large rain events when the storm surge barriers are closed. This will result in destruction of all businesses trapped between the floodwall and the 100 year storm protection.

During this public information period, we implore the Corps of Engineers to co-ordinate with state and local entities prior to construction to provide protection from rainwater by maintaining the rear levees in order to protect their tax payers.

Sincerely,

Philip Troxclair
Harvey Yard Manager
January 12, 2009

Richard A. Meissner  
811632  
Tomoka Correctional Inst.  
3950 Tiger Bay Rd.  
Daytona Beach, FL  
32124-1098

Mr. Gib Owen  
U.S. Army Corps of Engineers  
P.P. & P Management Division  
Environmental Planning & Compliance Branch  
CEMN - PM-RS  
PO. Box 60267  
New Orleans, LA 70160-0267

Dear Mr. Owen:

I am formally requesting herein to receive from your office, a complete copy of IER #12 and supporting documents. The Individual Environmental Report (IER) #12 is titled "GIWW, Harvey, and Algiers Levees and Floodwalls."

I am requesting this report so that I can make a proper informed review and comment concerning structure improvements along Harvey and Algiers Canals. Thank you for your attention to this matter.

Yours sincerely,

Richard A. Meissner
From: Owen, Gib A MVN on behalf of MVN Environmental  
Sent: Tuesday, January 13, 2009 7:38 PM  
To: Coulson, Getrisc MVN  
Subject: FW: Additional comments for inclusion in West Closure Complex Report  

Attachments: SCN_20081210094141_001_001.pdf; TIM CONNELL DECEMBER 10.doc  

Gig,  
Attached is comment for IER 12.  
Gib

Gib Owen  
US Army Corps of Engineers  
Chief, Ecological Planning and Restoration Section/ HSDRRS Environmental Team  
Leader New Orleans District  
504 862-1337

-----Original Message-----  
From: Jody Coyne [mailto:jcoyne@bkiusa.com]  
Sent: Tuesday, January 13, 2009 6:34 AM  
To: MVN Environmental  
Subject: FW: Additional comments for inclusion in West Closure Complex Report  

Attn: Mr. Gib Owen  
I am asking that the attached letter which I wrote to Mr. Tim Connell, be included in the public comments in the final version of the IER#12 report. As you will note, I had asked several questions which concern our family’s property in the vicinity of the West Closure Structure Location. I would appreciate an opportunity to discuss my comments with you.

1. In addition our family would like to know if once a final location is determined, if it impacts our family’s small wharf, boat launch and ramp over the levee (all of which have been permitted in the past), will the Corps reconstruct these upon completion of it’s activities at the front of our property. These were replaced in kind by the Parish after the last lift on the levee. We have recently spent around $5,000.00 on limestone and equipment to improve the ramp to give us access to the boat launch.

2. Will the corps assist in replacing any fences which are disrupted by corps activities.

3. Will our family be reimbursed for any loss of commercial use of our current water-frontage on the intra-coastal waterway. This type of property commands premium prices along the opposite bank along Engineers Road. The apparent location of the new drainage pump station appears to negate the possible use of the canal frontage in our area.
Please contact me at your convenience. Mr. Jody P. Coyne 486-5901-ext 131

From: Jody Coyne
Sent: Wednesday, December 10, 2008 10:06 AM
To: 'timothy.j.connell@usace.army.mil'
Subject: Additional comments for inclusion in West Closure Complex Report

Tim, I have attached a letter outlining some of the additional items you and I discussed. I have also included the review form for the meeting last night. If you need to reach me I am at 486-5901-ext. 131 or home at 393-2044. Thanks again Jody Coyne
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, La 70160-0267

Attention: Gib Owen PM-RS
Re: IER 12

Gentlemen:

As a land owner in Jefferson Parish along the Harvey Canal affected by this proposed construction, we support this project. However, there remains to be resolved the details of the water retention reservoir on the protected side of the new flood structure.

As it was explained at the Corps’ public meeting, the design of the retention reservoir on the protected side is based on an elevation of approximately four feet above mean gulf level. This retention design will work fine for the portions of the project which have levee district maintained levees along the Algiers GIWW. However, there is no public permanent flood protection along the water’s edge on the east side of the Harvey Canal. The only protection now is a temporary structure designed to last only until 2011. Though there will be a flood wall along Peters Road, there is no permanent protection for the businesses between the waters edge of Harvey Canal and the said flood wall. Without a protection levee along the waters edge of Harvey Canal, the retention reservoir will flood these businesses located to the east of Harvey Canal to the design four foot level which is not acceptable.

As a part of this project, the alternatives are either the U.S. government must either take responsibility for the levee maintenance along the east side of Harvey Canal or require the appropriate local governmental agency to provide the maintenance to prevent the four foot high retention reservoir from flooding the businesses to the east of Harvey Canal.

Should you need further explanation of this situation please call me at 504-394-5188.

Sincerely,
Numa C. Hero & Son

Allen Hero
Partner
Colonel Alvin B. Lee  
District Engineer  
U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

January 20, 2009

Dear Colonel Lee:

Please reference the U.S. Army Corps of Engineers’ (Corps) draft Individual Environmental Report (IER) # 12, titled “West Bank and Vicinity (WBV), Gulf Intracoastal Waterway (GIWW), Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans and Plaquemines Parishes.” The draft IER was transmitted via a January 5, 2009, letter from Ms. Elizabeth Wiggins, Chief of your Environmental Planning and Compliance Branch. The U.S. Fish and Wildlife Service (Service) submits the following comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 et seq.).

The draft IER provides an adequate description of fish and wildlife resources in the study area, the purpose and need for the proposed action, and the potential impacts associated with each alternative. We commend the Corps efforts to investigate all of the concerns put forth by the natural resource agencies within the expedited environmental analysis period.

During the alternatives analysis, the no-action alternative and the alternative to raise the existing Hurricane Protection System to a 100-year level of protection were considered. The no-action alternative would not be implemented because it fails to provide the authorized level of protection to the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins. The Corps also considered a series of alternative gate locations within the project area that would minimize the need for parallel protection. One of these alternatives included constructing a sector gate across the Environmental Protection Agency (EPA) Clean Water Act (CWA) Bayou aux Carpes 404 (c) area. That alternative was considered to have significant impacts to fish and wildlife resources and the EPA CWA, Section 404 (c) designated wetlands.

The preferred alternative would include construction of navigable floodgate and ancillary structures on the Gulf Intracoastal Waterway (GIWW) south of the confluence of the Algiers and Harvey Canals and upstream of the Hero Canal. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the V-levee would be raised to
the 100-year level of protection. Approximately 4,200 linear feet of floodwall would be constructed within a 100-foot-wide right-of-way along the periphery of the GIWW and the EPA CWA Bayou aux Carpes 404 (c) area to connect the proposed GIWW navigable floodgate with the existing flood protection system. Existing levees and floodwalls along Algiers and Harvey Canals will be incorporated into the protected side of the closure complex and would be integrated as features of the parallel protection system detention basin. Expansions of existing rights-of-way along several levee reaches would occur as a result of bringing those existing levees up to authorized levels of protection in order to provide necessary storm water retention during major storm events. To ensure habitat functions of the EPA CWA Bayou aux Carpes 404 (c) area are maintained, the proposed action includes several environmental augmentations along the Old Estelle pump station outfall canal and within the Bayou aux Carpes drainage area which will provide sheet flow and hydrologic exchange into, and within, the EPA CWA Bayou aux Carpes 404(c) area.

Due to the urgency of providing storm damage risk reduction to the Greater New Orleans area the design of the preferred alternative is not final. The Service and the Corps have evaluated the footprint of greatest impact to ensure that the IER addresses all potential impacts to forested and other fish and wildlife habitats. Based on the Service’s analysis of the existing conditions within the proposed footprint, implementation of the preferred alternative would directly impact 252 acres of hydrologically-altered bottomland hardwood habitat, 2.4 acres of wet bottomland hardwood habitat, and approximately 75 acres of swamp habitat. The preferred alternative would result in the direct loss of 179.2 and 38.5 average annual habitat units (AAHUs), of bottomland hardwood forest and swamp, respectively. According to our Habitat Assessment Methodology (HAM) and Wetland Value Assessment (WVA) analyses, of those impacts approximately 2.4 acres of wet bottomland hardwood and 7.4 acres of swamp habitat (i.e., total of 9.8 acres) occur within the Bayou aux Carpes 404 (c) area along the GIWW interface.

The Service calculated the acreage of potential impacts to forested and other fish and wildlife habitat using 2005 aerial photography and proposed rights-of-way provided by the Corps. The proposed right-of-way within the EPA CWA Bayou aux Carpes 404(c) area encompasses an area 4,200 feet long by 100 feet wide and is positioned along the periphery of the EPA CWA Bayou aux Carpes 404(c) area. According to the draft IER the innovative T-wall constructed within this right-of-way would be fronted by a protective berm and access road which would be positioned along the waterline further impacting any remaining habitat outside and waterward of the proposed right-of-way (0.2 acres, according to 2005 aerial photography). The Service’s habitat assessment, therefore, evaluated those additional impacts. We compared the proposed right-of-way to recently obtained 2007 aerial photography. That evaluation corresponded with the Corps’ impact assessment within the EPA CWA Bayou aux Carpes 404(c) area (i.e., 9.6 acres). The Service will address these revised impacts in our final Fish and Wildlife Coordination Act Report.

Specific Comments

2.3, Proposed Action, Table 1: Proposed Action Components, Page 25 – According to the
proposed right-of-way provided by the Corps for our HAM analyses, approximately 7 acres of bottomland hardwood habitat and 64 acres of pasture land would be temporarily impacted by two proposed staging areas. We recommend revising the table to include those impacts and provide a discussion within the wetland impacts section (3.2.1.2.2.2) of the IER. Moreover, proposed staging areas allowed to revert back to a hardwood forest after construction is complete will likely be dominated by the exotic Chinese tallowtree for part of the project life. Therefore, bottomland hardwood habitat temporarily impacted by the proposed project, including those staging areas, should be managed to control invasive species, specifically Chinese tallowtree.

2.3. Detention Basin Improvements, Page 32 – The goal of the detention basin is to provide rainwater detention during a storm event when the proposed hurricane protection system south of the confluence of the Algiers and Harvey Canals is closed. The Service questions the need to improve the existing levees which would make up that detention basin to a hurricane design level comparable to 100-year level of risk reduction. For clarification please provide a reference with regards to the Corps’ standards and the requirements needed to achieve Federal factors of safety specifically for the detention basin.

3.2.1.2.2 Proposed Action, Table 6: Proposed Action (WCC) Wetland Impacts form WVA (acres), Page 63 – We recommend revising the table to include proposed impacts to 6.9 acres of bottomland hardwood associated with the staging area north of the closure complex and levee and road realignment. Also, under habitat type indicate that the 63.6 acre staging area is pasture.

3.2.1.2.2 Specific Wetland Impacts Due to the Proposed Action, Northern Levee..., Page 65, second paragraph – The second sentence should be revised to indicate that the entire northern section would directly impact 5.8 acres of forested habitat.

3.2.3.2.1 No Action, Page 74 – We recommend omitting “non-wet” when referencing “uplands.”

3.2.3.2.2 Proposed Action, Page 74 – This section states that “implementation of the proposed action would not directly impact any upland habitats.” Impacts to upland habitat are likely to be associated with the levee realignment within the closure complex and with upgrading/improving the existing levee alignment for the proposed detention basin. This section should be revised to address those potential impacts.

3.2.6.2.2.2 Specific Fisheries Impacts Due to the Proposed Action, Page 82, first paragraph – It appears that the word “not” was inadvertently omitted from the first sentence. Revise accordingly.

Please be advised construction within the Bayou aux Carpes CWA Section 404 (c) area should not commence until the EPA’s decision to modify the designation to accommodate discharges into that area has been resolved. Furthermore, Congress is considering legislation to adjust the boundary of the Jean Lafitte National Historical Park and Preserve (NHPP), Barataria Preserve Unit to include the Bayou aux Carpes CWA Section 404 (c) area. In the meantime, the National Park Service (NPS) has constructive possession of the area. Therefore, the Corps should continue to coordinate with both the NPS and EPA regarding any proposed project feature that
may impact that area. For the NPS please contact Superintendent, David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management, David Muth, (504) 589-3882 extension 128 (david_muth@nps.gov). For the EPA please contact Ms. Barbara Keeler, 214/665-6698.

The Service appreciates the opportunity to comment on the draft IER, and we look forward to continuing coordination with the Corps and the other natural resource agencies to develop a feasible hurricane protection project for this region in a timely manner. If your staff has additional questions regarding our comments, please contact Angela Trahan at (337) 291-3137.

Sincerely,

[Signature]

James F. Boggs
Supervisor
Louisiana Field Office

cc: EPA, Dallas, TX
FWS, Atlanta, GA (ES/HC)
Jean Lafitte NHPP, New Orleans, LA (Attn: Mr. David Luchsinger)
Jean Lafitte NHPP, New Orleans, LA (Attn: Mr. David Muth)
NMFS, Baton Rouge, LA
Corps, New Orleans, LA (Attn: Mr. Gib Owen, CEMVN-PM-RS)
LDWF, Baton Rouge, LA
January 22, 2009

Gib Owen
U.S. Army Corps of Engineers
CEMVN-PM-RS
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Owen:

On behalf of Chief Oscla Clayton Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your agency’s efforts to consult us concerning the Individual Environmental Report (IER) #12, “West Bank and Vicinity, Gulf Intracoastal Waterway, Harvey, and Algiers Levees and Floodwalls” for Jefferson, Orleans and Plaquemines Parishes.

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

Upon review of the January 5, 2009 IER #12 submitted to our Tribe, no impact to religious, cultural, or historical assets of the Alabama-Coushatta Tribe of Texas should occur due to the absence of corroborating evidence from recent cultural resource investigations. Therefore, we have no objections to the proceeding of this proposal.

In the event of inadvertent discovery of human remains and/or archaeological artifacts, activity in proximity to the location must cease and appropriate authorities, including this office, notified without delay. Should you require additional assistance, please do not hesitate to contact us.

Respectfully submitted,

Bryant J. Celestine
Historic Preservation Officer

Telephone: 936 - 563 - 1181 celestine.bryant@actribe.org Fax: 936 - 563 - 1183
January 26, 2009

Mr. Pete J. Serio, Chief
Regulatory Branch
United States Army Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

RE: Draft of Individual Environmental Report # 12 (IER # 12) and related Clean Water Act (CWA) Section 404 public notice
Public Notice Date: January 05, 2009

Dear Mr. Serio:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced Public Notice. Based upon this review, the following has been determined:

During the detailed planning and construction phases, effort should be made to reduce wetland impacts, especially those impacts affecting higher quality wetlands. When practicable, access and construction activity should occur from existing waterways, and temporary workspaces and access roads should be minimized.

The impoundment of wetlands should be avoided; however, where impounding is unavoidable, measures aimed at maintaining hydrologic connections and natural flow regimes shall be taken. To this end, flood protection and control structures should be designed for operational flexibility and when deemed beneficial, control structures should remain open except when a risk of flooding exists.

LDWF would like to remain part of any Bayou aux Carpes management plan development, as well as have opportunity to review any modifications, and additional impacts. The department would also like involvement in any further detailed planning of project features and to be granted an opportunity to review and submit recommendations on such.

Additionally, the Corps shall provide adequate and appropriate mitigation for any additional unavoidable impacts to wetland functions.
The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Matthew Weigel at 225-763-3587 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Program Manager

mw

c: Matthew Weigel, Biologist
EPA Marine & Wetlands Section
USFWS Ecological Services
Mr. Gib Owen
Environmental Planning and Compliance Branch
Planning, Programs, and Management Division
New Orleans District, U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Mr. Owen:

NOAA’s National Marine Fisheries Service (NMFS) has reviewed the draft Individual Environmental Report (IER) #12 transmitted by letter from Ms. Elizabeth Wiggins dated January 5, 2009. The draft IER evaluates and quantifies the impacts associated with providing 100-year level of hurricane protection through the construction of the Gulf Intracoastal Waterway West Closure Complex.

NMFS staff has previously concurred with U.S. Fish and Wildlife Service’s (FWS) recommendations on IER #12 outlined in the Fish and Wildlife Coordination Act Report. We find the recommendations provided previously to the New Orleans District by FWS have been adequately incorporated into the document. As such, we have no comments to provide on the draft IER #12.

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

Sincerely,

Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

C:
FWS, Lafayette
EPA, Dallas
LA DNR, Consistency
F/SER46, Swafford Files
Mr. Gib Owen  
Environmental Planning and Compliance Branch  
Planning, Programs, and Project Management Division  
U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Mr. Owen:

We offer this letter as documentation of our review of the January, 2009 Draft Individual Environmental Report (DIER) #12, prepared by the U.S. Army Corps of Engineers (Corps) to evaluate the projected impacts from constructing and operating a series of upgraded and new 100-year flood protection measures for the Harvey and Algiers segment of the Mississippi River West Bank and Vicinity Hurricane and Storm Damage Risk Reduction System (HSDRRS) in Louisiana. Though DIER #12 represents the Corps’ public disclosure requirements in accordance with the National Environmental Policy Act (NEPA), it is not presented as a typical NEPA document. Rather, it has been prepared according to alternative provisions of the Council on Environmental Quality. Accordingly, our review of the draft NEPA document is a bit atypical in that it has been prepared while important data and decisions are still forthcoming.

This review represents a significant milestone in the extensive coordination between the Environmental Protection Agency (EPA) and the Corps on this project. The EPA focus for this section of the larger HSDRRS project is the Bayou aux Carpes Clean Water Act (CWA) Section 404(c) area in Jefferson Parish. EPA has a long record of protecting these wetlands, dating back to the early 1970’s and culminating in the 1985 decision to restrict the discharge of dredged and fill material.

Section 404(c) of the CWA authorizes EPA to restrict or prohibit the use of a wetland area as a disposal site for dredged or fill material if the discharge will have unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. In over three decades since this authority has existed, EPA has finalized only 12 such CWA Section 404(c) actions. Together, those few actions have protected the ecologically significant functions and values of over 73,000 acres of wetlands.

The Bayou aux Carpes CWA Section 404(c) site lies in the upper Barataria basin within the Mississippi deltaic plain, an area experiencing some of the highest historic rates of coastal wetland loss in the county and on a worldwide basis. This region experienced a spike in wetland loss and degradation as a result of hurricanes over the last several years. The Bayou aux Carpes...
site, however, has weathered the storms and other natural and human-induced forces, existing today as a unique and productive wetland system, providing ecological, flood storage, and water quality benefits. The approximately 3,000 acres of wetlands within the Bayou aux Carpes CWA Section 404(c) site are currently owned by the federal government and legislation has been proposed which would incorporate them into the Jean Lafitte National Historic Park and Preserve. There is no doubt that these wetlands represent a regional and national asset.

It is within this landscape that the Corps has been charged with developing a set of alternatives to provide additional storm protection for the people of the west bank of the Mississippi River, as well as for residential and commercial properties in the greater New Orleans metropolitan area. Hurricanes Katrina and Rita were the impetus for supplemental federal appropriations passed by Congress in the several years following the hurricanes of 2005.

In an effort to reconcile the potentially conflicting goals of increased flood protection and ecological protection, the New Orleans District of the Corps and EPA Region 6 have worked closely together and with other federal partners, State and local agencies, and many stakeholders in an effort to understand fully the possibilities for accommodating these serious needs. Seeing no acceptable option but to recommend flood control measures which would have adverse environmental impacts on the Bayou aux Carpes CWA Section 404(c) wetlands, the Corps has asked EPA to modify the 1985 CWA Section 404(c) determination to allow the construction of a berm and floodwall in an area disturbed by dredged material discharges predating the EPA designation.

The portion of the construction area within the Bayou aux Carpes CWA Section 404(c) site in the proposed alternative, described in DIER # 12 as the GIWW West Closure Complex, is located along the west bank of the Gulf Intracoastal Waterway (GIWW), or Bayou Barataria, from its junction with the Old Estelle Pumping Station Outfall Canal to a point at which the Corps proposes to construct a sector gate across the GIWW. As described in the Corps’ modification request to EPA (letter dated November 4, 2008) and in DIER # 12, the berm, floodwall, and associated features would rise up to 14 to 16 feet high and would occupy an area no greater than 4,200 linear feet by 100 linear feet. No more than ten acres of wetlands in the Bayou aux Carpes CWA Section 404(c) site would be affected and other design and construction features have been incorporated to minimize further the impacts to these wetlands.

The proposed GIWW West Closure Complex alternative is one of two alternatives presented which would entail adverse impacts to the Bayou aux Carpes CWA Section 404(c) area. Of those two, we agree that the potential impacts associated with the proposed action are far less significant. EPA has not yet, however, decided whether the existing Bayou aux Carpes CWA Section 404(c) determination will be modified to allow the discharges which would cause those impacts.

The second alternative involving impacts to the CWA Section 404(c) site is presented in DIER # 12 as the “Southern Closure Complex.” This design plan would include a new 3,000 foot-long floodwall, bisecting the Bayou aux Carpes CWA Section 404(c) area. Early in the planning process, EPA Region 6 notified the Corps of our determination that this option would present irreparable environmental impacts, most likely resulting in the loss of over 600 acres of
unique flotant marsh wetlands, and would not be in compliance with the provisions of the 1985 Bayou aux Carpes CWA Section 404(c) determination.

The "No Action" alternative affords the greatest level of protection to all environmental features within the planning segment covered by DIER # 12, including the Bayou aux Carpes CWA Section 404(c) area. While both the Algiers Gate and the Parallel Protection alternatives would avoid impacts to the Bayou aux Carpes Section 404(c) area, there would be environmental impacts to other areas of the flood protection planning segment covered by DIER # 12.

Based on the Corps’ recommendations regarding the relative flood protection benefits, social and economic costs, as well as the hydrologic, engineering, and navigation constraints, the GIWW West Closure Complex and the Southern Closure Complex alternatives were initially subjected to the greatest level of environmental analysis by our staff. Having reached agreement with the Corps that impacts from the Southern Closure Complex would present serious roadblocks to project implementation, we have since largely focused on the design features of the GIWW West Closure Complex alternative.

We have provided guidance on avoiding and minimizing the impacts to the Bayou aux Carpes CWA Section 404(c) site from the GIWW West Closure Complex alternative and we are continuing to evaluate the possibilities for minimizing and mitigating those impacts. In addition, we are working with an interagency team to evaluate an array of other features that might provide environmentally beneficial hydrologic and habitat impacts. Also, the alternative NEPA procedures developed for the HSDDRRS include a provision for a cumulative impact assessment to be published as one of the last pieces in the NEPA documentation process. For these reasons and others explained above, we are not currently able to offer a final evaluation of the full range of impacts associated with the proposed GIWW West Closure Complex alternative.

The Corps is currently gathering baseline data to evaluate potential wetland mitigation options and other project features to improve the existing hydrology of the Bayou aux Carpes area, as well as developing a long-term monitoring plan for the CWA Section 404(c) site. The Corps has committed to constructing those additional features if the analyses indicate that they would be ecologically beneficial. Discharges of dredged or fill material associated with such construction would require no additional modification to the CWA Section 404(c) designation, which contains an exception for approved habitat enhancement projects.

In the meantime, EPA is undertaking a review of the Corps’ request to modify the 1985 Bayou aux Carpes CWA Section 404(c) determination. Our decision in that matter will be a key factor in determining whether the Corps may proceed with the recommended GIWW West Closure Complex alternative. As a part of our review of the Corps’ request, we are soliciting public comments and will conduct a public hearing on the matter on February 11, 2009 (74 FR 2072, January 14, 2008). After considering all comments submitted, the ecological recommendations of other resource agencies, and the technical evaluations of our staff, EPA Region 6 will transmit to the EPA Office of Water in Washington, D.C., a written recommendation on whether the CWA Section 404(c) modification request should be granted or denied. The Assistant Administrator for Water will make the final decision and publish a notice of its availability in the Federal Register.
We recognize the need to balance flood control and environmental protection in south Louisiana and we have seen that these goals do not necessarily have to be exclusive. We have strived diligently to work with your staff and the interagency evaluation team on the HSDRRS project to protect the quality of the unique human environment of coastal Louisiana. Please do not hesitate to let us know if there is any way we can provide additional assistance. If you have any questions or wish to discuss this matter further, please contact Barbara Keeler at (214) 665-6698.

Sincerely yours,

Miguel I. Flores
Director
Water Quality Protection Division

Enclosure

cc:  U.S. Fish and Wildlife Service
     Lafayette, LA

     NOAA National Marine Fisheries Service
     Baton Rouge, LA

     Louisiana Department of Natural Resources
     Baton Rouge, LA

     Louisiana Department of Wildlife and Fisheries
     Baton Rouge, LA
Feb. 9, 2009
509 Third Ave.
Harvey, La. 70058

Gib Owen, PM-RS
U. S. Army Corps of Engineers
P. O. Box 60267
NOLA 70160-0267

Barbara Keeler (6WQ-EC)
EPA Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

mvnenvironmental@usace.army.mil  keeler.barbara@epa.gov

Dear Sir and Madam:

I am writing today in regard to the GIWW West Closure Complex, the Corps’ Individual Environmental Report 12, and the Corps’ request to impact the Bayou aux Carpes 404© area here in Jefferson Parish, Louisiana. Common sense dictates that the 404© area continue to receive full protection, and that the Corps request be denied.

For my entire adult life, the Corps of Engineers has served as a combination lap dog/lap dancer/towel girl for the Louisiana Congressional delegation, which has always ranked at or near the top in terms of corruption and its penchant for acting in direct contrast to the welfare of its constituents. Admittedly, Alaska probably kept Louisiana out of the top spot the last few years, but not for lack of trying. Some of what can only be considered to rank amongst the nation’s greatest eco-terrorists have been members of the Louisiana delegation: Billy Tauzin, J. Bennett Johnston, John Breaux, and Bob Livingston, to name a few. And today’s delegation has been guilty of tremendous neglect. Over 20 years after the creation (against terrific political opposition) of the only National Park in the State, the park’s boundaries have yet to be normalized.

For close to 40 years, I have been active in attempts to stop the Corps from either destroying or allowing the destruction of Louisiana’s wetlands. But the Corps has routinely either encouraged or allowed the continued destruction of our wetlands. Thousands upon thousands of needless projects were approved by or thought up by the Corps with the primary intent of destroying wetlands that could protect and nurture us all for the sake of some individual’s or corporation’s short-term gain. Wherever and whenever possible, the Corps ignored the law and
shirked its duties, dreaming up garbage like Nationwide Permits and delegating its authority to local programs like that of Jefferson Parish, which has always tried to destroy as many acres of wetlands as is humanly possible.

Jefferson Parish politicians wanted desperately to destroy the Bayou aux Carpes area. The Corps desperately wanted to help them do so. Only the miraculous intervention of EPA stopped that destruction from occurring. The same people who threw their weight around in those days are still around today. There may be new people in the Corps with whom I am not acquainted, who may actually want to obey the law and do what’s morally right. I hope so, although I would note that the Corps has yet to correct the situation in Crown Point, where Jefferson Parish has been illegally draining wetlands for over 30 years.

If our observations are correct, the talweg of the GIWW is now a few hundred feet from shore. The project was approved as a 125’ by 12’ channel, so there appears to be a tremendous amount of room for constructing a “T-wall” between the boundary of the Bayou aux Carpes 404© area and the boundary of the 125’ authorized channel. We find no reason to encroach upon the 404© area to accomplish the Corps’ stated purpose.

I myself live on the West Bank of Jefferson Parish. I need hurricane protection as much as anyone else. But there never was, and there is no reason to destroy wetlands to accomplish the completion of a hurricane protection levee system. Certainly, an area like the 404© area at Bayou aux Carpes is ever more rare, and as such ever more valuable as both habitat and a natural storm buffer. We cannot allow any of it to be lost. We cannot allow contaminated sediment to be placed in it. We cannot allow contaminated water to be pumped into it. We cannot bear to hear the word “mitigation”, which has historically been as pathetic a failure as the Jefferson Parish motto “Jefferson’s got to grow.”

I hereby ask the Corps to modify its design to move the “T-wall” further in the direction of the GIWW talweg to spare any and all parts of the 404© area, and I hereby ask EPA to not allow the destruction of any part of the Bayou aux Carpes 404© area.

Thank you.

Yours truly,
Joseph I. “Jay” Vincent
February 11, 2009

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RE: DRAFT INDIVIDUAL ENVIRONMENTAL REPORT 12 AND PROPOSED MODIFICATION TO 404(C) ACTION

Dear Mr. Owen and Ms. Keeler:

I am writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. Please accept the following comments regarding the Army Corps of Engineers’ Draft Individual Environmental Report: GIWW, Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans, and Plaquemines Parishes, Louisiana (IER #12), and the Proposed Modification to the Bayou aux Carpes 404(c) Action.

While we recognize that the protection of our coastal resources is urgent, we have some comments and concerns about several aspects of IER #12 as it is currently written. These concerns are outlined below:

1. Public Participation is Not Adequate

   While the public comment period was extended to at least coincide with the public hearing, this is still not adequate. If the public hearing lasts until 9:00 pm, this only allows the public three hours to process and comment upon any information presented by the Corps or other commenters. Because of this, we request the public comment period be extended to allow for the public to comment upon new information gained at the hearing.
2. Full Avoidance of Bayou aux Carpes 404(c) Must Be Further Analyzed

We would first like to applaud the Corps for working with us and EPA to develop the proposed alignment, instead of selecting an alignment that would have bisected the Bayou aux Carpes area. It is important that the Corps continue to recognize the importance of this ecologically sensitive area.

However, we feel that the 9.6 acres in the Bayou aux Carpes could be further avoided. On page 49, it is stated that “alternatives that would avoid impacts to that area were considered...this alternative was eliminated from further consideration due to constructability and navigation concerns” because it would “create engineering and construction challenges...” This statement is not supported. The navigation channel is authorized to be 125 feet wide, while the waterway is 400-500 feet wide. The Corps does not demonstrate in this IER why it is not feasible to place the T-wall further out into the waterway. Assuming the channel is in the approximate center of the canal, this would still allow a large buffer between navigation and hurricane protection. Because of this lack of justification and failure to demonstrate the necessity of impacting the 9.6 acres of the Bayou aux Carpes, we request that the moving of the t-wall further out be analyzed in order to further reduce, or even eliminate the wetland impacts. We request that an analysis be done examining moving the flood wall different distances out into the water. Since this would constitute a significant change, the IER should also be re-noticed. Additionally, EPA should not grant a 404(c) modification until it is shown that the Corps thoroughly explored all options for the reduction or elimination of impacts to the 404(c) area.

3. Wetland Impacts Must be Considered Fully

While Table 6 on page 63 presents the total direct wetland impacts anticipated, secondary and indirect impacts are not addressed. With increased storm protection comes increased development pressure. In fact the Bayou aux Carpes area was originally going to be drained and developed several years ago. On page 47, the Corps even admits that rezoning “could minimize future damages from new development in flood-prone areas,” thus implying that the surrounding areas very well could be developed given current zoning. This secondary effect must be taken into account. Further, taller and more expansive levees and flood walls have the potential to disrupt the flow of water through wetlands, potentially impacting these wetlands.

In order for this IER to fully address its environmental impacts, secondary and indirect impacts must be accounted for within the report, and slated to be mitigated for, just as direct impacts are.
Additionally, cumulative impacts are not thoroughly addressed. Acknowledging that cumulative impacts will be discussed fully in the CED, more on cumulative impacts should be included in this IER. In past meetings with the Corps, they have presented a spreadsheet that had current impacts and anticipated impacts. This analysis, or best estimate of cumulative impacts should be included in this and all subsequent IERs.

4. **Augmentation Features Must Be Thoroughly Researched and Planned**

In order for EPA to make a truly informed decision the “augmentation features” must be further designed and studies. The impact to the 404(c) area is partially justified because some augmentation features are being examined, the largest of which would be the gapping of the canal to the north of the area to allow storm runoff to flow through the wetland. A baseline study of at least two years should be done to see if this would indeed augment the area. Given that this water would be urban runoff, which could potentially be carrying high levels of nitrogen and phosphorus, metals, and petroleum products, care must be taken to ensure that this “fresh” water is truly fresh and not too contaminated to cause damage to the wetland over the short and long term.

The operating plan and funds for the augmentation features are also not discussed in this IER. On page 39, it is stated that “modifications to the banks and shell plug in the Bayou aux Carpes CWA Section 404(c) area would not be expected to require [operation and maintenance].” However the monitoring and control of flood structures in the canal would require monitoring, operation, and maintenance for at least several years after they are put into operation. The operation and management of the augmentation features must be addressed and guaranteed for years to come.

We also request if this action proceeds, a contingency plan is written into the project. Specifically if some or all of the augmentation features are not beneficial to the area, more mitigation should be required within or adjacent to the 404(c) area, since part of EPA’s decision depends on the success of these augmentation features.

5. **Beneficial Use**

It is stated that dredge material will be used beneficially in the “crib” area to build wetlands. This must be detailed more in the IER. Specifically, contaminants and wetland building plans must be further addressed. The dredge materials must be tested for contaminants to ensure that humans and wildlife will not be acutely or chronically harmed by any contaminants from industrialized navigation channels. Additionally if contaminated sediment is identified, and it is landfilled, this sediment would probably first be de-watered, which could cause large water quality issues.
Since this would be an obvious environmental impact, the effects of this dewatering of contaminated sediment must be addressed fully in the IER.

Further, a specific plan for wetland creation utilizing dredge material should be detailed in this report. It is not acceptable to defer this to the mitigation IER, as dredge disposal is an integral part of this project. This plan is vital in order to ensure that dredge material is not simply dumped in the crib area, but a plan is followed that will give wetlands the best opportunity for sustainable production.

Also regarding beneficial use, it is stated on page 29 that “overburden material...would be mulched and used on site or hauled away to a landfill.” At a recent meeting we asked why this overburden cannot be used beneficially in wetland creation instead of being hauled to a landfill, and our question was not adequately answered, so we ask again if the Corps looked into this beneficial use of overburden. If so, this information should be in the IER, if not, we formally request that this be explored within this IER.

6. **Non-Structural**

This IER, as well as other IERS that we have reviewed do not adequately address non-structural options to potential projects for the 100 year protection for metro New Orleans. On page 47, it stated that “no combination of non-structural tools could independently achieve the required 100-year level of risk reduction needed to provide hurricane surge protection on the [West Bank and Vicinity] as intended by federal statutes.” However, the question is not “can non-structural tools *eliminate* the need for structural storm protection,” but can it be used in *combination* with structural components to achieve protection that is sustainable and reduces the impact on the natural environment. We feel that the Corps is misinterpreting WRDA. While WRDA states that nonstructural measures can be considered independently or in combination with structural measures (p. 45 of IER #12), the combination of structural and nonstructural is completely ignored.

Additionally, when discussing the “raise in place” option, the IER assumes that all structures would have to be raised, and that each residential structure averages 1,800 square feet. Given that nonstructural and structural can be used together, the assumption that all buildings would have to be raised is a false assumption. Additionally, we request evidence to support the assertion that the average home in this area is 1,800 square feet.
7. **Preliminary Alternatives Screening Table is Not Complete**

Table 3 on page 50 has errors in the key, and thus is not correct. In the table there are checks, dots, and x’s, however nowhere in the table is it stated what a check is. This is a very important table, as it is supposed to summarize how each alternative was screened. Without knowing what the symbols are, it is impossible to interpret this table. Given the importance of this table, we request a re-notice of this IER, so we and EPA can be positive that the best option was truly chosen.

Thank you for the opportunity to comment on IER #12 and the 404(c) modification. While we are pleased that the Corps has worked towards avoiding impacts to the 404(c) area, we feel that more could potentially be done to protect the area. Given this, we request that EPA not modify the 404(c) action until IER #12 is truly completed, including the additions that are suggested above.

We trust that the Corps and EPA will take all of the above comments seriously, as they would enhance the project. We look forward to a timely written response. Further, we would welcome the opportunity to meet with the agencies to discuss our concerns.

Sincerely,

Matt Rota  
Water Resources Program Director

CC:  
John Ettinger, US EPA  
Horst Greczmiel, US CEQ  
Jill Mastrototaro, Sierra Club  
Melissa Samet, American Rivers  
Barry Kohl, LA Audubon Council  
Jill Witkowski, Tulane Environmental Law Clinic  
Mike Murphy, Tulane Environmental Law Clinic  
John Lopez, Lake Pontchartrain Basin Foundation  
Carlton Dufrechou, Lake Pontchartrain Basin Foundation  
Mark Davis, Tulane University  
Maura Wood, National Wildlife Federation  
Juanita Constable, National Wildlife Federation  
Natalie Snider, Coalition to Restore Coastal Louisiana
Comments RE: IER #12 and Bayou aux Carpes 404(c) modification
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Gulf Restoration Network
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Steven Peyronnin, Coalition to Restore Coastal Louisiana
Paul Kemp, National Audubon Society
Haywood Martin, Delta Chapter Sierra Club.
February 11, 2009

Gib Owen, PM-RS  Barbara Keeler (6WQ-EC)
U.S. Army Corps of Engineers  EPA Region 6
P.O. Box 60267  1445 Ross Avenue,
New Orleans, LA 70160-0267  Dallas, TX 75202-2733

Re: Combined public hearing on the Draft IER-12, on the modification of CWA Sec. 404(c) determination for Bayou aux Carpes; and hearing on GIWW West Closure Complex.

Dear Ms. Keeler and Mr. Owen,

First, the Louisiana Audubon Council wants to be on record as supporting a safe hurricane protection levee for the entire New Orleans area including the Westbank of Jefferson Parish. The Jean Lafitte National Historical Park and Preserve (JLNHPP) and Bayou aux Carpes (BAC) wetlands will provide non-structural protection and reduce the hurricane tidal surges before they reach the westbank levee system. Non-structural protection is provided by forested and non-forested wetlands and have been documented as reducing the height of tidal surges during Hurricanes Rita, Gustav and Ike.

We thank EPA and the other resource agencies for recommending to the Corps a change in their original preferred alternative, which was the Southern Closure option, GIWW-A. This alignment would have segregated the BAC, Sec. 404(c) area and adversely impacted 600 acres of flotant marsh.

The Corps’ new preferred alignment (Alternative 2, GIWW-WWC) would directly take 9.6 acres of the BAC. While this is a large decrease in the taking of wetlands of national significance, the Corps should not stop there. Additional structural changes to the eastern levee and closure complex would avoid any wetland loss to the BAC. The Corps Alternative 2, should be modified to avoid any direct or indirect impacts to the Sec 404(c) wetlands. (see below).

Alternative 2, GIWW-WWC: (a suggested modification)

It is our opinion that the encroachment into the BAC wetlands can be avoided entirely by moving the "innovative T-wall", berm and riprap further into the waterway by 100 ft., thereby avoiding the 404(c) wetlands. Bayou Barataria includes the GIWW barge channel which has a congressionally authorized width of 125 ft and a depth of 12 ft (USACE, 1998). The GIWW barge channel is a minor constituent of the waterway which is now 500-650 ft wide along the eastern side of the BAC project area. Moving the T-wall 100 ft into an area which, based on Corps maps was land prior to 1971, would be a slight alteration of the preferred alternative.

A waterway with a width of 400 ft was sufficient in 1971 and provided adequate space for a 125 ft barge channel (which then was 31 % of the waterway width). The present width of the waterway, due to erosion by barge traffic, is now 100-200 feet wider than in 1971 (USACE, 1971). This increased width reduces the portion of the waterway needed for the barge channel to 21 % of the total width. There are additional opportunities to improve the structural design of the T-wall and gate complex to avoid the BAC all together. The Corps stated that it intends to reduce the structural impacts on the BAC.
Alternative G-GIWW C: Sec. 2.5.3.4 (p. 49)

This section is a misrepresentation of the facts. It states that this alternative, of moving the "innovative T-wall" to avoid impacts to the 404(c) wetlands, would be to "construct the eastern innovative floodwall completely within the GIWW . . ." and that "construction of a floodwall within the heavily used navigation channel . . . would create engineering and construction challenges . . ."

The Corps suggests that building the floodwall in the navigation channel is the only other option to its preferred alternative. The navigation channel is only 125 ft wide in a waterway which is 600 feet in width. It appears that this misrepresentation is deliberately being used to discredit the practicability of this alternative.

What should be considered is moving the T-wall into the shallow water area which would still leave 500 ft to accommodate a 125 ft wide navigation channel. Congress authorized a 125 ft channel for most of the GIWW. If a wider channel was needed, Congress would have authorized it. Barges moored along the Harvey and Algiers Canals significantly reduce the waterway width available for barge navigation. This is evidently not a hazard to navigation. The alternative G-GIWW C was never presented in stakeholder meetings attended by our organization. Why weren't alternative designs presented in the DIER-12? Based on the various engineering designs of the sector gates and pumping station configurations (posted on the Corps' website), surely one could be modified to avoid the 404(c) wetlands all together. This deficiency should be corrected in the amended IER.

- Appendix K (Figure entitled, "Current Proposed Site Plan"): The description states that the "orientation of the pump station, gates, bypass channel and levee on east side of GIWW are not final and could change as design progresses." This means that there is still some flexibility and the final engineered design could avoid the 404(c) wetlands.

- Diagram 1 on p. 27 should be drawn to scale. It should also include the present width of the waterway and the position (centerline) of the 125 ft navigation channel. A scale showing the water depth should also be added. These figures should not be conceptual in this document.

Contaminated sediments: Appendices L, L(b) and M

The chemical analyses of the Algiers Canal sediments are not included in the Appendix of DIER-12. Only two contaminants are discussed but there is not a complete listing of COCs in which the bottom sediments were tested. Additional testing has been recommended but there is very little discussed in the DIER. A new document, dated Jan. 5, 2009, was posted on the website but not included in the DIER.

Of major concern to our organization is that the Corps intends to use the dredged material from the bottom of the Algiers Canal and barge it to the JLNHPP. The plan is to use the spoil to plug an erosional area along Lake Salvador and the Park boundary by placing the dredged material into a Geocrib. We support the use of clean spoil for beneficial use but oppose the introduction of contaminated material into the Park's ecosystem.

We request that this section of the IER be rewritten to fully identify the procedures undertaken by the Corps to determine whether the sediments are safe for open water disposal. The detection limit chosen does not take into consideration the affects of contaminants on benthic organisms - only the affect on human health. That update should include the location of sediment cores, chemical analyses of the sediments and a presentation of all the results in an appendix as part of an amended IER.

It is important that the screening procedure identify the levels of concentration of toxic sediments that cause chronic affects to benthic organisms as outlined in the NOAA's ER-M, ER-L sediment criteria for COC. In Appendix M the executive summary was omitted from the report as well.

Appendix L(b) recommends, "more sediment sampling . . . to further delineate the contaminated area." This canal could be contaminated with PAHs and other hydrocarbon derived toxics. The executive summary dated 1/5/09 for Final Phase II ESAR (and posted on the website) must be included in the amended IER-12 as well as the sediment data. The detection limit for PAHs was set at 330 ppb which is too high to detect many PAHs that have a consensus based TEL below this detection limit (Macdonald et al., 2000). Many states are using the consensus based TEL as a screening level for cleanup of contaminated sediments to protect aquatic organisms.

B. Kohl, LAC, 2/11/09
The ESAR stated that the toxic review was based on human impacts not impacts to the biota and used the LDEQ RECAP screening standards which do not consider the broader environmental impacts. Since these sediments will be deposited in the National Park, they should be tested for impacts to the biota as the highest priority. Unless this is done we oppose any of the Algiers Canal sediments being used as fill in the Barataria Preserve.

**Enterprise Pipeline Relocation:**

We did not find one map that identified the location of the existing Enterprise pipeline nor a discussion of the impacts of relocation of the pipeline on the BAC wetlands. In Appendix K figure 1 is a dashed line labeled pipeline relocation. Does this pipeline belong to Shell? It is identified on earlier corps maps as a Shell pipeline (USACE, 1971). There should be a full discussion describing how the relocation will prevent any direct or indirect impacts to the BAC. Will the old pipeline be removed? How old is it? How much will be relocated? Between what reference points will the work be done? (point A to point B). Will the pipeline segment reconnect to the old pipeline. We request the amended IER include an expansion of the discussion section fully explaining the pipeline relocation procedure and impacts to the BAC.

**Data Gaps and Uncertainties: (p. 16)**

Of concern to us, is that any additional information gathered over the one-year baseline study will come after the project has been approved. This includes most of the impacts to the BAC area.

Also, the engineering design report for the gates and floodwalls has not been completed. On page 16 it states, "At the time of the submission of this report, engineering evaluations have not been completed for all of the proposed actions and alternatives."

In fact, this section lists the data not included in this DIER-12 as; 1) sources of levee material have not been identified, 2) environmental surveys are not complete, 3) cumulative impact data are not complete, 4) impacts on transportation remain unknown, 5) the engineering analysis is based on a concept level design and is not complete.

The DIER states that a Draft Comprehensive Environmental Document (CED), "will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review." (DIER, p. 14). This means that potentially critical information will not be available at the time the IER is approved and construction commences. The long list of inadequacies admitted by the Corps shows that this document should have been withheld until the Corps had time to finish its work and prepare a complete IER prepared for public and agency review.

**"Augmentation" issues:**

**Length of study:**

We find the one year baseline study for the BAC too short. For a proper study, several annual cycles are needed especially for hydrologic information due to changes in rainfall patterns from year to year.

**Monitoring:**

The water monitoring should include the measurement of water flow under Highway 3134. The swamp on the west side of the highway is presently in the JLNHP. This highway bisected the BAC in 1977. There should be water flow monitoring at the culverts which allow water to pass under the highway. The conditional permit given to the DOTD and the congressional authorization for the highway requires that normal water circulation be maintained. It has now been over 30 years since the highway embankment was completed. How much subsidence has there been? Are all the culverts open to normal water exchange under the highway? What is the effective culvert cross sectional area available for water flow? Is there tidal exchange at the culvert locations? If so, can it be measured on both sides of the highway?
Degrading levees:

We agree that oil and gas drill hole canals should have the spoil banks degraded and in some instances the canals should be plugged. This should be done carefully since the canals and spoil banks have been there for over 40 years. A hydrologic study should consider that the swamp may be in equilibrium with the man-made ponding and drainage. Changes to the system must not harm the ecosystem of the BAC.

Opening Bayou aux Carpes shell dam:

As with degrading the levees, the opening of the dam to water flow from Bayou Barataria, during hurricane surges, may harm the swamp. Salinity ranges need to be measured in Bayou Barataria to assure that flow into the swamp will not harm or raise salinities within the leveed system.

Estelle stormwater diversion:

There is insufficient information on how contaminants in the effluent discharge from the Estelle Pumping Station will be measured. A complete list of the analytes should be included in the amended IER. We are concerned that diverting the urban effluent into BAC may not be beneficial for the wetlands. The effluent of many of the pumping stations, monitored by Jefferson Parish, have been documented to contain lead, arsenic, chromium and mercury.

How much monitoring will take place to properly document the water quality of the effluent over decades if the water will be used in the BAC? As urbanization increases in the basin, water quality will decline as more polluted urban runoff is pumped into the Estelle Canal.

We suggest that the effluent be monitored for chemicals which have shown up in Jefferson Parish analysis of effluent discharge into the Barataria Preserve (such as the Ames and Crown Point pumping stations). Water effluent monitoring must be continued over the life of the project.

The Audubon Council requests a meeting with the federal and state resource agencies to review the results of the "augmentation studies". There must be public input and review before the final decision is made to modify the BAC 404(c) ecosystem.

Inclusion in the Barataria Preserve:

The Bayou aux Carpes 404(c) area will be included within the Jean Lafitte National Historical Park and Preserve this year. Senate bill S. 22 has passed the US Senate and it is expected to pass the House soon. There are now two reasons to protect the BAC well into the future as, 1) a 404(c) area and, 2) part of the Barataria Preserve of the National Park.

Revision of the DIER necessary (IER addendum):

Because there are still important data omitted from the draft document, we request that a revised/amended IER be prepared and circulated to the public and resource agencies for review. According to the federal register, "an IER addendum responding to comments received will be completed and published for a 30-day public review period." (USACE, 2007). We are formally requesting that IER-12 be amended to include omitted information, and full responses to the public/agency comments on the DIER-12. The document should include:

1). Design of the sector gate complex with alternative designs presented- not "conceptual diagrams".
2). Alternative designs for the innovative floodwall to avoid the 404(c) area
3). Review of all dredged sediment data and chemical analyses. Decision whether dredged sediments can be utilized for beneficial purposes in the JLNHPP, based on acute and chronic impacts of toxic sediments to benthic organisms.
4). More specifics on the length of time and parameters measured for all studies discussed in the "augmentation" section of the DIER - including beneficial or adverse impacts to the 404(c) wetlands.
5. Monitoring plan details - include detailed section on rationale for placement of water flow instruments and hydrologic modeling
6. More details on the relocation of the Enterprise pipeline and its impacts to the 404(c) area.
7. A thorough analysis of the proposed diversion of urban discharges from the Estelle pumping station into the 404(c) wetlands. Also, include the impacts of pollutants on the 404(c) area.

All these issues and other data gaps must be thoroughly discussed and presented in the amended IER.

Summary:

1) In conclusion, we oppose Alternative 2, the preferred alignment, as presented in the DIER-12. The Corps admits that the engineering designs for the floodwall and gate complex are not complete and therefore we believe the design can be modified to avoid the 404(c) wetlands entirely. The new designs and supportive data should be presented in a IER addendum for public review and comment. We will reconsider our position based on the new document.

2) We also recommend that EPA deny the request by the Corps to modify its final determination on the Bayou aux Carpes CWA 404(c) since the Corps hasn't finished its alternative engineering designs for the floodwall and gate complex. It would be premature for any action to be taken by EPA at this time.

3) We oppose a process whereby any deficiencies in this IER will be answered sometime in the future - as part of a catchall document. The public must be engaged in one single process which comes to a single conclusion - not a decision process which is segmented and strung out for several years on a specific IER. It is supposed to be an individual environmental report.

4) It appears that this DIER was rushed through without the adequate internal review. This is precisely what we were concerned about with the Alternative Arrangements (USACE, 2007). It appears that expediency was the prime factor - not a thorough evaluation of the environmental impacts and avoidance. It would be a better process if the Corps allowed time for its engineers to carefully design and check its own proposals and then the public could review and comment on a document that was ready rather than one which is incomplete.

Sincerely,

Dr. Barry Kohl
President, LAC

cc:
Delta Chapter Sierra Club
Gulf Restoration Network
National Audubon Society
National Wildlife Federation
Tulane Environmental Law Clinic
Horst Greczmiel, CEQ
National Wildlife Federation
National Park Service
US Fish and Wildlife Service
National Marine Fisheries Service
La DNR

B. Kohl, LAC, 2/11/09
References:


USACE 1977. (Jeff Parish Wetlands) 26, Conditional permit for Lafitte-Larose Highway segment from Estelle to Wagner Ferry Bridge.


February 11, 2009

Gib Owen, PM-RS
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, LA 70160-0267

Barbara Keeler (6WQ-EC)
EPA Region 6
1445 Ross Avenue,
Dallas, TX 75202-2733

Re: Public hearing on the Draft IER-12, on the modification of CWA Sec. 404(c) determination for Bayou aux Carpes; and on West Closure Complex.

The Sierra Club Delta Chapter supports a safe hurricane protection levee for the entire New Orleans area including the west bank of Jefferson Parish. We also strongly support the use of natural systems such as forested and non-forested wetlands to add progressive barriers to storm surges.

We thank EPA and the other resource agencies for recommending to the Corps a change in their original preferred alternative, which was the Southern Closure option. It appears that the proposed alternative would take 9.6 acres of the BAC as opposed the 600 acres of marsh that would have been impacted by the earlier proposal. While this is a large decrease in the taking of wetlands of national significance, we suggest that the Corps can do better. Additional structural changes to the eastern levee and closure complex would avoid any wetland loss to the BAC. The Corps Alternative 2, should be modified to avoid any direct or indirect impacts to the Sec 404(c) wetlands. It appears that there is adequate space to move the structure further into the waterway so as to avoid the 404(c) wetlands.

We are also concerned that any additional information gathered over the one-year baseline study will come after the project has been approved. This includes most of the impacts to the BAC area. Also, the engineering design report for the gates and floodwalls has not been completed. The DIER states that a Draft Comprehensive Environmental Document (CED) "will contain updated information for any IER that had incomplete or unavailable data at the time it was posted"
for public review." It appears that potentially critical information will not be available at the time the IER is approved and construction commences. The list of inadequacies admitted by the Corps shows that this document should not have been released until the Corps had time to finish its work and a complete IER prepared for public and agency review.

We are informed that the Bayou aux Carpes 404(c) area will be included within the Jean Lafitte National Historical Park and Preserve this year. Senate bill S. 22 has passed the US Senate and it is expected to pass the House soon. This provides significant additional importance to the protection of the BAC as, a 404(c) area and as part of the Barataria Preserve of the National Park.

Because there are still important data omitted from the draft document, we request that a revised/amended IER be prepared and circulated to the public and resource agencies for review. We are formally requesting that IER-12 be amended to include omitted information, and full responses to the public/agency comments on the DIER-12.

In conclusion, we oppose Alternative 2, the preferred alignment, as presented in the DIER-12. We request the Corps do an amended IER containing new designs and supportive data, and we strongly recommend that EPA deny the request by the Corps to modify its final determination on the Bayou aux Carpes CWA 404(c). Furthermore we request that the comment period be extended so that all interested parties have adequate time to prepare substantive comments.

Thank you,

Haywood Martin, Chair
Sierra Club Delta Chapter

cc: Louisiana Audubon Council
From: Owen, Gib A MVN on behalf of MVN Environmental  
Sent: Saturday, February 14, 2009 8:07 AM  
To: Coulson, Getrisc MVN  
Cc: Lyncker, Lissa A MVN-Contractor  
Subject: FW: NOLA Environmental Comment - General Comment

Gigi,
Comment for IER 12. Came in on 11 February 09.
Gib

Gib Owen  
US Army Corps of Engineers  
Chief, Ecological Planning and Restoration Section/ HSDRRS Environmental Team  
Leader New Orleans District  
504 862-1337

-----Original Message-----
From: lombas@cox.net [mailto:lombas@cox.net]  
Sent: Wednesday, February 11, 2009 8:46 AM  
To: lombas@cox.net; MVN Environmental  
Cc: Powell, Nancy J MVN  
Subject: RE: NOLA Environmental Comment - General Comment

Finished glancing thru the 175 page IER-12 report. Just as I suspected, the areas south of the proposed project was not included.

----- lombas@cox.net wrote:  
> I have just read portions of the "IER 12" report, specifically page 15 regarding concerns. I doesn't mention anything about the populated areas south of the proposal. Maybe we need to move Lafitte, Barataria and Crown Point to the Bayou Aux Carpes Swamp, then maybe someone would address our concerns. I still haven't received a report that shows the "INSIGNIFICANT" tidal rise on the flood side of the structure during a storm surge. Why doesn't the Corps of Engineers hold a public meeting in the Lafitte area to explain your position. I doubt that anyone from this area will attend the public meeting tonight in New Orleans. I am not opposed to this project. If my home and community has to be sacrificed to protect the west bank . so be it. I just don't understand why these communities are not considered when hurricane protection projects are proposed. I have heard that we may be included in the Morganza to the Gulf, but only as an afterthought. I seriously do not believe this will happen (not in my lifetime anyway!) I am starting to realize the meaning of the word "insignificant". I live in an "insignificant" community, with "insignificant" representation. Any damage that may occur to my community by this proposed project will be called "insignificant. I have been fortunate in the past that my home has not flooded . I do not qualify for any assistance to elevate my home and I cannot afford to elevate on my own. I appears that elevating our homes is our only option at this time. In the future, please remember, that north of Grand Isle and south of the West bank hurricane protection levee are three communities. Please don't think of us as only the drainage for the West bank. We don't even appear on your maps most of the time!  
> ---- MVN Environmental <MVNEnvironmental@usace.army.mil> wrote:  
> >  
> > Sir,  
> > I have contacted a number of my USACE colleagues in the Engineering  
> > Division concerning your request for information. The Hydrologist  
> > working on the West Bank and Vicinity project have looked into the
Has the Corps of Engineers or any agency done any studies as to what will happen to the areas south of the proposed floodgates on the GIWW? If anyone has bothered, where can a copy of the study be found?
PUBLIC HEARING HELD IN THE MATTER OF GIWW
WEST CLOSURE COMPLEX/BAYOU AUX CARPES 404 REQUEST
FOR MODIFICATION TAKEN AT THE US ARMY CORPS OF
ENGINEERS DISTRICT OFFICE, 7400 LEAKE AVENUE, NEW
ORLEANS, LOUISIANA 70118 ON THE 11TH DAY OF
FEBRUARY 2009 COMMENCING AT 7:00 P.M.

REPORTED BY:
RACHEL TORRES-REGIS, CCR, RPR
CERTIFIED COURT REPORTER
MR. BARRA:

Okay. Let's go on record, please. Ladies and gentlemen, it is approximately 7 p.m. on February 11, 2009, and this joint public hearing concerning the Corps of Engineers Individual Environment Report No. 12, an environmental document that details potential impacts of actions proposed as part of the Gulf Intracoastal Waterway West Closure Complex Project and concerning the Corps request that EPA modify the Bayou aux Carpes Clean Water Act Section 404 (c) designation is now in session.

Good evening and thank you for coming to this public hearing.

My name is Mike Barra. I am a Regional Judicial Officer with EPA Region 6 located in Dallas, Texas. I am the designated hearing officer for this public hearing. My responsibility
includes fully developing the public hearing record by taking testimony in admitting data and information into the hearing record as evidence. EPA will consider the public hearing record in making its final decision concerning the Corps of Engineers request to modify the Bayou aux Carpes Clean Water Act Section 404 (c) designation. The Corps of Engineers will consider the public hearing record in the process of making a final decision on the actions proposed as part of the Gulf Intracoastal Waterway West Closure Complex Project described as individual Environmental Report No. 12. Please note that I do not participate in making EPA's final decision concerning the request to modify the 404 (c) designation nor in the Corps final decision on the proposed action described
in Individual Environmental Report No. 12.

In addition to me there are other EPA representatives present this evening, including Brian Frazer, Chief of the Wetlands and Aquatic Resources Regulatory Branch in the EPA headquarters Office of Water, and two persons on his staff, Ann Campbell and Clay Miller. From EPA Region 6 in Dallas, Jane Watson, Chief of the Ecosystems Protection Branch in the Water Quality Division, and Barbara Keeler, Coastal and Wetlands Planning Coordinator.

There are a number of representatives of Corps of Engineers present this evening including Lieutenant Colonel Mark Jernigan, Deputy District Commander, New Orleans District U.S. Army Corps of Engineers. And Gib Owen, the Chief of the Ecological Planning and
Restoration Section in the New Orleans District of the Corps of Engineers.

EPA prepared a public -- a public notice of tonight's public hearing in the Federal Register on January 14, 2009. The Corps of Engineers published notice of this public hearing in the Plaquemines Gazette on January 20 and 27. The Times Picayune on January 20, 28, February 7 and 11, and in The Gambit, February 8. The Corps also notified the public of tonight's public hearing with notices on its website, postcard mailings to members of the public who have requested to be on the Corps mailing list for this action, and by running flash ads during the period February 2 through February 11 on the nola.com website. The public notices informed the members of the
public of their opportunity to
obtain information and copies of
Individual Environmental Report
No. 12 and the request that EPA
modify the Bayou aux Carpes Clean
Water Act Section 404 (c)
designation to submit comments to
attend and participate in the
public hearing being held this
evening. I have entered the
public note -- copies of the
public notices for tonight's
public hearing into the hearing
record and have asked the court
reporter to number them as
Exhibits 1 and 2.

In addition, several people
have submitted written comments
prior to this public hearing. I
am entering those comments into
the record and I have asked the
court reporter to number them as
Exhibits 3 through 6.

Now I would like to outline
the procedures for this public
hearing. The procedures for this public hearing are rather simple and informal; however, this hearing must be conducted in an orderly manner that will allow EPA and the Corps to obtain and record all relevant and appropriate information related to the request to modify the Bayou aux Carpies Clean Water Act Section 404 (c) designation and Individual Environmental Report No. 12. Tonight's public hearing is not an evidentiary hearing or trial. There will be no direct or cross examination of witnesses. As hearing officer, I may ask questions but only for clarification of the hearing record. Otherwise, persons giving testimony will not be requested. This is not a forum for debate or argumentative exchanges but rather one for the gathering of facts, data and
information and opinions
regarding the request to modify
the Bayou aux Carpes Clean Water
Act Section 404 (c) Designation
and Individual Environmental
Report No. 12. EPA will respond
to questions and issues
concerning the Corps request to
modify the Bayou aux Carpes Clean
Water Act Section 404 (c)
Designation raised in the record
of this public hearing and the
Corps of Engineers will respond
to questions and issues
concerning Individual
Environmental Report No. 12
raised in the record of this
public hearing, but those answers
will be in writing and prepared
after this public hearing and
after fully considering the
questions and issues raised. EPA
and Corps of Engineers personnel
will not respond to questions
during the public hearing this
evening. They may respond to informal questions presented outside of the hearing record at the open house that will be conducted after this hearing concludes. I will call on everyone who desires to provide testimony in the order presented on the forms provided at the registration table. If you have not signed a speaker registration form and wish to testify, please take a minute to obtain and complete a form provided at the registration table. When I call upon you to give your testimony, please state your name, and if you are affiliated with or representing an organization, please identify your organization. I must obtain a clear uninterrupted record of the hearing, so please do not talk while others are giving testimony. We can only have one
person talking at a time in order
for the court reporter to be able
to hear and accurately record the
testimony provided.

As hearing officer for this
public hearing, I may impose time
limits on providing testimony if
the circumstances warrant. If
your plan testimony is rather
lengthy, I recommend that you
consider summarizing your
testimony followed by a request
to enter your complete written
statement into the hearing
record. At the present time
eleven people have signed up to
speak. In order to give everyone
an opportunity to speak in a
reasonable time, I’m imposing a
time limit of six minutes per
speaker until all have had the
opportunity to give testimony. I
will give you a warning when you
have gone five so that you know
that it will be time to be
wrapping it up. If time permits after all have had their opportunity, I may give persons wishing to add to their testimony additional time. After the public hearing closes this evening, EPA will continue to accept written comments on the request to modify the Bayou aux Carpies Clean Water Act Section 404 (c) Designation through February 13, 2009. The Corps of Engineers will continue to accept written comments on Individual Environmental Report No. 12 until 12 midnight tonight.

I will now take the testimony of persons who have signed up to speak beginning with Mayor Tim Kerner of the town of Lafitte.

MR. KERNER:

Thank you. Good evening. I want to thank y'all for having me. I was going to ask a few questions but I will just say
that watching the presentation it said that, you know, they had a lot of input and you got with the local government and the Levee Board. Well, I am the mayor of the town of Lafitte and nobody got with me or anybody that belongs to my town, and also the -- I'm the President of the Levee Board and nobody ever addressed the Levee Board with any of these issues, so -- and I will tell you what, Lafitte and Barataria is going to be the ones that's devastated from this floodgate. I'm sure that the people from the Corps here has heard about Donaldsonville to the Gulf. That the levee system that is supposed to be going from Lafourche to Belle Chasse. Well, the delegation from Washington signed a letter in support that Lafitte, Barataria and Crown Point would be in that levee system. They
are going to pick that alignment
in the next couple of months.
Why are we going through a $50
million floodgate that is right
north of Lafitte that will flood
us out even quicker when the
tidal surge is coming up and
putting a big pump station to
throw more water on us -- sorry.
Why is the Corps not sitting back
saying, well, if we are going to
protect the people of the
westbank, why not see if
Donaldsonville to the Gulf is --
when it's run and finish the
study, if GIWW -- the GIWW
alignment is chosen. If that
alignment is chosen, we are
spending fifty -- I mean, five
hundred million dollars for
nothing because we are going to
have a floodgate south of Lafitte
that is going to be sixteen and a
half feet high. It will be done
for nothing. And I will tell
you, what a slap in the face of
the people of Lafitte that is
trying to get back in their homes
right now that 70 percent of them
is gutted in a place that clean
up and you wouldn't even know
that a hurricane was there, but
they trying to get back in their
homes, they are doing it
themselves. What a slap in the
face to say $500,000 for a
floodgate right north of you and
not discuss giving one dime for
even tidal protection. The Corps
of Engineers is not coming to
Lafitte to the town hall to see
the town council or anybody in
the public hearing that -- the
Lafitte Levee Board, not anybody.
Look, the Corps of Engineers has
been so good to me with Section
205 in the continuing authority
programs, Donaldsonville to the
Gulf project, the guys have been
great, but what you are doing
here with the five hundred
million dollar floodgate without
coming to talk to the people of
Lafitte, without caring about the
people of Lafitte, Barataria and
Crown Point is a sin and you
ought to be ashamed of yourself.
That's all I got to say. Thank
you. And I oppose of it.

MR. BARRA:

Thank you for your comments.

Donald Vallee.

MR. VALLEE:

I'm Donald Vallee. We own
High Point Shooting Grounds,
which is directly along Bayou
Road, which is going to be
affected. After reading the
report on the website, 174 pages,
I wanted to comment on two
things. The little bit -- first
off, let me just say --
compliment the Corps on informing
all of us, this has been going on
for two years and there have been
numerous meetings we have had as well as people from the Corps attending and coming out to our property and all of the adjacent property all around and keeping up informed what is going on; however, in reading the report, there really was not enough significance impact addressed in it to reflect how we are going to be addressed. If you look directly behind you on that map, those two squares of property at the end of Bayou Road is what we utilize as our safe fall in shooting areas. We have to have at least a thousand feet of protected area and shot fall to protect the general public from any shot that goes into those areas. All of that is going to get lost as well as the adjoining properties and there's a lot of facilities that we have back up in there. So I just want to make
those notes back into the public comment at that point in time.
That's all I want to say.

MR. BARRA:

Thank you for your comments.
Matt Rota.

MR. ROTA:

Hello. My name is Matt Rota.
I am with Gulf Restoration
Network and I thank you for the
opportunity for the comments,
thank you for putting this
hearing together. I will also be
submitting written comments. I
have emailed them to Gib Owen and
Barbara Keeler already, but I
will also be submitting hard
copies into the record.

There is a few aspects that I
would like to talk about today.
The first one is just the whole
idea that we are having this
meeting. This is probably the
first time a lot people are
learning about this project and
our public forum, and for the
Corps to have the public comment
period to end midnight and this
is probably going to go on until
about 8 o'clock, giving everybody
a full three or so hours to
digest and figure out what they
want to comment on is just not
adequate. We don't think that
the Corps comment period has been
adequate for that. I mean, the
EPA isn't that much longer, it's
just 'til Friday, but there is at
least some significant time to be
able to digest what people are
learning today. The second thing
that I would like to mention and
I think others will be talking
about this further is that we
don't feel that the full
avoidance of the Bayou aux Carpes
404 (c) area has been looked at.
It is given a little time in
IER-12 showing that they are
avoiding and I would like to,
first of all, thank the Corps and EPA for modifying the alignment so we aren't bisecting the Bayou aux Carpes like it was originally proposed, but, still, we don't think there's enough discussion and enough analysis to look at moving the floodwall further out into the waterway, the dredged -- the dredged handle should only be 125 feet wide so there is a lot of buffer there that we don't, at least in the IER has not been fully analyzed, and so we are requesting a better analysis see moving the floodwall further out into the water, not interfering with the channel, we would like to see that further looked at. Also, there hasn't been any analysis on secondary or secondary impacts and also cumulative impacts to wetlands was not addressed. It was said that that basically was going to
be looked at in another one of
the IER's, but in public meetings
that we have had with the Corps
in the past they developed a
spreadsheet that is kind of a
rolling cumulative impact
analysis, and we feel that that
should be included in each one of
these IER's to give everybody the
best idea that they can, what
kind of cumulative impacts we are
going to be looking at with the
entire one hundred year
protection system as a whole.

Finally, last thing that I
would like to talk about today
that I would like to highlight is
the fact that non-structural
alternatives really are just
given lip service in this. It is
basically assumed in here in the
IER that -- in IER-12 that if we
can't raise every single house in
the entire area we aren't going
to look at non-structural
alternatives, raising houses, weather rising houses at all. In WRDA it is not an all or nothing, it says it can be -- non-structural alternatives can be looked at in conjunction with structural alternatives such as levees and floodwalls and I am not saying that we don't need levees and floodwalls. I'm a resident of New Orleans as probably everybody here is or the greater metro area and all of us understand the importance of levees within a comprehensive hurricane system, but completely dismissing raising houses or some houses in some areas because we can't -- it would be economically infeasible to raise every single house in the metro area is just flood logic. So in conclusion I would just like to say that we feel that the -- and it's outlined more in my written
comments that the IER-12 is not flushed out enough and that they have not -- the Corps has not presented what we feel a full analysis on all of the alternatives, and without that, we don't see how EPA can make a real informed decision without having some of that information basically, like I said, wrote off maybe moving the floodwall out a little bit more into the waterways still not impacting the channel, and we don't feel there's enough evidence to support that, and there might in the end, but we don't want EPA to make a hasty decision because they certainly didn't make a hasty decision when they first did this for the foresee action. Thank you for the opportunity to comment.

MR. BARRA:

Thank you for commenting.
Gabriel Mondino.

MR. MONDINO:

Good evening. My name is Gabriel Mondino. I suppose that my affiliation would be as a citizen of New Orleans. I have no organization that I'm affiliated with.

I guess the relevant question that I have noticed looking at this presentation, reading materials about it is that with the 404 (c) Designation and all of the work that went into what was -- what is labeled the final determination, the question of -- at hand really is not so much the entirety of the levee system, and this exactly is why EPA is here tonight, but the impact on this particular area, and so the question that -- the way that I would phrase it is whether it's reasonable for the Army Corps of Engineers to use a 404 (c)
Designated area which has already been given extensive EPA authority with oversight in fashioning adequate hurricane protection for the New Orleans area, and I would have to unfortunately say that based on the presentation that we have here tonight I don't think that we can have an adequate answer to that question because I feel that the plan at this point, the IER doesn't really seem like it's half baked. We ought to be cooking, I might give it another 20 minutes or so to see if it really hit the point at that point, but I don't feel as though the plan where it is now, there isn't enough information for the public. We do not know what the Environmental Impact of Alternative studies of placing the floodwall away from the 404 (c) Designated area back into the
shallow waters, what the
hydrological effects of that or
the engineering challenges in
that and we haven't been able to
witness that as the public to
truly see whether we, as the
public, who are the ones who
benefit from this 404 (c)
Designation are willing to allow
some impact on something that is
as noted by the EPA a national
historic treasure.

The only other comment that I
would make is that it seems to me
that the appropriate action to
take at this time is really to
present the public with an
amended IER as to this project as
opposed to filling in these
details in some sort of
comprehensive environmental
statement after the fact. I
think that doing -- doing that
course of action filling the
necessary details of a project
really runs in the face of a
logic of having these public
hearings in the first place of a
logic that foster one of our
first environmental legislation,
NEPA, and the entire logic of the
public impact and the public
opportunity to engage its civil
servants and its agencies in a
way that is going to benefit not
only the natural environment as
is the case here but also protect
all of the people like me and
everyone else in this room who
live in this metro area. That is
my only comments.

MR. BARRA:
Thank you for your comment.

Jill Mastrototano.

MS. MASTROTOTANO:
Good evening. I'm Jill
Mastrototano. I am the senior
field organizing manager for the
Sierra Club based here in New
Orleans and I appreciate the
opportunity that EPA and the Corps has afforded us all this evening in the community to review and comment on this project. I would echo the request of Matt Rota with the Gulf Restoration Network that the comment period be extended one additional week to allow those in the public that have just learned about this project to put written comments into the record beyond midnight tonight or Friday, that is EPA's deadline.

Certainly the Sierra Club supports effective comprehensive and meaningful hurricane protection for the Louisiana community, be it in the form of levees but also non-structural protection, and certainly since the 2005 hurricane season there's been significant scientific attention given to support the importance of protecting our
wetlands and maintaining our
coastal resources of which these
404 (c) designated wetlands are,
and we appreciate EPA's concern
to uphold the importance of this
404 (c) area. We would ask that
given the almost 25 years of
protection that this area has has
enjoyed that that continue in
whole. Importantly we recognize
the importance of 404 (c) not
just given the nice presentation
that EPA provided but that our
Sierra Club staff and volunteers
have worked very hard on
protecting 404 (c) area. Of
course last year's recent Yazoo
Pumps is a very good example of
that. We would ask that EPA
continue to explore the
importance of including or the
necessity of including this 404
(c) area in Jean Lafitte Historic
National Park, we would encourage
that. We also recognize that the
Corps has made significant strides in modifying the impacts of this project on the ground to 404 (c) area, and we applaud them for that. However, we feel that there can be additional distance met, and we request that the Corps explore the nine acres of impacts that continue to exist on paper. One thing that we would want them to consider is, and we don't feel it was fully explored in the IER itself, was to move the T-wall, the innovative T-wall, berm and riprap farther into the channel center, toward the channel center. The channel center currently is 500 feet and was authorized to about 400 feet, and because of the shallowness along the western side of the channel there are opportunities to consider for engineering and structural; however, the IER did not fully explore that, it just
basically had a statement in
there saying that such a -- such
a movement or location of the
T-wall would not be appropriate,
and so we would ask that that be
revisited and the Corps actually
provide adequate data to refute
or support that proposal.

To that end, I would echo the
sentiments forthcoming from our
Louisiana Delta Chapter that
represents three thousand members
as well as the New Orleans group.
Thank you.

MR. BARRA:

Thank you for your comments.
Harvey Stern.

MR. STERN:

Good evening. My name is
Harvey Stern and I am also the
Delta Chapter of the Sierra Club,
and I have here a comment of Mr.
Haywood Martin, who is chair of
the Delta Chapter of the Sierra
Club, which do in fact reflect
many of the comments that we just
heard from Jill, the field
coordinator of the Sierra Club.
I will just add a few excerpts
from this letter that I think
will elaborate on her comments.

The Sierra Club of the Delta
Chapter supports a safe hurricane
protection levee for the entire
New Orleans area including the
westbank of Jefferson Parish. We
also support the use of natural
systems such as forested to the
non-forested wetlands to add to
the aggressive barriers to the
storm surges. And we also, as
Jill mentioned, we feel that the
proposed alternative that would
take 9.6 acres of the BAC as
opposed to the 600 needs to be
reevaluated. While this is a
large decrease of the taking of
the wetlands of national
significance, we suggest that the
Corps can do better. Additional
structural changes to the eastern levee and closure compacts would avoid any wetland loss to the BAC. The Corps alternative 2 should be modified to avoid any direct or indirect impacts to the Section 404 (c) wetlands. It appears that there is adequate space to move the structure further away into the waterway so as to avoid the 404(c) wetlands as we heard expressed earlier by several folks. And we are also concerned that any additional information gathered over the one-year baseline study will come after the project has been approved. This includes most of the impacts to the BAC area. Also the engineering design report for the gates and floodwalls has not been completed. The DIER states that a Draft Comprehensive Environmental Document will
contain updated information for
any IER that had incomplete or
unavailable data at the time it
was posted for public review. It
appears that potentially critical
information will not be available
at the time the IER is approved
and construction commences.
Because there are still important
data omitted from the draft
document, we request that a
revised/amended IER be prepared
and circulated to the public and
resource agencies for review. We
are formally requesting that
IER-12 be amended to include
omitted information and full
responses to the public/agency
comments on the DIER-12.

In conclusion, we oppose
Alternative 2, the preferred
alignment as presented in the
DIER-12. We request the Corps to
do an amended IER containing new
designs and supportive data, and
we strongly recommend that EPA
deny the request by the Corps to
modify its final determination on
the Bayou aux Carpes CWA 404 (c).
Furthermore we request that the
comment period be extended, as we
heard from Jill, so that all
interested parties have adequate
time to prepare substantial
comments. Those are the comments
from the Chair of the Sierra
Club. I have a couple of
personal observations about why
this project is being done in the
first place, and as we heard
referred to at least once in this
presentation, that the intent of
the project is to provide, quote,
one hundred year level of
protection to the residents of
the westbank, and the, quote, one
hundred year level of protection
and five hundred year level of
protection has been the mantra of
the Corps, certainly before
Katrina as to how to explain to
the public the kind of protection
against a level of risk of
flooding from significant rain
events. I was at at least one
public Corps meeting at which a
Corps official himself told me
after I raised the issue about
the credibility of the one
hundred year concept that the
idea of the one hundred year
storm or even talking about a one
percent chance in any given year
is misleading, it's misguided,
it's obsolete and it needs to be
reassessed, and it's my
understanding, I stand to be
corrected, that the Corps intends
to continue to use the, quote,
one hundred year level of concept
of the one hundred year level of
flood protection in this proposed
project to explain to the public
why particular projects are
needed. I would beg the Corps to
get on the fast track and find a
different way to assess risk.
The one hundred year level of
flood level of protection concept
just does not work in many
people's mind. We are talking
about reducing flood risk. I
think the credibility of the
Corps is at risk as long as it
continues to talk about the one
hundred year level of flood risk
or the five hundred year level.
There has got to be a better way
to explain risk to the public
that is credible. People's lives
are at risk. People are making
life decisions on where to live
and whether to move back based on
the Corps decisions on this
project.

MR. BARRA:
One more minute.

MR. STERN:
That's my comments. Thank
you very much.
MR. BARRA:

Okay. Thank you. Ray Champagne.

MR. CHAMPAGNE:

Yes. My name is Ray Champagne. Resident of Lafitte, member of the Sixth Ward Association for Progress. And realizing that this project is funded, I want to congratulate the people that was involved, but saying that, Crown Point, Barataria and Lafitte is going to be left out of this, and since we have been flooding for the last three storms, we were just wondering if the Corps would take into consideration this proposal that -- it's lower Jefferson Parish alternative. It's part of what the mayor was talking about, the Donaldsonville feasibility study. Well, Shaw and other people put this together, it's pretty impressive. I would like
to leave it here for the record, and the people in Lafitte and Barataria they just tired doing with these graves every time high water come in. And they feel -- like the mayor was saying, they feel a little left out because no money has been spent south of this project and everything south of this project, especially Crown Point where the water is going to get up against this structure, and it's pretty impressive. It's a real nice -- I mean, who wouldn't like this. You would have to be crazy not to like it. It's very impressive, cost a lot of money, but anything south of that the water is going to back up against it and the potential for flooding in that area where the structure is is going to be greater, maybe not just in a quarter of a mile, we are talking about three or four miles back,
that is Crown Point, and beyond
that is Lafitte, where the mayor
is, and beyond that is where I
live. I flood regardless, but I
have been lucky. I'm above the
ground and a lot of the other
people is putting their houses
up. But, like I said, I would
like to introduce this if it's
possible and we hope that the
Corps would consider it, and I
thank you for the time.

MR. BARRA:
Thank you for your comments.
Dr. Barry Kohl.

DR. KOHL:
My name is Barry Kohl. I'm
here representing the Louisiana
Audubon Council and we thank the
Corps and EPA for holding this
hearing tonight, especially on
the EPA side protecting and
trying to continue the protection
of the 404 (c) area. The John
Lafitte National Historical Park
and Preserve and the Bayou aux
Carpes wetlands will provide
non-structural protection and
reduce the hurricane tidal surges
before they reach the westbank
levee, and they have been
documented -- the forested
wetlands and non-forested
wetlands have been documented as
reducing the height of tidal
surges during hurricanes Rita,
Gustav and Ike, so the
non-structural protection that
the 404 (c) gives, the westbank
levee and Lafitte National Park,
which protects almost the entire
portion of the westbank of
Jefferson Parish from tidal
storms is very important. We
thank the Corps for reducing the
impacts to the 404 (c). Wetlands
from the 404 (c) wetlands from
its original plans which would
take -- which would have taken
almost 600 acres of the 404 (c)
area. One way to avoid impacts, further impacts is to modify Alternative A by moving the flood wall one hundred feet into the waterway along the eastern perimeter of the 404 (c) area. We don't suggest that the wall be moved into the navigation channel as was alluded in the IER, but to the edge of the waterway which is 600 feet wide. The channel is barge channel is only 125 feet in width authorized by congress. We don't need a wider channel or congress would have authorized it, a larger channel. We request the Corps staff to consider in its engineering analysis and include in the amended IER the engineering analysis since it has environmental significance. We have been interested in all of the data gaps listed in the IER of which we find many. In fact, the section on data gaps and
uncertainties list the data note
included in the draft IER as,
one, source of levee material
that has not been identified.
Environmental surveys are not
complete. Cumulative impact data
are not complete. Impacts on
transportation remain unknown,
and one of the more important
omissions is the engineering
analysis that's based on a
concept level design and is not
complete. The last one indicates
there is still time to consider
some other engineering
alternatives. There are many
other inadequacies in the
document. It appears the
document was prepared in haste
and that the Corps should have
waited before circulating the
Draft IER for public and agency
comments. There are many
questions to be answered and they
are raised in our more detailed
comments. The record is also not complete. Letters from EPA, the Fish and Wildlife Service sent in January were not posted on the website. There should have been a complete record of documents somewhere so the public could review the agency documents before public comment period closes at midnight tonight. Technical reports were posted during the public review period and have not been summarized in the Draft IER nor was there extra time to review them. Because of this, we ask the Corps extend the comment period for another two weeks. That will give the NGO's the opportunity to communicate with the resource agencies and get a copy of their comments and to review any new technical reports posted on the web.

We also ask the amended IER-12 be prepared and that it be
circulated for a 30 day public
review period as per the
alternative arrangements. This
document should include critical
data needed for both the Corps
and EPA decision making.
Regarding EPA's involvement, we
want to thank EPA and other
resource agencies for
recommending to the Corps a
change in the original preferred
alternative which would have
taken -- impacted over 600 acres
of this nationally significant
wetland. EPA has been a real
leader over the last 35 years in
protecting important wetland in
Jefferson Parish.

MR. BARRA:
One more minute.

DR. KOHL:

Much of the land in the
Barataria Preserve of the Lafitte
National Park was protected
through NGO and EPA's vision that
these wetlands were an important
natural resource and shouldn't be
destroyed. They are now
protected in the National Park,
and legislation will be
transferring the 404 (c) Bayou
aux Carpés area into the National
Park later this year. We're
asking EPA to require a fully
funded multi-year baseline study
to be undertaken to evaluate any
modifications to the 404 (c) area
to improve the water quality and
hydrology. We're told that a one
year baseline study is not enough
to understand the complex
hydrodynamics in a man-altered
wetland system. Additional
issues are addressed in our
detail comments. We request that
EPA require the Corps to do a
thorough engineering analysis to
avoid any of the 404 (c) wetland.
A relocation of the T-wall one
hundred feet would avoid all
impacts to Bayou aux Carpes. This analysis must be completed before EPA makes a decision on whether to grant the Corps's request for modification of its 404 (c) determination. In the absence of that study, we ask EPA to deny the Corps's request for modification of the 404 (c) determination. Thank you.

MR. BARRA:

Thank you. Felicia Kahn.

MS. KAHN:

Okay. Felicia Kahn, member of the League of Women Voters of New Orleans. The League of Women Voters will submit comments to the EPA regarding the protection of wetlands and the park. We have worked -- we have worked for many, many years in this area and have extensive knowledge about it, and our statement will be submitted before February 13. Is that the correct date?
MR. BARRA:
Yes.

MS. KAHN:
So we thank you very much for allowing us to appear.

MR. BARRA:
Thank you for coming. Allen Hero.

MR. HERO:
I'm Allen Hero. I represent some landowners on the Mississippi River side of this complex, and I would like to commend the Corps, this idea was first presented about 15 years ago about putting the super -- at that time I don't know what they called it, the super pump, and was denied because of the cost benefit ratio I think was the criteria in that time. And so I think, you know, the Corps is trying to get -- solve this problem. There are a few issues that we are concerned about along
the Harvey Canal that I brought up in another one of these hearings is -- that was talked about briefly in this presentation on the tension area on the protected side of this flood structure, there is still some issues along the eastbank of Harvey Canal that have not been resolved and that those businesses there, even though they may have some protection, that funding and that protection has not been -- has not been taken into by the local Levee District. There is some conflict as to how those businesses are going to have protection when this is completed. Right now there is a temporary protection on the east side of Harvey Canal and there is no plan that I have heard as to how that is going to be maintained in the sense that we are supposed to be having one
hundred year protection. I don't think we are going to have that at that location, so I think that needs to be -- the Corps and the EPA or whoever altogether need to look at those issues ongoing because once this is built, I think everybody is going to think it's all taken care of but there is some issues there that have not been addressed in the view of myself and some other landowners along Harvey Canal.

The other issue that I don't know has been addressed, they talk about all of this dredging material coming out of the intracoastal waterway and moving that material some distance and redepositing it, I think it's most probably a more cost effective way of moving that material into some of the fast land adjoining intracoastal waterway rather than moving all
of that material ten miles away
or wherever they are going to
take it. And those are my
comments. Thank you.

MR. BARRA:

Thank you for your comments.

Jerry Huffman.

MR. HUFFMAN:

Good evening. I'm Jerry
Huffman, President of the Harvey
Canal Industrial Association. We
represent 200 businesses along
the Harvey Canal which are
greatly affected by the decisions
the Corps and the EPA will make
today. For many, many years we
have been seeking meaningful
flood protection along the
westbank. We think this proposal
will give us the best shot at
that. We understand there are
very difficult environmental
concerns. We are very much
impressed by the interagency
collaboration that has taken
place in order to address those concerns. We support the Corps request to the EPA to modify the 1985 Bayou aux Carpes Clean Water Act Section 404 (c) Final Determination and we support the current plan for the West Closure Complex as outlined in the IER-12 report. We feel that this alignment will provide a much needed and long waited storm protection for the westbank of Jefferson Parish. Now, the HCIA, in cooperation with the other business organizations, commissioned an economic impact study in late 2007. That study included all of the businesses from LaPalco Boulevard south of the Hero Pumping Station. The study revealed a total employment of 1619 employees with an aggregate payroll of more than $67.5 million and showed a direct and indirect spending of over
$1.1 billion. This study excluded companies along the upper portion of Peters Road, the Destrehan corridor or Engineers Road. The potential for economic loss in this area, a direct hit for a storm of Katrina like proportions is catastrophic. We applaud what you are doing, we support your effort. We have additional comments that we have already submitted into the record. Thank you for letting us come and to speak.

MR. BARRA:

Thank you for coming. Tom Halko.

MR. HALKO:

Good evening. My name is Thomas Halko and I live in lower Jefferson Parish, lower Lafitte, which is beyond the cone of Jean Lafitte, and, for the record, I have experience in less than four years -- four one hundred year
storms. With that being said, I
would like to concur with what
Mayor Kerner has stated as well
as Mr. Champagne, and I think,
first of all and far most that I
extend my appreciation to the
Corps of Engineers for all of the
hard work that they have done in
this region, for the EPA and for
federal involvement because I
think that it has made a
difference as it relates to our
lives and livelihood.

I think it's important, with
that being said, with all due
respect, I think that this
proposal is somewhat
shortsighted. I do believe that
there should be consideration
given to the concept that is in
and on the board as it relates to
the Donaldsonville to the Gulf
levee protection. I think it's
important to think about coastal
restoration going hand in hand
with levee protection, and I think that this project does not perfectly address that. This is -- is advertised as the primary protection for the New Orleans westbank area. When I think that -- it is important to think of a line of defense that is further south that perhaps is less intrusive environmentally, I think it's important to think of all of the Barataria estuary, but it is also important to note that lower Lafitte is the staging area for an offshore oil industry and represents substantial jobs and is very, very important to the infrastructure of all of the south and all of the nation, and I am personally as a property owner of Lafitte and I own property in Algiers Point, that I feel as if I am going to be adversely affected by this proposal because it's the
backwash that we will experience
and for attempting to protect a
few hundred or a few thousand
acres of pristine wetland, it may
compromise everything that is
pristine and wonderful south of
this area all of the way to Grand
Isle, and I think it's important
that -- to take note of that, and
I think sort of in a rush to
attempt to provide levee
protection and answers to people
that the totality of flood
protection is being minimized,
and I think that we need to turn
to the Dutch and look to see what
they have done and we -- they
have been able to both protect
their nation, not one hundred
year storms or five hundred year
storms, but a thousand year
storms, and have done so in
protecting the population as well
as their environment. Thank you.

MR. BARRA:
Thank you for your comment.
Okay. I believe we have heard
from all of the people who signed
up to speak. Okay.

Is there anyone who has not
signed up who want to sign up and
speak? Before we conclude, would
anyone who has spoken like to add
to their testimony? Yes, sir.

DR. KOHL:

I'm Barry Kohl with the
Louisiana Audubon Council. There
are a couple of items that I
skipped over before. One is the
dredging of the Algiers Canal.
We're very concerned about the
possibility of using dredge
material from the canal and
barging it to the Barataria
preserve. Their preliminary
information has shown that the
sediments in the bottom of the
canal are contaminated with
several toxics that could harm
the Lafitte National Park, the
ecosystem. One of the problems with the Corps is they analyze toxic sediments and its effect on humans and they use screening standards that is protective of human life, not aquatic life, and they intend to use this dredge material and put it in the National Park for erosion control, which is good but it should be clean sediments, and we are just concerned about the degradation of water quality in the park and the fact that the Corps has habitually done a very poor job of analyzing contaminated sediments and placing them in areas that would protect them from getting into open water. Thank you.

MR. BARRA:

Thank you. Anyone else? Yes, sir.

MR. CHAMPAGNE:

Realizing that Lafitte and
Barataria is the frontline, I would ask this audience and the Corps of Engineers to wish us well. Thank you.

MR. BARRA:

Thank you. Anyone else? Yes, sir.

MR. POURCIAU:

Lawrence Pourciau. I wanted to kind of expand on one of the comments that was made earlier about the hundred one year level of protection. It's my understanding, and please correct me if I am wrong, that that -- this came about from a one percent chance in any given year that we could be flooded; is that correct?

MR. BARRA:

We'll have -- someone will have to talk to you about that during the open house after this hearing.

MR. POURCIAU:
Okay. Well, that is my understanding of it, and if it is in fact the case, it probably does the Corps more of a disservice to anyone, of course the citizens of New Orleans, you know, for not benefitting from this because mathematically the way that works out is, you know, in 30 years there is a 30 percent chance that in any given one of those 30 years that you could experience a flood. Now, that means there is a 70 percent chance that you would not, but almost one in three chance that you would in fact experience a flooding situation is kind of scary, I think, and what this does is it makes the people feel safe and when a storm that is too big comes, it will flood and then of course the Corps will be blamed; when in fact congress didn't authorize enough funding.
for the Corps to build a wall
that was high enough, and it
won't be the Corps fault but they
will be the one that the finger
was pointed at and by using this
terminology it does kind of make
most people feel safe, but, in
fact, you know, at some point
down the road, hopefully never,
but at some point down the road
guess who is going to get the
blame, the Corps, and I would
like to see the Corps adopt
something that puts pressure on
congress to maybe help authorize
a little more funding because I
see funding given out everywhere
lately to all areas of the
country yet I do still see, you
know, why can't funding be
approved for, you know, one of
the oldest cities and most
historic cities in America.
Thank you for letting me speak.

MR. BARRA:
Thank you. Yes, sir.

MR. MONDINO:

Gabriel Mondino. I would like to add to my comment one thing which I had recalled that I failed to mention.

The EPA mentioned in the presentation that the -- when the 404 (c) or 404 legislation was enacted and the regulations were enacted that they did not foresee the need to -- they did not include a mechanism for making modifications to 404 (c) wetland, and I think that that is very, very pertinent because in crafting legislation and crafting legislation about especially environmentally affected areas, we know avenues made to make those modifications, the regulations and the statutes that fail to include those are clear and that if those modifications aren't envisioned then those
modifications should not be made, so my addition to my entire comment is that with respect to the floodwall affecting the 404 (c) area, I think that that portion of the plan needs to be roundly denied because of the logic that went into creating the 404 impact in and of itself. That's the only additional comment.

MR. BARRA:

Thank you. Anyone else? Okay. If there are no further comments or issues to be addressed, I will conclude this public hearing. Representatives of EPA and the Corps of Engineers will remain in this room to informally answer questions after the conclusion of this hearing. It is now approximately 7:57 p.m. on February 11, 2009 and this public hearing is hereby closed. Thank you for coming.
(Whereupon the hearing was concluded at 7:57 p.m.)
REPORTER'S CERTIFICATE

I, RACHEL Y. TORRES, a Certified Court Reporter, do hereby certify that the within witness, after having been first duly sworn to testify to the truth, did testify as hereinabove set forth.

That the testimony was reported by me in shorthand and transcribed under my personal direction and supervision, and is a true and correct transcript, to the best of my ability and understanding; that I am not of counsel, not related to counsel or the parties hereto, and in no way interested in the outcome of this event.

______________________________

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February 11, 2009

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IER # 12 - Appendix B (Transcript)

GIWW/BAYOU AUX CARPES PUBLIC HEARING

February 11, 2009

Page 10
ENVIRONMENTAL PROTECTION AGENCY

[FR-L-8762-2]

Request for Amendment of Designation Prohibiting Discharges of Dredged or Fill Material to the Bayou aux Carpes Clean Water Act Section 404(c) Site, Louisiana

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Public Hearing and Request for Comments.

SUMMARY: In 1985, EPA prohibited the discharge of dredged or fill material to wetlands in the Bayou aux Carpes Clean Water Act Section 404(c) site, Louisiana. EPA solicits written public comments on that request and will hold a public hearing for receipt of comments.

Public Hearing: The public hearing will be held in the District Assembly Room at the U.S. Army Corps of Engineers New Orleans District Office, 7400 Leake Avenue, New Orleans, LA 70118. The public hearing will commence at 6 p.m. on February 11, 2009, and will end when all comments have been received. During the hearing, any member of the public may submit written comments or present comments verbally.

Public Comments: In addition to providing comments at the public hearing, written comments on the CWA Section 404(c) modification request may be submitted to EPA for 30 days following the date of this notice. Comments should be addressed to Ms. Barbara Koeler (FWQ-E), EPA Region 6, 1445 Ross Avenue, Dallas, TX 75202-2733. All comments should directly address whether the 1985 Bayou aux Carpes CWA Section 404(c) EPA Final Determination should be modified as requested by the Corps.

For further information contact: For information regarding this matter, contact Ms. Barbara Koeler by phone at (214) 665-6998 or by e-mail at koeler.barbara@epa.gov. Copies of the modification request and supporting documentation are available online at: http://www.noa.env.gov/nola/public_data/projects/usace_levae/docs/original/ModificationLetterToEPA4Oct08.pdf. Additional project information may be found at: http://www.noa.env.gov/projects/usace_levae/IER.aspx?IERID=12.

SUPPLEMENTARY INFORMATION: The Bayou aux Carpes CWA Section 404(c) site is located approximately ten miles south of New Orleans, Louisiana, on the West Bank of Jefferson Parish. The site covers approximately 3200 acres, including about 3000 acres of wetlands subject to federal jurisdiction under the CWA. The area is bounded on the north by the east-west Old Estelle Pumping Station Outfall Canal, on the east by Bayou Barataria (Gulf Intracoastal Waterway), on the south by Bayou Barataria and Bayou des Familles, and on the west by State Highway 3134 and the “V-Love.” Immediately across State Highway 3134 to the west of the site is the Barataria Unit of Jean Lafitte National Historical Park and Preserve. Section 404(c) of the CWA authorizes EPA to restrict or prohibit the use of a wetland area as a disposal site for dredged or fill material if the discharge will have unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. EPA published a CWA Section 404(c) Final Determination prohibiting, with three exceptions, future discharges of dredged or fill material to wetlands in the Bayou aux Carpes site at 50 FR 47267 (November 15, 1985). Since then, the Agency has received two other requests for modification.

In connection with initial construction of the West Bank Hurricane Protection Levee, the Corps requested that EPA modify its CWA Section 404(c) designation to allow extension of the top of the “V-Love.”

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into the protected Bayou aux Carpes area. The Corps stated that such a modification would result in significant cost savings to the government and would affect only a relatively small part of the area protected by the Section 404(c) designation. EPA, however, denied that request and in 1988 the Corps modified the levee alignment to avoid disturbing the Bayou aux Carpes CWA Section 404(c) area.

In 1992, Shell Pipeline Corporation requested that EPA amend the designation to allow the discharge of dredged and fill material to wetlands in the Bayou aux Carpes CWA Section 404(c) area in connection with emergency reconstruction of a leaking pipeline. After notifying interested parties of the request via Federal Register publication and coordinating with the Corps and other agencies, EPA granted the request, publishing the decision at 57 FR 3757 (January 31, 1992). EPA concluded that relocating the pipeline to non-wetlands was infeasible from the perspectives of engineering and public safety, and that the work would have only minimal and temporary effects on the wetlands at issue.

The request notice today was submitted by the Corps and is associated with proposed improvements to the West Bank and Vicinity Hurricane Protection Levee system. By way of a letter dated November 6, 2008, the Corps requested that the designation be modified to allow construction of an easement, berm, and floodwall in an area disturbed by dredged material discharges predating the 1985 404(c) designation. The construction area is located along the west bank of the Gulf Intracoastal Waterway, or Bayou Barataria, from its junction with the Old Estelle Pumping Station Outfall Canal to a point at which the Corps proposes to construct a sector gate across the Waterway. As described in the modification request, the berm and floodwall would be 14 to 16 feet high and would occupy an area no greater than 4,200 linear feet by 100 linear feet. No more than ten acres of wetlands in the Bayou aux Carpes CWA Section 404(c) site would be affected and other design and construction features have been incorporated to minimize impacts to the wetlands.

The Corps is currently gathering baseline data to evaluate potential wetland mitigation options and other project features to improve the existing hydrology of the Bayou aux Carpes site. The Corps has committed to constructing those features if the analyses indicate that they would be ecologically beneficial. Discharges of dredged or fill material associated with such construction would require no additional modification to the CWA Section 404(c) designation, which contains an exception for approved habitat enhancement projects.

Additional information on the Corps project and its relationship to the Bayou aux Carpes site may be found in the Alternative Natural Environmental Policy Act document, known as Individual Environmental Report #12 (IER #12), which is posted online at:


The public hearing referenced above will be jointly conducted by EPA Region 6 and the Corps. At the hearing, EPA will receive comments on the Corps request to EPA to modify the Bayou aux Carpes CWA Section 404(c) designation and the Corps will receive comments on IER #12.

After considering all comments submitted, EPA Region 6 will transmit to the EPA Office of Water in Washington, DC, a written recommendation on whether the CWA Section 404(c) modification request should be granted or denied. The Assistant Administrator for Water will make the final decision and publish a notice of its availability in the Federal Register.

Dated: January 6, 2009.

Richard E. Greene,
Regional Administrator, EPA Region 6.

BILLING CODE 6559-50-P

FEDERAL COMMUNICATIONS COMMISSION

Notice of Public Information
Collected, and a Form Submitted by the Federal Communications Commission for Extension Under Delegated Authority, Comments Requested

January 8, 2009.

SUMMARY: The Federal Communications Commission, as part of its continuing effort to reduce paperwork burden, invites the general public and other Federal agencies to take this opportunity to comment on the following information collection(s), as required by the Paperwork Reduction Act (PRA) of 1980, 44 U.S.C. 3501-3520.

The agency may not conduct or sponsor a collection of information unless it displays a currently valid control number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the Paperwork Reduction Act (PRA) that does not display a valid control number. Comments are requested concerning (a) Whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission’s burden estimate; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

DATES: Written Paperwork Reduction Act (PRA) comments should be submitted on or before March 16, 2009. You may anticipate that you will be submitting PRA comments, but find it difficult to do so within the period of time allowed by this notice, you should advise the FCC contact listed below as soon as possible.

ADDRESSES: Direct all PRA comments to Nicholas A. Fraser, Office of Management and Budget, (202) 395-3667, or via fax at 202-395-5167 or via Internet at Nicholas.A.Fraser@omb.eop.gov and to Judith B. Herman at Judith.B.Herman@fcc.gov, Federal Communications Commission, or an e-mail to PRA@fcc.gov. To view a copy of this information collection request (ICR) submitted to OMB: (1) Go to the Web page http://www.reginfo.gov/public/do/PRAMain, (2) look for the section of the Web page called “Currently Under Review”, (3) click on the downward-pointing arrow in the “Select Agency” box below the “Currently Under Review” heading, (4) select “Federal Communications Commission” from the list of agencies presented in the “Select Agency” box, (5) click the “Submit” button to the right of the “Select Agency” box, and (6) when the list of FCC ICRs currently under review appears, look for the title of this ICR (or its OMB Control Number, if there is one) and then click on the ICR Reference Number to view detailed information about this ICR.

FOR FURTHER INFORMATION CONTACT: For additional information, contact Judith B. Herman at 202-418-0214 or via the Internet at Judith.B.Herman@fcc.gov.

SUPPLEMENTARY INFORMATION:

OMB Control Number: 3060-0755. Title: Sections 59.1 through 59.4, Infrastructure Sharing.

Form No.: N/A.

Type of Review: Extension of a currently approved collection.

Respondents: Business or other for-profit.
Reducing Risk in Southeast Louisiana

The U.S. Army Corps of Engineers, New Orleans District, is hosting a public meeting to discuss environmental compliance efforts, per the National Environmental Policy Act.

**Jan. 28, 2009**
Plaquemines Parish Non-Federal Levees
Woodland Plantation
21997 Highway 23, Port Sulphur, LA 70083
Open House: 6:00 p.m. – 7:00 p.m.
Presentation/Discussion: 7:00 – 9:00 p.m.

Meeting presentation will:
- Discuss the plans to upgrade the current Plaquemines Parish Non-Federal Levees as it will be discussed in the Supplemental Environmental Impact Statement.

The U.S. Army Corps of Engineers, New Orleans District is also hosting a joint public hearing with the Environmental Protection Agency.

**Feb. 11, 2009**
GIWW West Closure Complex/
Bayou aux Carpes 404 request for modification
US Army Corps of Engineers
District Office
7400 Leake Ave., New Orleans, LA 70118
Open House: 5:00 – 6:00 p.m.
Presentation/Comments: 6:00 – 9:00 p.m.

Meeting will:
- Provide a unique venue to take comments on the Corps' proposed action to reduce risk to communities surrounding the Harvey and Algiers canals as discussed in IER 12
- Provide a unique venue for the EPA to take comments on the Corps' proposed action which will require a modification to the Bayou aux Carpes 404(c) area, a wetland of national importance.

Contact: Gib Owen  (504) 862-1337
mvnenviro@usace.army.mil
www.nolaenvironmetal.gov
Reducing Risk in Southeast Louisiana

The U.S. Army Corps of Engineers, New Orleans District, is hosting a public meeting to discuss environmental compliance efforts, per the National Environmental Policy Act.

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Feb. 11, 2009  GIWW West Closure Complex/Bayou aux Carpes 404 request for modification
US Army Corps of Engineers
District Office
7400 Leake Ave., New Orleans, LA 70118
Open House: 5:30 – 6:00 p.m.
Presentation/Comment-only period: 6:00 p.m.

The Corps has extended the public comment period for IER 12 from Feb. 4 to Feb. 11, 2009. All comments given at the public hearing will be considered as official comments to IER 12.

Meeting will:
• Provide a venue to give comments on the Corps’ proposed action to reduce risk to communities and businesses near the Harvey and Algiers canals as discussed in IER 12
• Provide a venue for the EPA to accept comments on the Corps’ proposed action which will require a modification to the Bayou aux Carpes 404(c) area, a wetland of national significance under the jurisdiction of the EPA.

Contact: Gib Owen  (504) 862-1337  mvnenvironmental@usace.army.mil

Learn more at www.nolaenvironmental.gov
Building Strong™

The U.S. Army Corps of Engineers, New Orleans District is hosting a joint public hearing with the Environmental Protection Agency.

Feb. 11, 2009  
GiWW West Closure Complex/Bayou aux Carpes 404 request for modification
US Army Corps of Engineers District Office
7400 Leake Ave., New Orleans, LA 70118
Doors open at 5:30 p.m.
Presentation begins promptly at 6:00 p.m. and is followed by a comment-only period

The Corps has extended the public comment period for Individual Environmental Report 12 from Feb. 4 to Feb. 11, 2009. All comments given at the public hearing will be considered as official comments to IER 12.

Meeting will:
- Provide a venue to give comments on the Corps’ proposed action to reduce risk to communities and businesses near the Harvey and Algiers canals as discussed in IER 12
- Provide a venue for the EPA to accept comments on the Corps’ proposed action which will require a modification to the Bayou aux Carpes 404(c) area, a wetland of national significance under the jurisdiction of the EPA

The U.S. Army Corps of Engineers, New Orleans District, is continuing its series of public meetings to discuss environmental compliance efforts, per the National Environmental Policy Act, and project updates on the planned and proposed Greater New Orleans Hurricane and Storm Damage Risk Reduction System.

Mar. 3, 2009  
New Orleans Lakefront Levees west of the Industrial Canal and
Inner Harbor Navigation Canal Surge Barrier - Borgne and Pontchartrain
Lindy Boggs International Conference Center
2045 Lakeshore Dr., New Orleans LA 70122
Open house 6 p.m.  Presentation and discussion 7 p.m.

Meeting presentation will:
- Provide an overview of the proposed action to improve the New Orleans Lakefront Levee as discussed in IER 4
- Discuss the status of construction of the Inner Harbor Navigation Canal Surge Barrier - Lake Borgne as previously discussed in IER 11 Tier 2 Borgne
- Provide an overview of the alternatives under consideration for reducing risk to the residents and businesses near the Inner Harbor Navigation Canal Surge Barrier - Lake Pontchartrain as it will be discussed in IER 11 Tier 2 Pontchartrain

Upcoming Public Meetings

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<td>#1 Lynn Oaks Dr.</td>
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Contact: Gib Owen  (504) 862-1337  mwvenvironmental@usace.army.mil
Learn more at www.nolaenvironmental.gov
Reducing Risk on the Westbank

The U.S. Army Corps of Engineers, New Orleans District is hosting a joint public hearing with the Environmental Protection Agency.

Feb. 11, 2009
GIWW West Closure Complex/Bayou aux Carpes 404 request for modification
US Army Corps of Engineers
District Office
7400 Leake Ave., New Orleans, LA 70118
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- Provide a venue for the EPA to accept comments on the Corps’ proposed action which will require a modification to the Bayou aux Carpes 404(c) area, a wetland of national significance under the jurisdiction of the EPA

Contact: Gib Owen (504) 862-1337 myenvironmental@usace.army.mil
Learn more at www.nolaenvironmental.gov
Police identify mother who threw newborn into lake; say she will be charged with first-degree murder

20-year-old court date set for charged abortion. Adoption counseling.

- Qualifying opens in for state appeals court posts and for Jefferson, Gretna and Westwego offices.
- Apartment complex approved at former site of St. Aloysius High

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3:15 AM

Q&A with Times-Picayune beat reporter John Reid

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dealer & satellite maps

5-day forecast and more »

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Police identify mother who threw newborn into lake; say she will be charged with first-degree murder

24-year-old told police she killed infant after abortion, adoption counseling.

• Qualifying opens in for state appeals court posts and for Jefferson, Gretna and Westwego offices.

• Apartment complex approved at former site of St. Aloysius High School.

• Trent Johnson’s LSU Tigers have more important things to worry about than home rank.

New Orleans District Assembly Room
7400 Leake Ave., New Orleans, LA 70118
US Army Corps of Engineers

Nola.com Feb. 2 – Feb. 11, 2009
Ms. Barbara Keeler (6WQ-EC)
Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Dear Ms. Keeler:

Please reference the Environmental Protection Agency’s (EPA) Notice of Public Hearing and Request for Comments published in the Federal Register (Volume 74, No. 9, pg. 2072) on January 14, 2009. The U.S. Army Corps of Engineers (Corps), New Orleans District, has requested an amendment to EPA’s Clean Water Act (CWA) Section 404 (c) designation which prohibits discharges of dredged or fill material into the Bayou aux Carpes Site in Jefferson Parish, Louisiana. That amendment is requested to allow the Corps to construct the proposed Westbank and Vicinity of New Orleans (WBV), Harvey to Algiers, 100-year level hurricane protection project, Individual Environmental Report 12 (IER 12), which is authorized in accordance with Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). The EPA has requested comments as to whether the 1985 Bayou aux Carpes CWA Section 404 (c) EPA Final Determination should be modified as requested by the Corps. The Service submits the following comments in accordance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 et seq.), Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The Service recognizes the importance of the Bayou aux Carpes wetland complex to fish and wildlife resources and believes that the designation is warranted to protect these sensitive areas from development. In cooperation with Federal and State partners, the Corps has minimized potential direct and indirect impacts to significant flotant marsh and cypress swamp habitat by aligning the floodwall along the periphery of the Bayou aux Carpes CWA Section 404 (c) site. While the preferred alignment has resulted in greater direct impacts to forested wetlands, those forested wetlands at one time were previously altered by fill material. The preferred alignment would enclose fewer wetland acres, and avoid the damaging hydrologic consequences associated with bisecting the Bayou aux Carpes flotant marsh with a structural barrier. Moreover, unlike the Harvey Canal-Bayou Barataria Levee project which was the catalyst for EPA’s determination, the preferred alternative alignment would avoid inclusion of the Bayou aux Carpes flotant and cypress swamp complex into the flood protection system and subsequently placing the area under
pumped drainage.

During the alternatives analysis for IER 12, the Corps considered a series of alternative gate locations within the project area that would minimize the need for parallel protection. One of these alternatives included constructing a sector gate across the Bayou aux Carpes CWA Section 404 (c) site and was initially the Corps’ preferred alternative. The proposed floodwall alignment within the Bayou aux Carpes CWA Section 404 (c) site would have, not only directly impacted high-quality flotant marsh and forested wetlands, but would have isolated approximately 500 acres of flotant marsh by placing them within the flood protection system. Constructing a floodwall across flotant marsh would disrupt the dynamic hydrologic conditions characteristic of a flotant marsh and would disrupt the natural hydrologic regimes within the entire Bayou aux Carpes wetland complex negatively impacting significant fish and wildlife resources. As proposed, the preferred alternative would minimize impacts by avoiding bisecting the Bayou aux Carpes CWA Section 404 (c) site and by implementing innovative design and construction techniques (e.g., floodwall design, construction sequencing).

At this time, the Service is unaware of any threatened or endangered species or their critical habitat within the proposed hurricane protection system project footprint for IER 12. However, the project-area forested wetlands provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*), and a bald eagle nest was documented within the Bayou aux Carpes drainage area in 2007. This should be considered when designing environmental augmentation features. The bald eagle was officially removed from the List of Endangered and Threatened Species on August 8, 2007. Bald eagles nest in Louisiana from October through mid-May. Eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water in the southeastern Parishes. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (i.e., organochlorine pesticides and lead). Although the bald eagle has been removed from the List of Endangered and Threatened Species, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute “disturbance,” which is prohibited by the BGEPA. The Service’s Division of Migratory Birds for the Southeast Region (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting such consultations. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

Direct impacts to bottomland hardwood and swamp habitat associated with the preferred alternative were quantified by acreage and habitat quality (i.e., average annual habitat units or AAHUs). The Service used the Louisiana Department of Natural Resources Habitat Assessment Methodology (HAM) to quantify the impacts of proposed project features on upland and wetland bottomland hardwood habitat and used the Wetland Value Assessment (WVA) methodology to quantify the impacts on swamp habitat. The Service determined that direct impacts to approximately 9.6 acres of forested habitat (i.e., 2.4 acres of bottomland hardwood habitat and 7.2 acres of swamp habitat) within the proposed 100-foot right-of-way of the Bayou aux Carpes CWA Section 404 (c) site would result in the loss of 6.1 AAHUs. Riparian habitat and
associated fish and wildlife resources would be minimally reduced within the Bayou aux Carpes CWA Section 404 (c) site. Mitigation for unavoidable losses of wet and non-wet bottomland hardwoods and swamp habitat, caused by project features of the entire hurricane protection system will be evaluated through a complementary comprehensive mitigation IER. However, should this designation be amended and the Corps’ proposed alternative authorized, mitigation for unavoidable impacts to the Bayou aux Carpes 404 (c) area would be provided concurrently with flood protection features and within the Bayou aux Carpes 404 (c) area.

To ensure that potential impacts resulting from the construction of a flood protection structure do not compromise the value of this nationally-significant wetland ecosystem and to maintain the integrity of the Bayou aux Carpes CWA Section 404 (c) site, the Corps is proposing to incorporate environmental augmentation features into the proposed hurricane protection project. Stormwater from the Old Estelle Pump Station canal is currently being directed into the GIWW bypassing the Bayou aux Carpes wetland complex. Because of the invaluable water quality functions wetlands provide, stormwater will be redirected through the Bayou aux Carpes CWA Section 404 (c) site which would restore the natural process of nutrient cycling and reduce the risk of eutrophication in the lower basin waterbodies, provided modeling results support that action. Proposed augmentations could supplement hydrologic exchange within approximately 3,000 acres of flotant marsh, cypress swamp, and wetland scrub-shrub habitat.

Although complete avoidance of the Bayou aux Carpes CWA Section 404 (c) site would be preferred, it is the Service’s opinion that amending the designation as proposed would not have an unacceptable adverse effect on fish and wildlife resources within the Bayou aux Carpes wetland complex. The Corps has incorporated proposed environmental augmentation features as a feature of the proposed project. Provided that hydrologic modeling supports implementation of those features, the Service believes that those augmentations coupled with long-term monitoring will ensure that unforeseen impacts to the Bayou aux Carpes CWA Section 404 (c) site are avoided. On the condition that the Corps moves forward with modeling and design of the environmental augmentation features concurrently with hurricane protection features, the Service would not be opposed to EPA modifying the 1985 Bayou aux Carpes CWA Section 404 (c) EPA Final Determination.

We appreciate the opportunity to comment on the proposed amendment and look forward to the continued coordination with the EPA, the Corps, and other State and Federal resource agencies with regards to the proposed hurricane protection system project. Should you have any questions regarding our comments, please give me a call (337/291-3115).

Sincerely,

[Signature]

James F. Boggs
Supervisor
Louisiana Field Office
cc: FWS, Atlanta, GA (ES/HC)
    Corps, New Orleans, LA
    Jean Lafitte National Historical Park and Preserve, New Orleans, LA
    NMFS, Baton Rouge, LA
    LDWF, Baton Rouge, LA
    LDNR, CMD, Baton Rouge, LA
Ms. Barbara Keeler (6WQ-EC)  
Environmental Protection Agency  
Region 6  
1445 Ross Avenue  
Dallas, Texas 75202-2733

Dear Ms. Keeler:

Please reference the Environmental Protection Agency’s (EPA) Notice of Public Hearing and Request for Comments published in the Federal Register (Volume 74, No. 9, pg. 2072) on January 14, 2009. The U.S. Army Corps of Engineers (Corps), New Orleans District, has requested an amendment to EPA’s Clean Water Act (CWA) Section 404 (c) designation which prohibits discharges of dredged or fill material into the Bayou aux Carpes Site in Jefferson Parish, Louisiana. That amendment is requested to allow the Corps to construct the proposed Westbank and Vicinity of New Orleans (WBV), Harvey to Algiers, 100-year level hurricane protection project, Individual Environmental Report 12 (IER 12), which is authorized in accordance with Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). The EPA has requested comments as to whether the 1985 Bayou aux Carpes CWA Section 404 (c) EPA Final Determination should be modified as requested by the Corps. The Service submits the following comments in accordance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 et seq.), Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The Service recognizes the importance of the Bayou aux Carpes wetland complex to fish and wildlife resources and believes that the designation is warranted to protect these sensitive areas from development. In cooperation with Federal and State partners, the Corps has minimized potential direct and indirect impacts to significant flotant marsh and cypress swamp habitat by aligning the floodwall along the periphery of the Bayou aux Carpes CWA Section 404 (c) site. While the preferred alignment has resulted in greater direct impacts to forested wetlands, those forested wetlands at one time were previously altered by fill material. The preferred alignment would enclose fewer wetland acres, and avoid the damaging hydrologic consequences associated with bisecting the Bayou aux Carpes flotant marsh with a structural barrier. Moreover, unlike the Harvey Canal-Bayou Barataria Levee project which was the catalyst for EPA’s determination, the preferred alternative alignment would avoid inclusion of the Bayou aux Carpes flotant and cypress swamp complex into the flood protection system and subsequently placing the area under
pumped drainage.

During the alternatives analysis for IER 12, the Corps considered a series of alternative gate locations within the project area that would minimize the need for parallel protection. One of these alternatives included constructing a sector gate across the Bayou aux Carpes CWA Section 404 (c) site and was initially the Corps’ preferred alternative. The proposed floodwall alignment within the Bayou aux Carpes CWA Section 404 (c) site would have, not only directly impacted high-quality flotant marsh and forested wetlands, but would have isolated approximately 500 acres of flotant marsh by placing them within the flood protection system. Constructing a floodwall across flotant marsh would disrupt the dynamic hydrologic conditions characteristic of a flotant marsh and would disrupt the natural hydrologic regimes within the entire Bayou aux Carpes wetland complex negatively impacting significant fish and wildlife resources. As proposed, the preferred alternative would minimize impacts by avoiding bisecting the Bayou aux Carpes CWA Section 404 (c) site and by implementing innovative design and construction techniques (e.g., floodwall design, construction sequencing).

At this time, the Service is unaware of any threatened or endangered species or their critical habitat within the proposed hurricane protection system project footprint for IER 12. However, the project-area forested wetlands provide nesting habitat for the bald eagle (Haliaeetus leucocephalus), and a bald eagle nest was documented within the Bayou aux Carpes drainage area in 2007. This should be considered when designing environmental augmentation features. The bald eagle was officially removed from the List of Endangered and Threatened Species on August 8, 2007. Bald eagles nest in Louisiana from October through mid-May. Eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water in the southeastern Parishes. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (i.e., organochlorine pesticides and lead). Although the bald eagle has been removed from the List of Endangered and Threatened Species, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute “disturbance,” which is prohibited by the BGEPA. The Service’s Division of Migratory Birds for the Southeast Region (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting such consultations. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

Direct impacts to bottomland hardwood and swamp habitat associated with the preferred alternative were quantified by acreage and habitat quality (i.e., average annual habitat units or AAHUs). The Service used the Louisiana Department of Natural Resources Habitat Assessment Methodology (HAM) to quantify the impacts of proposed project features on upland and wetland bottomland hardwood habitat and used the Wetland Value Assessment (WVA) methodology to quantify the impacts on swamp habitat. The Service determined that direct impacts to approximately 9.6 acres of forested habitat (i.e., 2.4 acres of bottomland hardwood habitat and 7.2 acres of swamp habitat) within the proposed 100-foot right-of-way of the Bayou aux Carpes CWA Section 404 (c) site would result in the loss of 6.1 AAHUs. Riparian habitat and
associated fish and wildlife resources would be minimally reduced within the Bayou aux Carpes CWA Section 404 (c) site. Mitigation for unavoidable losses of wet and non-wet bottomland hardwoods and swamp habitat, caused by project features of the entire hurricane protection system will be evaluated through a complementary comprehensive mitigation IER. However, should this designation be amended and the Corps' proposed alternative authorized, mitigation for unavoidable impacts to the Bayou aux Carpes 404 (c) area would be provided concurrently with flood protection features and within the Bayou aux Carpes 404 (c) area.

To ensure that potential impacts resulting from the construction of a flood protection structure do not compromise the value of this nationally-significant wetland ecosystem and to maintain the integrity of the Bayou aux Carpes CWA Section 404 (c) site, the Corps is proposing to incorporate environmental augmentation features into the proposed hurricane protection project. Stormwater from the Old Estelle Pump Station canal is currently being directed into the GIWW bypassing the Bayou aux Carpes wetland complex. Because of the invaluable water quality functions wetlands provide, stormwater will be redirected through the Bayou aux Carpes CWA Section 404 (c) site which would restore the natural process of nutrient cycling and reduce the risk of eutrophication in the lower basin waterbodies, provided modeling results support that action. Proposed augmentations could supplement hydrologic exchange within approximately 3,000 acres of flotant marsh, cypress swamp, and wetland scrub-shrub habitat.

Although complete avoidance of the Bayou aux Carpes CWA Section 404 (c) site would be preferred, it is the Service's opinion that amending the designation as proposed would not have an unacceptable adverse effect on fish and wildlife resources within the Bayou aux Carpes wetland complex. The Corps has incorporated proposed environmental augmentation features as a feature of the proposed project. Provided that hydrologic modeling supports implementation of those features, the Service believes that those augmentations coupled with long-term monitoring will ensure that unforeseen impacts to the Bayou aux Carpes CWA Section 404 (c) site are avoided. On the condition that the Corps moves forward with modeling and design of the environmental augmentation features concurrently with hurricane protection features, the Service would not be opposed to EPA modifying the 1985 Bayou aux Carpes CWA Section 404 (c) EPA Final Determination.

We appreciate the opportunity to comment on the proposed amendment and look forward to the continued coordination with the EPA, the Corps, and other State and Federal resource agencies with regards to the proposed hurricane protection system project. Should you have any questions regarding our comments, please give me a call (337/291-3115).

Sincerely,

James F. Borgs
Supervisor
Louisiana Field Office
cc:  FWS, Atlanta, GA (ES/HC)
    Corps, New Orleans, LA
    Jean Lafitte National Historical Park and Preserve, New Orleans, LA
    NMFS, Baton Rouge, LA
    LDWF, Baton Rouge, LA
    LDNR, CMD, Baton Rouge, LA
Feb. 9, 2009
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Barbara Keeler (6WQ-EC)
EPA Region 6
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Dear Sir and Madam:

I am writing today in regard to the GIWW West Closure Complex, the Corps’ Individual Environmental Report 12, and the Corps’ request to impact the Bayou aux Carpes 404© area here in Jefferson Parish, Louisiana. Common sense dictates that the 404© area continue to receive full protection, and that the Corps request be denied.

For my entire adult life, the Corps of Engineers has served as a combination lap dog/lap dancer/towel girl for the Louisiana Congressional delegation, which has always ranked at or near the top in terms of corruption and its penchant for acting in direct contrast to the welfare of its constituents. Admittedly, Alaska probably kept Louisiana out of the top spot the last few years, but not for lack of trying. Some of what can only be considered to rank amongst the nation’s greatest eco-terrorists have been members of the Louisiana delegation: Billy Tauzin, J. Bennett Johnston, John Breaux, and Bob Livingston, to name a few. And today’s delegation has been guilty of tremendous neglect. Over 20 years after the creation (against terrific political opposition) of the only National Park in the State, the park’s boundaries have yet to be normalized.

For close to 40 years, I have been active in attempts to stop the Corps from either destroying or allowing the destruction of Louisiana’s wetlands. But the Corps has routinely either encouraged or allowed the continued destruction of our wetlands. Thousands upon thousands of needless projects were approved by or thought up by the Corps with the primary intent of destroying wetlands that could protect and nurture us all for the sake of some individual’s or corporation’s short-term gain. Wherever and whenever possible, the Corps ignored the law and
shirked its duties, dreaming up garbage like Nationwide Permits and delegating its authority to local programs like that of Jefferson Parish, which has always tried to destroy as many acres of wetlands as is humanly possible.

Jefferson Parish politicians wanted desperately to destroy the Bayou aux Carpes area. The Corps desperately wanted to help them do so. Only the miraculous intervention of EPA stopped that destruction from occurring. The same people who threw their weight around in those days are still around today. There may be new people in the Corps with whom I am not acquainted, who may actually want to obey the law and do what’s morally right. I hope so, although I would note that the Corps has yet to correct the situation in Crown Point, where Jefferson Parish has been illegally draining wetlands for over 30 years.

If our observations are correct, the talweg of the GIWW is now a few hundred feet from shore. The project was approved as a 125’ by 12’ channel, so there appears to be a tremendous amount of room for constructing a “T-wall” between the boundary of the Bayou aux Carpes 404© area and the boundary of the 125’ authorized channel. We find no reason to encroach upon the 404© area to accomplish the Corps’ stated purpose.

I myself live on the West Bank of Jefferson Parish. I need hurricane protection as much as anyone else. But there never was, and there is no reason to destroy wetlands to accomplish the completion of a hurricane protection levee system. Certainly, an area like the 404© area at Bayou aux Carpes is ever more rare, and as such ever more valuable as both habitat and a natural storm buffer. We cannot allow any of it to be lost. We cannot allow contaminated sediment to be placed in it. We cannot allow contaminated water to be pumped into it. We cannot bear to hear the word “mitigation”, which has historically been as pathetic a failure as the Jefferson Parish motto “Jefferson’s got to grow.”

I hereby ask the Corps to modify its design to move the “T-wall” further in the direction of the GIWW talweg to spare any and all parts of the 404© area, and I hereby ask EPA to not allow the destruction of any part of the Bayou aux Carpes 404© area.

Thank you.

Yours truly,

Joseph I. “Jay” Vincent
January 19, 2009

Mr. Gib Owen  
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, LA  70160-0267

RE: Draft Individual Environmental Report #12 (IER #12)

Dear Mr. Owen:

The Harvey Canal Industrial Association (HCIA) is a business organization that represents the interests of businesses in the Harvey Canal area. We have been a driving force for area improvements for more than sixty years. We represent the vast majority of companies that will be impacted by Corps of Engineers flood control efforts on the West Bank of Jefferson Parish.

The HCIA has been working with local, state and federal officials on the levee alignment for the East of the Harvey Canal Project since 1987. Shortly before Hurricane Katrina, we felt assured that a final authorized alignment would provide the west bank with the desperately needed hurricane protection. However, with the levee failure during Katrina, the West Bank and Vicinity Project had to be redesigned and the project again went to the drawing board. What resulted was the first phase of the new 100 year protection project, i.e. the flood walls along Peters Road. Businesses between Lapalco Boulevard and the Hero Pumping Stations are now sandwiched in between the newly constructed flood wall with no permanent protection.

Since 2005, numerous alternative flood protection options and cost/benefit ratios have been studied to determine the best option for full risk reduction East of the Harvey Canal. The HCIA supports the Corps of Engineers proposed West Closure Complex (WCC) as identified in the IER 12 proposal. We will, however, continue to work to provide those affected businesses with a supplemental protection levee for the smaller storms, tidal surges or rain events that may enter the canal when the WCC is not needed.

We certainly understand and appreciate the concerns that have been expressed for environmental impacts to the Bayou aux Carpes Section 404(c) area. It is our understanding that there has been a tremendous interagency collaboration, especially with EPA, to help identify and adopt a comprehensive plan to minimize adverse impacts within the 404(c) area during construction and for
a long term affect once the project is completed. But we feel strongly that much has been sacrificed by the business community – even to one large employer moving to another part of the State.

The HCIA supports the Corps' request to the EPA to modify the 1985 Bayou aux Carpes Clean Water Act Section 404 (c) Final Determination and we support the current plan for the WCC as outlined in the EIR 12 report. We feel the WCC alignment will provide the much needed and long awaited 100 year storm protection for the West Bank of Jefferson Parish.

The businesses along Peters Road have suffered long enough. Numerous rain events, hurricanes and tropical storms have flooded our businesses and threatened residential neighborhoods. The HCIA, in cooperation with other business organizations, commissioned an Economic Impact Study in late 2007. The study area included all the businesses from Lapalco Boulevard south to the Hero Pumping Station. The study revealed a total employment of 1,619 employees with an aggregate payroll of more than $67.5 million and showed a direct and indirect spending of over $1.1 billion.

This study did not include any companies along the upper portion of Peters Road, the Destrehan corridor or Engineers Road. The potential for economic loss to this area is astronomical and the HCIA urges the U. S. Army Corps of Engineers to approve the final draft of the IER 12 and to move the West Closure Complex project to completion.

Sincerely,

HARVEY CANAL INDUSTRIAL ASSOCIATION

Gerald J. Huffman, Jr.
President
Re: Combined public hearing on the Draft IER-12, on the modification of CWA Sec. 404(c) determination for Bayou aux Carpes; and hearing on GIWW West Closure Complex.

Dear Ms. Keeler and Mr. Owen,

First, the Louisiana Audubon Council wants to be on record as supporting a safe hurricane protection levee for the entire New Orleans area including the Westbank of Jefferson Parish. The Jean Lafitte National Historical Park and Preserve (JLNHP) and Bayou aux Carpes (BAC) wetlands will provide non-structural protection and reduce the hurricane tidal surges before they reach the westbank levee system. Non-structural protection is provided by forested and non-forested wetlands and have been documented as reducing the height of tidal surges during Hurricanes Rita, Gustav and Ike.

We thank EPA and the other resource agencies for recommending to the Corps a change in their original preferred alternative, which was the Southern Closure option, GIWW-A. This alignment would have segregated the BAC, Sec. 404(c) area and adversely impacted 600 acres of flotant marsh.

The Corps’ new preferred alignment (Alternative 2, GIWW-WWC) would directly take 9.6 acres of the BAC. While this is a large decrease in the taking of wetlands of national significance, the Corps should not stop there. Additional structural changes to the eastern levee and closure complex would avoid any wetland loss to the BAC. The Corps Alternative 2, should be modified to avoid any direct or indirect impacts to the Sec 404(c) wetlands. (see below).

Alternative 2, GIWW-WWC: (a suggested modification)

It is our opinion that the encroachment into the BAC wetlands can be avoided entirely by moving the "innovative T-wall", berm and riprap further into the waterway by 100 ft., thereby avoiding the 404(c) wetlands. Bayou Barataria includes the GIWW barge channel which has a congressionally authorized width of 125 ft and a depth of 12 ft (USACE, 1998). The GIWW barge channel is a minor constituent of the waterway which is now 500-650 ft wide along the eastern side of the BAC project area. Moving the T-wall 100 ft into an area which, based on Corps maps was land prior to 1971, would be a slight alteration of the preferred alternative.

A waterway with a width of 400 ft was sufficient in 1971 and provided adequate space for a 125 ft barge channel (which then was 31% of the waterway width). The present width of the waterway, due to erosion by barge traffic, is now 100-200 feet wider than in 1971 (USACE, 1971). This increased width reduces the portion of the waterway needed for the barge channel to 21% of the total width. There are additional opportunities to improve the structural design of the T-wall and gate complex to avoid the BAC all together. The Corps stated that it intends to reduce the structural impacts on the BAC.
Alternative G-GIW W C: Sec. 2.5.3.4 (p. 49)
This section is a misrepresentation of the facts. It states that this alternative, of moving the
“innovative T-wall” to avoid impacts to the 404(c) wetlands, would be to “construct the eastern
innovative floodwall completely within the GIWW . . .” and that “construction of a floodwall within the
heavily used navigation channel . . . would create engineering and construction challenges . . .”
The Corps suggests that building the floodwall in the navigation channel is the only other option
to its preferred alternative. The navigation channel is only 125 ft wide in a waterway which is 600 feet in
width. It appears that this misrepresentation is deliberately being used to discredit the practicability of
this alternative.

What should be considered is moving the T-wall into the shallow water area which would still
leave 500 ft to accommodate a 125 ft wide navigation channel. Congress authorized a 125 ft channel for
most of the GIWW. If a wider channel was needed, Congress would have authorized it. Barges moored
along the Harvey and Algiers Canals significantly reduce the waterway width available for barge
navigation. This is evidently not a hazard to navigation. The alternative G-GIW W C was never
presented in stakeholder meetings attended by our organization. Why weren’t alternative designs
presented in the DIER-12? Based on the various engineering designs of the sector gates and pumping
station configurations (posted on the Corps’ website), surely one could be modified to avoid the 404(c)
wetlands all together. This deficiency should be corrected in the amended IER.

- Appendix K (Figure entitled, "Current Proposed Site Plan"): The description states that the
"orientation of the pump station, gates, bypass channel and levee on east side of GIWW are not final and
could change as design progresses." This means that there is still some flexibility and the final
engineered design could avoid the 404(c) wetlands.

- Diagram 1 on p. 27 should be drawn to scale. It should also include the present width of the
waterway and the position (centerline) of the 125 ft navigation channel. A scale showing the water depth
should also be added. These figures should not be conceptual in this document.

Contaminated sediments: Appendices L, L(b) and M
The chemical analyses of the Algiers Canal sediments are not included in the Appendix of DIER-
12. Only two contaminants are discussed but there is not a complete listing of COCs in which the bottom
sediments were tested. Additional testing has been recommended but there is very little discussed in the
DIER. A new document, dated Jan. 5, 2009, was posted on the website but not included in the DIER.

Of major concern to our organization is that the Corps intends to use the dredged material from
the bottom of the Algiers Canal and barge it to the JLNHP. The plan is to use the spoil to plug an
erosional area along Lake Salvador and the Park boundary by placing the dredged material into a Geocrib.
We support the use of clean spoil for beneficial use but oppose the introduction of contaminated material
into the Park’s ecosystem.

We request that this section of the IER be rewritten to fully identify the procedures undertaken by
the Corps to determine whether the sediments are safe for open water disposal. The detection limit
chosen does not take into consideration the affects of contaminants on benthic organisms - only the affect
on human health. That update should include the location of sediment cores, chemical analyses of the
sediments and a presentation of all the results in an appendix as part of an amended IER.

It is important that the screening procedure identify the levels of concentration of toxic sediments
that cause chronic affects to benthic organisms as outlined in the NOAA’s ER-M, ER-L sediment criteria
for COC. In Appendix M the executive summary was omitted from the report as well.

Appendix L(b) recommends, "more sediment sampling . . . to further delineate the contaminated
area." This canal could be contaminated with PAHs and other hydrocarbon derived toxics. The
executive summary dated 1/5/09 for Final Phase II ESAR (and posted on the website) must be included in
the amended IER-12 as well as the sediment data. The detection limit for PAHs was set at 330 ppb which
is too high to detect many PAHs that have a consensus based TEL below this detection limit (Macdonald
et al., 2000). Many states are using the consensus based TEL as a screening level for cleanup of
contaminated sediments to protect aquatic organisms.

B. Kohl, LAC. 2/11/09
The ESAR stated that the toxic review was based on human impacts not impacts to the biota and used the LDEQ RECAP screening standards which do not consider the broader environmental impacts. Since these sediments will be deposited in the National Park, they should be tested for impacts to the biota as the highest priority. Unless this is done we oppose any of the Algiers Canal sediments being used as fill in the Barataria Preserve.

**Enterprise Pipeline Relocation:**

We did not find one map that identified the location of the existing Enterprise pipeline nor a discussion of the impacts of relocation of the pipeline on the BAC wetlands. In Appendix K figure 1 is a dashed line labeled pipeline relocation. Does this pipeline belong to Shell? It is identified on earlier corps maps as a Shell pipeline (USACE, 1971). There should be a full discussion describing how the relocation will prevent any direct or indirect impacts to the BAC. Will the old pipeline be removed? How long is it? How much will be relocated? Between what reference points will the work be done? (point A to point B). Will the pipeline segment reconnect to the old pipeline? We request the amended IER include an expansion of the discussion section fully explaining the pipeline relocation procedure and impacts to the BAC.

**Data Gaps and Uncertainties:** (p. 16)

Of concern to us, is that any additional information gathered over the one-year baseline study will come after the project has been approved. This includes most of the impacts to the BAC area.

Also, the engineering design report for the gates and floodwalls has not been completed. On page 16 it states, "At the time of the submission of this report, engineering evaluations have not been completed for all of the proposed actions and alternatives."

In fact, this section lists the data not included in this DIER-12 as: 1) sources of levee material have not been identified, 2) environmental surveys are not complete, 3) cumulative impact data are not complete, 4) impacts on transportation remain unknown, 5) the engineering analysis is based on a concept level design and is not complete.

The DIER states that a Draft Comprehensive Environmental Document (CED), "will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review." (DIER, p. 14). This means that potentially critical information will not be available at the time the IER is approved and construction commences. The long list of inadequacies admitted by the Corps shows that this document should have been withheld until the Corps had time to finish its work and prepare a complete IER prepared for public and agency review.

"Augmentation" issues:

**Length of study:**

We find the one year baseline study for the BAC too short. For a proper study, several annual cycles are needed especially for hydrologic information due to changes in rainfall patterns from year to year.

**Monitoring:**

The water monitoring should include the measurement of water flow under Highway 3134. The swamp on the west side of the highway is presently in the JLNHP. This highway bisected the BAC in 1977. There should be water flow monitoring at the culverts which allow water to pass under the highway. The conditional permit given to the DOTD and the congressional authorization for the highway requires that normal water circulation be maintained. It has now been over 30 years since the highway embankment was completed. How much subsidence has there been? Are all the culverts open to normal water exchange under the highway? What is the effective culvert cross sectional area available for water flow? Is there tidal exchange at the culvert locations? If so, can it be measured on both sides of the highway?
Degrading levees:

We agree that oil and gas drill hole canals should have the spoil banks degraded and in some instances the canals should be plugged. This should be done carefully since the canals and spoil banks have been there for over 40 years. A hydrologic study should consider that the swamp may be in equilibrium with the man-made ponding and drainage. Changes to the system must not harm the ecosystem of the BAC.

Opening Bayou aux Carpes shell dam:

As with degrading the levees, the opening of the dam to water flow from Bayou Barataria, during hurricane surges, may harm the swamp. Salinity ranges need to be measured in Bayou Barataria to assure that flow into the swamp will not harm or raise salinities within the leveed system.

Estelle stormwater diversion:

There is insufficient information on how contaminants in the effluent discharge from the Estelle Pumping Station will be measured. A complete list of the analytes should be included in the amended IER. We are concerned that diverting the urban effluent into BAC may not be beneficial for the wetlands. The effluent of many of the pumping stations, monitored by Jefferson Parish, have been documented to contain lead, arsenic, chromium and mercury.

How much monitoring will take place to properly document the water quality of the effluent over decades if the water will be used in the BAC? As urbanization increases in the basin, water quality will decline as more polluted urban runoff is pumped into the Estelle Canal.

We suggest that the effluent be monitored for chemicals which have shown up in Jefferson Parish analysis of effluent discharge into the Barataria Preserve (such as the Ames and Crown Point pumping stations). Water effluent monitoring must be continued over the life of the project.

The Audubon Council requests a meeting with the federal and state resource agencies to review the results of the "augmentation studies". There must be public input and review before the final decision is made to modify the BAC 404(c) ecosystem.

Inclusion in the Barataria Preserve:

The Bayou aux Carpes 404(c) area will be included within the Jean Lafitte National Historical Park and Preserve this year. Senate bill S. 22 has passed the US Senate and it is expected to pass the House soon. There are two reasons to protect the BAC well into the future as, 1) a 404(c) area and, 2) part of the Barataria Preserve of the National Park.

Revision of the DIER necessary (IER addendum):

Because there are still important data omitted from the draft document, we request that a revised/amended IER be prepared and circulated to the public and resource agencies for review. According to the federal register, "an IER addendum responding to comments received will be completed and published for a 30-day public review period." (USACE, 2007). We are formally requesting that IER-12 be amended to include omitted information, and full responses to the public/agency comments on the DIER-12. The document should include:

1). Design of the sector gate complex with alternative designs presented- not "conceptual diagrams".

2). Alternative designs for the innovative floodwall to avoid the 404(c) area

3). Review of all dredged sediment data and chemical analyses. Decision whether dredged sediments can be utilized for beneficial purposes in the JLNHPP, based on acute and chronic impacts of toxic sediments to benthic organisms.

4). More specifics on the length of time and parameters measured for all studies discussed in the "augmentation" section of the DIER - including beneficial or adverse impacts to the 404(c) wetlands.
5). Monitoring plan details - include detailed section on rationale for placement of water flow instruments and hydrologic modeling
6). More details on the relocation of the Enterprise pipeline and its impacts to the 404(c) area.
7). A thorough analysis of the proposed diversion of urban discharges from the Estelle pumping station into the 404(c) wetlands. Also, include the impacts of pollutants on the 404(c) area.

All these issues and other data gaps must be thoroughly discussed and presented in the amended IER.

Summary:

1) In conclusion, we oppose Alternative 2, the preferred alignment, as presented in the DIER-12. The Corps admits that the engineering designs for the floodwall and gate complex are not complete and therefore we believe the design can be modified to avoid the 404(c) wetlands entirely. The new designs and supportive data should be presented in a IER addendum for public review and comment. We will reconsider our position based on the new document.

2) We also recommend that EPA deny the request by the Corps to modify its final determination on the Bayou aux Carpes CWA 404(c) since the Corps hasn't finished its alternative engineering designs for the floodwall and gate complex. It would be premature for any action to be taken by EPA at this time.

3) We oppose a process whereby any deficiencies in this IER will be answered sometime in the future - as part of a catchall document. The public must be engaged in one single process which comes to a single conclusion - not a decision process which is segmented and strung out for several years on a specific IER. It is supposed to be an individual environmental report.

4) It appears that this DIER was rushed through without the adequate internal review. This is precisely what we were concerned about with the Alternative Arrangements (USACE, 2007). It appears that expediency was the prime factor - not a thorough evaluation of the environmental impacts and avoidance. It would be a better process if the Corps allowed time for its engineers to carefully design and check its own proposals and then the public could review and comment on a document that was ready rather than one which is incomplete.

Sincerely,

[Signature]

Dr. Barry Kohl
President, LAC

cc:
Delta Chapter Sierra Club
Gulf Restoration Network
National Audubon Society
National Wildlife Federation
Tulane Environmental Law Clinic
Horst Greczmiel, CEQ
National Wildlife Federation
National Park Service
US Fish and Wildlife Service
National Marine Fisheries Service
La DNR

B. Kohl, LAC. 2/11/09
References:


USACE 1977. (Jeff Parish Wetlands) 26, Conditional permit for Lafitte-Larose Highway segment from Estelle to Wagner Ferry Bridge.


February 11, 2009

Mr. Gib Owen, PM-RS
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RE: DRAFT INDIVIDUAL ENVIRONMENTAL REPORT 12 AND PROPOSED MODIFICATION TO 404(C) ACTION

Dear Mr. Owen and Ms. Keeler:

I am writing on behalf of the Gulf Restoration Network (GRN), a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico. Please accept the following comments regarding the Army Corps of Engineers’ Draft Individual Environmental Report: GIWW, Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans, and Plaquemines Parishes, Louisiana (IER #12), and the Proposed Modification to the Bayou aux Carpes 404(c) Action.

While we recognize that the protection of our coastal resources is urgent, we have some comments and concerns about several aspects of IER #12 as it is currently written. These concerns are outlined below:

1. **Public Participation is Not Adequate**

   While the public comment period was extended to at least coincide with the public hearing, this is still not adequate. If the public hearing lasts until 9:00 pm, this only allows the public three hours to process and comment upon any information presented by the Corps or other commenters. *Because of this, we request the public comment period be extended to allow for the public to comment upon new information gained at the hearing.*
2. **Full Avoidance of Bayou aux Carpes 404(c) Must Be Further Analyzed**

We would first like to applaud the Corps for working with us and EPA to develop the proposed alignment, instead of selecting an alignment that would have bisected the Bayou aux Carpes area. It is important that the Corps continue to recognize the importance of this ecologically sensitive area.

However, we feel that the 9.6 acres in the Bayou aux Carpes could be further avoided. On page 49, it is stated that “alternatives that would avoid impacts to that area were considered...this alternative was eliminated from further consideration due to constructability and navigation concerns” because it would “create engineering and construction challenges...” This statement is not supported. The navigation channel is authorized to be 125 feet wide, while the waterway is 400-500 feet wide. The Corps does not demonstrate in this IER why it is not feasible to place the T-wall further out into the waterway. Assuming the channel is in the approximate center of the canal, this would still allow a large buffer between navigation and hurricane protection. Because of this lack of justification and failure to demonstrate the necessity of impacting the 9.6 acres of the Bayou aux Carpes, we request that the moving of the t-wall further out be analyzed in order to further reduce, or even eliminate the wetland impacts. We request that an analysis be done examining moving the flood wall different distances out into the water. Since this would constitute a significant change, the IER should also be re-noticed. Additionally, EPA should not grant a 404(c) modification until it is shown that the Corps thoroughly explored all options for the reduction or elimination of impacts to the 404(c) area.

3. **Wetland Impacts Must be Considered Fully**

While Table 6 on page 63 presents the total direct wetland impacts anticipated, secondary and indirect impacts are not addressed. With increased storm protection comes increased development pressure. In fact the Bayou aux Carpes area was originally going to be drained and developed several years ago. On page 47, the Corps even admits that rezoning “could minimize future damages from new development in flood-prone areas,” thus implying that the surrounding areas very well could be developed given current zoning. This secondary effect must be taken into account. Further, taller and more expansive levees and flood walls have the potential to disrupt the flow of water through wetlands, potentially impacting these wetlands.

In order for this IER to fully address its environmental impacts, secondary and indirect impacts must be accounted for within the report, and slated to be mitigated for, just as direct impacts are.
Additionally, cumulative impacts are not thoroughly addressed. Acknowledging that cumulative impacts will be discussed fully in the CED, more on cumulative impacts should be included in this IER. In past meetings with the Corps, they have presented a spreadsheet that had current impacts and anticipated impacts. This analysis, or best estimate of cumulative impacts should be included in this and all subsequent IERs.

4. **Augmentation Features Must Be Thoroughly Researched and Planned**

In order for EPA to make a truly informed decision the “augmentation features” must be further designed and studies. The impact to the 404(c) area is partially justified because some augmentation features are being examined, the largest of which would be the gapping of the canal to the north of the area to allow storm runoff to flow through the wetland. A baseline study of at least two years should be done to see if this would indeed augment the area. Given that this water would be urban runoff, which could potentially be carrying high levels of nitrogen and phosphorus, metals, and petroleum products, care must be taken to ensure that this “fresh” water is truly fresh and not too contaminated to cause damage to the wetland over the short and long term.

The operating plan and funds for the augmentation features are also not discussed in this IER. On page 39, it is stated that “modifications to the banks and shell plug in the Bayou aux Carpes CWA Section 404(c) area would not be expected to require [operation and maintenance].” However the monitoring and control of flood structures in the canal would require monitoring, operation, and maintenance for at least several years after they are put into operation. The operation and management of the augmentation features must be addressed and guaranteed for years to come.

We also request if this action proceeds, a contingency plan is written into the project. Specifically if some or all of the augmentation features are not beneficial to the area, more mitigation should be required within or adjacent to the 404(c) area, since part of EPA’s decision depends on the success of these augmentation features.

5. **Beneficial Use**

It is stated that dredge material will be used beneficially in the “crib” area to build wetlands. This must be detailed more in the IER. Specifically, contaminants and wetland building plans must be further addressed. The dredge materials must be tested for contaminants to ensure that humans and wildlife will not be acutely or chronically harmed by any contaminants from industrialized navigation channels. Additionally if contaminated sediment is identified, and it is landfilled, this sediment would probably first be de-watered, which could cause large water quality issues.
Since this would be an obvious environmental impact, the effects of this dewatering of contaminated sediment must be addressed fully in the IER.

Further, a specific plan for wetland creation utilizing dredge material should be detailed in this report. It is not acceptable to defer this to the mitigation IER, as dredge disposal is an integral part of this project. This plan is vital in order to ensure that dredge material is not simply dumped in the crib area, but a plan is followed that will give wetlands the best opportunity for sustainable production.

Also regarding beneficial use, it is stated on page 29 that “overburden material...would be mulched and used on site or hauled away to a landfill.” At a recent meeting we asked why this overburden cannot be used beneficially in wetland creation instead of being hauled to a landfill, and our question was not adequately answered, so we ask again if the Corps looked into this beneficial use of overburden. If so, this information should be in the IER, if not, we formally request that this be explored within this IER.

6. Non-Structural

This IER, as well as other IERS that we have reviewed do not adequately address non-structural options to potential projects for the 100 year protection for metro New Orleans. On page 47, it stated that “no combination of non-structural tools could independently achieve the required 100-year level of risk reduction needed to provide hurricane surge protection on the [West Bank and Vicinity] as intended by federal statutes.” However, the question is not “can non-structural tools eliminate the need for structural storm protection,” but can it be used in combination with structural components to achieve protection that is sustainable and reduces the impact on the natural environment. We feel that the Corps is misinterpreting WRDA. While WRDA states that nonstructural measures can be considered independently or in combination with structural measures (p. 45 of IER #12), the combination of structural and nonstructural is completely ignored.

Additionally, when discussing the “raise in place” option, the IER assumes that all structures would have to be raised, and that each residential structure averages 1,800 square feet. Given that nonstructural and structural can be used together, the assumption that all buildings would have to be raised is a false assumption. Additionally, we request evidence to support the assertion that the average home in this area is 1,800 square feet.
7. Preliminary Alternatives Screening Table is Not Complete

Table 3 on page 50 has errors in the key, and thus is not correct. In the table there are checks, dots, and x’s, however nowhere in the table is it stated what a check is. This is a very important table, as it is supposed to summarize how each alternative was screened. Without knowing what the symbols are, it is impossible to interpret this table. Given the importance of this table, we request a re-notice of this IER, so we and EPA can be positive that the best option was truly chosen.

Thank you for the opportunity to comment on IER #12 and the 404(c) modification. While we are pleased that the Corps has worked towards avoiding impacts to the 404(c) area, we feel that more could potentially be done to protect the area. Given this, we request that EPA not modify the 404(c) action until IER #12 is truly completed, including the additions that are suggested above.

We trust that the Corps and EPA will take all of the above comments seriously, as they would enhance the project. We look forward to a timely written response. Further, we would welcome the opportunity to meet with the agencies to discuss our concerns.

Sincerely,

[Signature]

Matt Rota
Water Resources Program Director

CC:

John Ettinger, US EPA
Horst Greczmiel, US CEQ
Jill Mastrototaro, Sierra Club
Melissa Samet, American Rivers
Barry Kohl, LA Audubon Council
Jill Witkowski, Tulane Environmental Law Clinic
Mike Murphy, Tulane Environmental Law Clinic
John Lopez, Lake Pontchartrain Basin Foundation
Carlton Dufrechou, Lake Pontchartrain Basin Foundation
Mark Davis, Tulane University
Maura Wood, National Wildlife Federation
Juanita Constable, National Wildlife Federation
Natalie Snider, Coalition to Restore Coastal Louisiana
Comments RE: IER #12 and Bayou aux Carpes 404(c) modification
February 11, 2009
Gulf Restoration Network
Page 6 of 6

Steven Peyronnin, Coalition to Restore Coastal Louisiana
Paul Kemp, National Audubon Society
Haywood Martin, Delta Chapter Sierra Club.
February 11, 2009

Gib Owen, PM-RS  
U.S. Army Corps of Engineers  
P.O. Box 60267  
New Orleans, LA 70160-0267

Barbara Keeler (6WQ-EC)  
EPA Region 6  
1445 Ross Avenue,  
Dallas, TX 75202-2733

Re: Combined public hearing on the Draft IER-12, on the modification of CWA Sec. 404(c) determination for Bayou aux Carpes; and hearing on GIWW West Closure Complex.

The Sierra Club Delta Chapter supports a safe hurricane protection levee for the entire New Orleans area including the west bank of Jefferson Parish. We also support the use of natural systems such as forested and non-forested wetlands to add progressive barriers to storm surges.

We thank EPA and the other resource agencies for recommending to the Corps a change in their original preferred alternative, which was the Southern Closure option. It appears that the proposed alternative would take 9.6 acres of the BAC as opposed the 600 acres of marsh that would have been impacted by the earlier proposal. While this is a large decrease in the taking of wetlands of national significance, we suggest that the Corps can do better. Additional structural changes to the eastern levee and closure complex would avoid any wetland loss to the BAC. The Corps Alternative 2, should be modified to avoid any direct or indirect impacts to the Sec 404(c) wetlands. It appears that there is adequate space to move the structure further into the waterway so as to avoid the 404(c) wetlands.

We are also concerned that any additional information gathered over the one-year baseline study will come after the project has been approved. This includes most of the impacts to the BAC area. Also, the engineering design report for the gates and floodwalls has not been completed. The DIER states that a Draft Comprehensive Environmental Document (CED) "will contain updated information for any IER that had incomplete or unavailable data at the time it was posted for public review." It appears that potentially critical information will not be available at the time the IER is approved and construction commences. The list of inadequacies admitted by the Corps shows that this document should not have been released until the Corps had time to finish its work and a complete IER prepared for public and agency review.
We are informed that the Bayou aux Carpes 404(c) area will be included within the Jean Lafitte National Historical Park and Preserve this year. Senate bill S. 22 has passed the US Senate and it is expected to pass the House soon. This provides significant additional importance to the protection of the BAC as, a 404(c) area and as part of the Barataria Preserve of the National Park.

Because there are still important data omitted from the draft document, we request that a revised/amended IER be prepared and circulated to the public and resource agencies for review. We are formally requesting that IER-12 be amended to include omitted information, and full responses to the public/agency comments on the DIER-12.

In conclusion, we oppose Alternative 2, the preferred alignment, as presented in the DIER-12. We request the Corps do an amended IER containing new designs and supportive data, and we strongly recommend that EPA deny the request by the Corps to modify its final determination on the Bayou aux Carpes CWA 404(c). Furthermore we request that the comment period be extended so that all interested parties have adequate time to prepare substantive comments.

Thank you,

Haywood Martin, Chair
Sierra Club Delta Chapter

cc: Louisiana Audubon Council
### Appendix C: Members of Interagency Environmental Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
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<tbody>
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<td>Kyle Balkum</td>
<td>Louisiana Dept. of Wildlife and Fisheries</td>
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<tr>
<td>Elizabeth Behrens</td>
<td>U.S. Army Corps of Engineers, MVN</td>
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<td>Agaha Brass</td>
<td>Louisiana Department of Natural Resources</td>
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<tr>
<td>Catherine Breaux</td>
<td>U.S. Fish and Wildlife Service</td>
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<td>David Castellanos</td>
<td>U.S. Fish and Wildlife Service</td>
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<td>Frank Cole</td>
<td>Louisiana Department of Natural Resources</td>
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<td>Getrisc Coulson</td>
<td>U.S. Army Corps of Engineers, MVN</td>
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<td>John Ettinger</td>
<td>U.S. Environmental Protection Agency</td>
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<td>Mandy Green</td>
<td>LDNR Coastal Protection and Restoration Authority</td>
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<td>Jeffrey Harris</td>
<td>Louisiana Department of Natural Resources</td>
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<td>Richard Hartman</td>
<td>NOAA National Marine Fisheries Service</td>
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<td>Jeffrey Hill</td>
<td>NOAA National Marine Fisheries Service</td>
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<td>Christina Hunnicutt</td>
<td>U.S. Geologic Survey</td>
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<td>Barbara Keeler</td>
<td>U.S. Environmental Protection Agency</td>
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<td>Kirk Kilgen</td>
<td>Louisiana Department of Natural Resources</td>
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<td>Tim Killeen</td>
<td>Louisiana Department of Natural Resources</td>
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<td>Brian Lezina</td>
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<td>Lissa Lyncker</td>
<td>U.S. Army Corps of Engineers, MVN</td>
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<td>Brian Marcks</td>
<td>Louisiana Department of Natural Resources</td>
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<td>Ismail Merhi</td>
<td>LDNR Coastal Protection and Restoration Authority</td>
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<td>David Muth</td>
<td>U.S. National Park Service</td>
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<td>Clint Padgett</td>
<td>U.S. Geologic Survey</td>
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<td>Jamie Phillipe</td>
<td>Louisiana Dept. of Environmental Quality</td>
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<td>Molly Reif</td>
<td>U.S. Geologic Survey</td>
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<td>Manuel Ruiz</td>
<td>Louisiana Dept. of Wildlife and Fisheries</td>
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<td>Renee Sanders</td>
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<td>Angela Trahan</td>
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<td>Lauralee Wilkinson</td>
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<tr>
<td>Patrick Wilkinson</td>
<td>NOAA National Marine Fisheries Service</td>
</tr>
</tbody>
</table>
Robert H. Boudet  
Senior Project Manager  
Aerostar Environmental Services  
4640 S. Carrollton Ave  
Suite 160  
New Orleans, LA 70119

Subject: Individual Environmental Report (IER) – 12  
United States Army Corps of Engineers (USACE)  
Harvey-Algiers Canal and the GIWW  
Jefferson, Orleans and Plaquemines Parish, Louisiana

Dear Mr. Boudet:  

Please reference your June 6, 2008, letter requesting our review of the Harvey-Algiers Canal and the GIWW project located in Jefferson, Orleans, and Plaquemines Parishes, Louisiana. The U.S. Fish and Wildlife Service (Service) has reviewed the information you provided, and offers the following comments in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Our records indicate that no federally listed threatened or endangered species presently occur within the proposed project area. Therefore, no further consultation will be required unless there are changes in the scope or location of the project, or construction has not been initiated within one year. If the proposed projects have not been initiated within one year, follow-up consultation should be accomplished with this office prior to making expenditures for construction. If the scope or location of the proposed work is changed, consultation should occur as soon as such changes are made.

The proposed project is not located within a wilderness area/preserve but in an area that was subject to an Environmental Protection Agency (EPA) Final Determination under the Clean Water Act (CWA) Section 404(c) in 1985. According to the EPA Final Determination, the discharge of any dredged or fill material within the approximately 3200 acre site, referred to as the Bayou aux Carpes 404(c) area, is restricted. The EPA action allowed for three specific exceptions, none of which appears to apply to the Corps' current hurricane protection proposal. Previous requests which have
fallen outside those exceptions have been denied by EPA as being contrary to the CWA 404(c) determination. One such categorical denial prohibited the Corps from altering the alignment of the West Bank Hurricane Protection Levee such that it would encroach upon the Bayou aux Carpes 404(c) area.

The EPA 404(c) action was intended as an advance notification to the public and agencies of the government's determination under the CWA Section 404 for the area, in the sense of planning aid coordination. In light of this existing determination, we would expect the NEPA work on the portion of the levee forming the 404(c) boundary to thoroughly evaluate the range of feasible alternatives and their environmental impacts, as well as documenting the Corps' legal and regulatory authority for any alternative that would entail impacts to the Bayou aux Carpes 404(c) area.

The Bayou aux Carpes 404(c) is one of only 11 such actions ever completed by EPA. Approximately 2,800 acres within the site are in Federal ownership and Congress is considering legislation to adjust the boundary of the Barataria Preserve within the Jean Lafitte National Historical Park and Preserve to include the Bayou aux Carpes. In the meantime, the National Park Service (NPS) has constructive possession of the area. Therefore, the Corps should contact both the NPS (Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov) and EPA (Ms. Barbara Keeler, 214/665-6698) regarding any proposed project feature that may impact that area.

The above findings and recommendations constitute the report of the Department of the Interior. Please contact David Walther (337/291-3122) or Angela Trahan (337/291-3137) of this office if additional information is needed.

Sincerely,

James F. Boggs
Supervisor
Louisiana Field Office

cc: EPA, Dallas, TX
LDWF, Baton Rouge, LA
Jean Lafitte National Historical Park
December 17, 2008

Elizabeth Wiggins
Chief, Environmental Planning and Compliance Branch
U. S. Army Corps of Engineers, New Orleans District
P. O. Box 60267
New Orleans, Louisiana 70160-0267

RE: C20080483, Coastal Zone Consistency
U. S. Army Corps of Engineers, New Orleans District
Direct Federal Action
IER #12, West Bank and Vicinity, GIWW, Algiers, and Harvey Canals Hurricane Protection, Jefferson and Plaquemines Parishes, Louisiana

Dear Ms. Wiggins:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP. If you have any questions concerning this determination please contact Brian Marcks of the Consistency Section at (225) 342-7939 or 1-800-267-4019.

Sincerely yours,

Jim Rives
Administrator

JR/JDH/bgm

cc: Dave Butler, LDWF
    Gretise Coulson, COE-NOD
    Albertine Kimble, Plaquemines Parish
    Marnie Winter, Jefferson Parish
    Barbara Keeler, USEPA, Dallas
    Frank Cole, CMD FI
    Ismail Mehri, LACRPA
U.S. Army Corps of Engineers- New Orleans District  
P.O. Box 60267  
New Orleans, LA 70160-0267  

Attention: Gigi Coulson  

RE: Water Quality Certification (WQC 080825-02/AI 160206/CER 20080001)  
   Individual Environmental Report (IER) #12  
   West Bank & Vicinity, GIWW, Harvey & Algiers Canals  
   Jefferson & Plaquemines Parishes  

Dear Ms. Coulson:  

The Department has reviewed your application for a 401 Water Quality Certification for the construction of the GIWW, Harvey & Algiers Canals hurricane protection levee, in the vicinity of Belle Chasse, Louisiana in Jefferson & Plaquemines Parishes.  

The requirements for Water Quality Certification have been met in accordance with LAC 33:IX.1507.A-E. Based on the information provided in your application, we have determined that the placement of the fill material will not violate the water quality standards of Louisiana provided for under LAC 33:IX.Chapter 11. Therefore, the Department has issued a Water Quality Certification.  

Sincerely,  

[Signature]

Thomas F. Harris  
Administrator  
Waste Permits Division  

TFH/jjp
United States Department of the Interior
FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

January 20, 2009

Colonel Alvin B. Lee
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

Please reference the U.S. Army Corps of Engineers’ (Corps) draft Individual Environmental Report (IER) # 12, titled “West Bank and Vicinity (WBV), Gulf Intracoastal Waterway (GIWW), Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans and Plaquemines Parishes.” The draft IER was transmitted via a January 5, 2009, letter from Ms. Elizabeth Wiggins, Chief of your Environmental Planning and Compliance Branch. The U.S. Fish and Wildlife Service (Service) submits the following comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 et seq.).

The draft IER provides an adequate description of fish and wildlife resources in the study area, the purpose and need for the proposed action, and the potential impacts associated with each alternative. We commend the Corps efforts to investigate all of the concerns put forth by the natural resource agencies within the expedited environmental analysis period.

During the alternatives analysis, the no-action alternative and the alternative to raise the existing Hurricane Protection System to a 100-year level of protection were considered. The no-action alternative would not be implemented because it fails to provide the authorized level of protection to the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins. The Corps also considered a series of alternative gate locations within the project area that would minimize the need for parallel protection. One of these alternatives included constructing a sector gate across the Environmental Protection Agency (EPA) Clean Water Act (CWA) Bayou aux Carpes 404 (c) area. That alternative was considered to have significant impacts to fish and wildlife resources and the EPA CWA, Section 404 (c) designated wetlands.

The preferred alternative would include construction of navigable floodgate and ancillary structures on the Gulf Intracoastal Waterway (GIWW) south of the confluence of the Algiers and Harvey Canals and upstream of the Hero Canal. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the V-levee would be raised to
the 100-year level of protection. Approximately 4,200 linear feet of floodwall would be constructed within a 100-foot-wide right-of-way along the periphery of the GIWW and the EPA CWA Bayou aux Carpes 404 (c) area to connect the proposed GIWW navigable floodgate with the existing flood protection system. Existing levees and floodwalls along Algiers and Harvey Canals will be incorporated into the protected side of the closure complex and would be integrated as features of the parallel protection system detention basin. Expansions of existing rights-of-way along several levee reaches would occur as a result of bringing those existing levees up to authorized levels of protection in order to provide necessary storm water retention during major storm events. To ensure habitat functions of the EPA CWA Bayou aux Carpes 404 (c) area are maintained, the proposed action includes several environmental augmentations along the Old Estelle pump station outfall canal and within the Bayou aux Carpes drainage area which will provide sheet flow and hydrologic exchange into, and within, the EPA CWA Bayou aux Carpes 404(c) area.

Due to the urgency of providing storm damage risk reduction to the Greater New Orleans area the design of the preferred alternative is not final. The Service and the Corps have evaluated the footprint of greatest impact to ensure that the IER addresses all potential impacts to forested and other fish and wildlife habitats. Based on the Service’s analysis of the existing conditions within the proposed footprint, implementation of the preferred alternative would directly impact 252 acres of hydrologically-altered bottomland hardwood habitat, 2.4 acres of wet bottomland hardwood habitat, and approximately 75 acres of swamp habitat. The preferred alternative would result in the direct loss of 179.2 and 38.5 average annual habitat units (AAHUs), of bottomland hardwood forest and swamp, respectively. According to our Habitat Assessment Methodology (HAM) and Wetland Value Assessment (WVA) analyses, of those impacts approximately 2.4 acres of wet bottomland hardwood and 7.4 acres of swamp habitat (i.e., total of 9.8 acres) occur within the Bayou aux Carpes 404 (c) area along the GIWW interface.

The Service calculated the acreage of potential impacts to forested and other fish and wildlife habitat using 2005 aerial photography and proposed rights-of-way provided by the Corps. The proposed right-of-way within the EPA CWA Bayou aux Carpes 404(c) area encompasses an area 4,200 feet long by 100 feet wide and is positioned along the periphery of the EPA CWA Bayou aux Carpes 404(c) area. According to the draft IER the innovative T-wall constructed within this right-of-way would be fronted by a protective berm and access road which would be positioned along the waterline further impacting any remaining habitat outside and waterward of the proposed right-of-way (0.2 acres, according to 2005 aerial photography). The Service’s habitat assessment, therefore, evaluated those additional impacts. We compared the proposed right-of-way to recently obtained 2007 aerial photography. That evaluation corresponded with the Corps’ impact assessment within the EPA CWA Bayou aux Carpes 404(c) area (i.e., 9.6 acres). The Service will address these revised impacts in our final Fish and Wildlife Coordination Act Report.

Specific Comments

2.3. Proposed Action, Table 1: Proposed Action Components, Page 25 – According to the
proposed right-of-way provided by the Corps for our HAM analyses, approximately 7 acres of bottomland hardwood habitat and 64 acres of pasture land would be temporarily impacted by two proposed staging areas. We recommend revising the table to include those impacts and provide a discussion within the wetland impacts section (3.2.1,2.2.2) of the IER. Moreover, proposed staging areas allowed to revert back to a hardwood forest after construction is complete will likely be dominated by the exotic Chinese tallowtree for part of the project life. Therefore, bottomland hardwood habitat temporarily impacted by the proposed project, including those staging areas, should be managed to control invasive species, specifically Chinese tallowtree.

2.3, Detention Basin Improvements, Page 32 - The goal of the detention basin is to provide rainwater detention during a storm event when the proposed hurricane protection system south of the confluence of the Algiers and Harvey Canals is closed. The Service questions the need to improve the existing levees which would make up that detention basin to a hurricane design level comparable to 100-year level of risk reduction. For clarification please provide a reference with regards to the Corps' standards and the requirements needed to achieve Federal factors of safety specifically for the detention basin.

3.2.1.2.2 Proposed Action, Table 6: Proposed Action (WCC) Wetland Impacts form WVA (acres), Page 63 - We recommend revising the table to include proposed impacts to 6.9 acres of bottomland hardwood associated with the staging area north of the closure complex and levee and road realignment. Also, under habitat type indicate that the 63.6 acre staging area is pasture.

3.2.1.2.2 Specific Wetland Impacts Due to the Proposed Action, Northern Levee..., Page 65, second paragraph - The second sentence should be revised to indicate that the entire northern section would directly impact 5.8 acres of forested habitat.

3.2.3.2.1 No Action, Page 74 - We recommend omitting “non-wet” when referencing “uplands.”

3.2.3.2.2 Proposed Action, Page 74 - This section states that “implementation of the proposed action would not directly impact any upland habitats.” Impacts to upland habitat are likely to be associated with the levee realignment within the closure complex and with upgrading/improving the existing levee alignment for the proposed detention basin. This section should be revised to address those potential impacts.

3.2.6.2.2.2 Specific Fisheries Impacts Due to the Proposed Action, Page 82, first paragraph - It appears that the word “not” was inadvertently omitted from the first sentence. Revise accordingly.

Please be advised construction within the Bayou aux Carpes CWA Section 404 (c) area should not commence until the EPA's decision to modify the designation to accommodate discharges into that area has been resolved. Furthermore, Congress is considering legislation to adjust the boundary of the Jean Lafitte National Historical Park and Preserve (NHPP), Barataria Preserve Unit to include the Bayou aux Carpes CWA Section 404 (c) area. In the meantime, the National Park Service (NPS) has constructive possession of the area. Therefore, the Corps should continue to coordinate with both the NPS and EPA regarding any proposed project feature that
may impact that area. For the NPS please contact Superintendent, David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management, David Muth, (504) 589-3882 extension 128 (david_muth@nps.gov). For the EPA please contact Ms. Barbara Keeler, 214/665-6698.

The Service appreciates the opportunity to comment on the draft IER, and we look forward to continuing coordination with the Corps and the other natural resource agencies to develop a feasible hurricane protection project for this region in a timely manner. If your staff has additional questions regarding our comments, please contact Angela Trahan at (337) 291-3137.

Sincerely,

[Signature]

James F. Boggs
Supervisor
Louisiana Field Office

cc:   EPA, Dallas, TX
      FWS, Atlanta, GA (ES/HC)
      Jean Lafitte NHPP, New Orleans, LA (Attn: Mr. David Luchsinger)
      Jean Lafitte NHPP, New Orleans, LA (Attn: Mr. David Muth)
      NMFS, Baton Rouge, LA
      Corps, New Orleans, LA (Attn: Mr. Gib Owen, CEMVN-PM-RS)
      LDWF, Baton Rouge, LA
January 22, 2009

Gib Owen
U.S. Army Corps of Engineers
CEMVN-PM-RS
P.O. Box 60267
New Orleans, LA 70160-0267

Dear Mr. Owen:

On behalf of Chief Oscola Clayston Sylestine and the Alabama-Coushatta Tribe, our appreciation is expressed on your agency’s efforts to consult us concerning the Individual Environmental Report (IER) #12, “West Bank and Vicinity, Gulf Intracoastal Waterway, Harvey, and Algiers Levees and Floodwalls” for Jefferson, Orleans and Plaquemines Parishes.

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

Upon review of the January 5, 2009 IER #12 submitted to our Tribe, no impact to religious, cultural, or historical assets of the Alabama-Coushatta Tribe of Texas should occur due to the absence of corroborating evidence from recent cultural resource investigations. Therefore, we have no objections to the proceeding of this proposal.

In the event of inadvertent discovery of human remains and/or archaeological artifacts, activity in proximity to the location must cease and appropriate authorities, including this office, notified without delay. Should you require additional assistance, please do not hesitate to contact us.

Respectfully submitted,

Bryant J. Celestine
Historic Preservation Officer
January 26, 2009

Mr. Pete J. Serio, Chief
Regulatory Branch
United States Army Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

RE: Draft of Individual Environmental Report # 12 (IER # 12) and related Clean Water Act (CWA) Section 404 public notice
Public Notice Date: January 05, 2009

Dear Mr. Serio:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced Public Notice. Based upon this review, the following has been determined:

During the detailed planning and construction phases, effort should be made to reduce wetland impacts, especially those impacts affecting higher quality wetlands. When practicable, access and construction activity should occur from existing waterways, and temporary workspaces and access roads should be minimized.

The impoundment of wetlands should be avoided; however, where impounding is unavoidable, measures aimed at maintaining hydrologic connections and natural flow regimes shall be taken. To this end, flood protection and control structures should be designed for operational flexibility and when deemed beneficial, control structures should remain open except when a risk of flooding exists.

LDWF would like to remain part of any Bayou aux Carpes management plan development, as well as have opportunity to review any modifications, and additional impacts. The department would also like involvement in any further detailed planning of project features and to be granted an opportunity to review and submit recommendations on such.

Additionally, the Corps shall provide adequate and appropriate mitigation for any additional unavoidable impacts to wetland functions.
The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Matthew Weigel at 225-763-3587 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Program Manager

mw

c: Matthew Weigel, Biologist
EPA Marine & Wetlands Section
USFWS Ecological Services
Mr. Gib Owen  
Environmental Planning and Compliance Branch  
Planning, Programs, and Management Division  
New Orleans District, U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Mr. Owen:

NOAA’s National Marine Fisheries Service (NMFS) has reviewed the draft *Individual Environmental Report (IER) #12* transmitted by letter from Ms. Elizabeth Wiggins dated January 5, 2009. The draft IER evaluates and quantifies the impacts associated with providing 100-year level of hurricane protection through the construction of the Gulf Intracoastal Waterway West Closure Complex.

NMFS staff has previously concurred with U.S. Fish and Wildlife Service’s (FWS) recommendations on IER #12 outlined in the Fish and Wildlife Coordination Act Report. We find the recommendations provided previously to the New Orleans District by FWS have been adequately incorporated into the document. As such, we have no comments to provide on the draft IER #12.

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

Sincerely,

[Signature]

Miles M. Croom  
Assistant Regional Administrator  
Habitat Conservation Division

c:  
FWS, Lafayette  
EPA, Dallas  
LA DNR, Consistency  
F/SER46, Swafford  
Files
Mr. Gib Owen  
Environmental Planning and Compliance Branch  
Planning, Programs, and Project Management Division  
U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Mr. Owen:

We offer this letter as documentation of our review of the January, 2009 Draft Individual Environmental Report (DIER) # 12, prepared by the U.S. Army Corps of Engineers (Corps) to evaluate the projected impacts from constructing and operating a series of upgraded and new 100-year flood protection measures for the Harvey and Algiers segment of the Mississippi River West Bank and Vicinity Hurricane and Storm Damage Risk Reduction System (HSDRRS) in Louisiana. Though DIER # 12 represents the Corps’ public disclosure requirements in accordance with the National Environmental Policy Act (NEPA), it is not presented as a typical NEPA document. Rather, it has been prepared according to alternative provisions of the Council on Environmental Quality. Accordingly, our review of the draft NEPA document is a bit atypical in that it has been prepared while important data and decisions are still forthcoming.

This review represents a significant milestone in the extensive coordination between the Environmental Protection Agency (EPA) and the Corps on this project. The EPA focus for this section of the larger HSDRRS project is the Bayou aux Carpes Clean Water Act (CWA) Section 404(c) area in Jefferson Parish. EPA has a long record of protecting these wetlands, dating back to the early 1970’s and culminating in the 1985 decision to restrict the discharge of dredged and fill material.

Section 404(c) of the CWA authorizes EPA to restrict or prohibit the use of a wetland area as a disposal site for dredged or fill material if the discharge will have unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. In over three decades since this authority has existed, EPA has finalized only 12 such CWA Section 404(c) actions. Together, those few actions have protected the ecologically significant functions and values of over 73,000 acres of wetlands.

The Bayou aux Carpes CWA Section 404(c) site lies in the upper Barataria basin within the Mississippi deltaic plain, an area experiencing some of the highest historic rates of coastal wetland loss in the county and on a worldwide basis. This region experienced a spike in wetland loss and degradation as a result of hurricanes over the last several years. The Bayou aux Carpes
Letter to Mr. Gib Owen
U.S. Army Corps of Engineers
Page 2 of 4

site, however, has weathered the storms and other natural and human-induced forces, existing today as a unique and productive wetland system, providing ecological, flood storage, and water quality benefits. The approximately 3,000 acres of wetlands within the Bayou aux Carpes CWA Section 404(c) site are currently owned by the federal government and legislation has been proposed which would incorporate them into the Jean Lafitte National Historic Park and Preserve. There is no doubt that these wetlands represent a regional and national asset.

It is within this landscape that the Corps has been charged with developing a set of alternatives to provide additional storm protection for the people of the west bank of the Mississippi River, as well as for residential and commercial properties in the greater New Orleans metropolitan area. Hurricanes Katrina and Rita were the impetus for supplemental federal appropriations passed by Congress in the several years following the hurricanes of 2005.

In an effort to reconcile the potentially conflicting goals of increased flood protection and ecological protection, the New Orleans District of the Corps and EPA Region 6 have worked closely together and with other federal partners, State and local agencies, and many stakeholders in an effort to understand fully the possibilities for accommodating these serious needs. Seeing no acceptable option but to recommend flood control measures which would have adverse environmental impacts on the Bayou aux Carpes CWA Section 404(c) wetlands, the Corps has asked EPA to modify the 1985 CWA Section 404(c) determination to allow the construction of a berm and floodwall in an area disturbed by dredged material discharges predating the EPA designation.

The portion of the construction area within the Bayou aux Carpes CWA Section 404(c) site in the proposed alternative, described in DIER # 12 as the GIWW West Closure Complex, is located along the west bank of the Gulf Intracoastal Waterway (GIWW), or Bayou Barataria, from its junction with the Old Estelle Pumping Station Outfall Canal to a point at which the Corps proposes to construct a sector gate across the GIWW. As described in the Corps’ modification request to EPA (letter dated November 4, 2008) and in DIER # 12, the berm, floodwall, and associated features would rise up to 14 to 16 feet high and would occupy an area no greater than 4,200 linear feet by 100 linear feet. No more than ten acres of wetlands in the Bayou aux Carpes CWA Section 404(c) site would be affected and other design and construction features have been incorporated to minimize further the impacts to these wetlands.

The proposed GIWW West Closure Complex alternative is one of two alternatives presented which would entail adverse impacts to the Bayou aux Carpes CWA Section 404(c) area. Of those two, we agree that the potential impacts associated with the proposed action are far less significant. EPA has not yet, however, decided whether the existing Bayou aux Carpes CWA Section 404(c) determination will be modified to allow the discharges which would cause those impacts.

The second alternative involving impacts to the CWA Section 404(c) site is presented in DIER # 12 as the “Southern Closure Complex.” This design plan would include a new 3,000 foot-long floodwall, bisecting the Bayou aux Carpes CWA Section 404(c) area. Early in the planning process, EPA Region 6 notified the Corps of our determination that this option would present irreparable environmental impacts, most likely resulting in the loss of over 600 acres of
unique flotant marsh wetlands, and would not be in compliance with the provisions of the 1985 Bayou aux Carpes CWA Section 404(c) determination.

The "No Action" alternative affords the greatest level of protection to all environmental features within the planning segment covered by DIER # 12, including the Bayou aux Carpes CWA Section 404(c) area. While both the Algiers Gate and the Parallel Protection alternatives would avoid impacts to the Bayou aux Carpes Section 404(c) area, there would be environmental impacts to other areas of the flood protection planning segment covered by DIER # 12.

Based on the Corps’ recommendations regarding the relative flood protection benefits, social and economic costs, as well as the hydrologic, engineering, and navigation constraints, the GIWW West Closure Complex and the Southern Closure Complex alternatives were initially subjected to the greatest level of environmental analysis by our staff. Having reached agreement with the Corps that impacts from the Southern Closure Complex would present serious roadblocks to project implementation, we have since largely focused on the design features of the GIWW West Closure Complex alternative.

We have provided guidance on avoiding and minimizing the impacts to the Bayou aux Carpes CWA Section 404(c) site from the GIWW West Closure Complex alternative and we are continuing to evaluate the possibilities for minimizing and mitigating those impacts. In addition, we are working with an interagency team to evaluate an array of other features that might provide environmentally beneficial hydrologic and habitat impacts. Also, the alternative NEPA procedures developed for the HSDRRS include a provision for a cumulative impact assessment to be published as one of the last pieces in the NEPA documentation process. For these reasons and others explained above, we are not currently able to offer a final evaluation of the full range of impacts associated with the proposed GIWW West Closure Complex alternative.

The Corps is currently gathering baseline data to evaluate potential wetland mitigation options and other project features to improve the existing hydrology of the Bayou aux Carpes area, as well as developing a long-term monitoring plan for the CWA Section 404(c) site. The Corps has committed to constructing those additional features if the analyses indicate that they would be ecologically beneficial. Discharges of dredged or fill material associated with such construction would require no additional modification to the CWA Section 404(c) designation, which contains an exception for approved habitat enhancement projects.

In the meantime, EPA is undertaking a review of the Corps' request to modify the 1985 Bayou aux Carpes CWA Section 404(c) determination. Our decision in that matter will be a key factor in determining whether the Corps may proceed with the recommended GIWW West Closure Complex alternative. As a part of our review of the Corps' request, we are soliciting public comments and will conduct a public hearing on the matter on February 11, 2009 (74 FR 2072, January 14, 2008). After considering all comments submitted, the ecological recommendations of other resource agencies, and the technical evaluations of our staff, EPA Region 6 will transmit to the EPA Office of Water in Washington, D.C., a written recommendation on whether the CWA Section 404(c) modification request should be granted or denied. The Assistant Administrator for Water will make the final decision and publish a notice of its availability in the Federal Register.
Letter to Mr. Gib Owen
U.S. Army Corps of Engineers
Page 4 of 4

We recognize the need to balance flood control and environmental protection in south Louisiana and we have seen that these goals do not necessarily have to be exclusive. We have strived diligently to work with your staff and the interagency evaluation team on the HSDRRS project to protect the quality of the unique human environment of coastal Louisiana. Please do not hesitate to let us know if there is any way we can provide additional assistance. If you have any questions or wish to discuss this matter further, please contact Barbara Keeler at (214) 665-6698.

Sincerely yours,

Miguel I. Flores
Director
Water Quality Protection Division

Enclosure

cc: U.S. Fish and Wildlife Service
Lafayette, LA

NOAA National Marine Fisheries Service
Baton Rouge, LA

Louisiana Department of Natural Resources
Baton Rouge, LA

Louisiana Department of Wildlife and Fisheries
Baton Rouge, LA
August 1, 2008

Ms. Elizabeth Wiggins
Chief, Environmental Planning and Compliance Branch
Department of the Army
New Orleans District, Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160-0276

Re: Reconnaissance CRM Management Summary
LA Division of Archaeology Report No. 22-3134
Management Summary: Reconnaissance Survey
of the Belle Chasse to Harvey Westwego Segment
(IER #12), West Bank and Vicinity Hurricane
Protection Levee, Jefferson, Orleans, and Plaquemines
Parishes, Louisiana
Coastal Environments, Inc.

Dear Ms. Wiggins:

We acknowledge the receipt of your letter dated July 7, 2008, and two copies of the above-referenced report. We have completed our review of the report and offer the following comments.

The management summary of this 6,000-acre (ac) reconnaissance survey is detailed in the description of the methodology and results for the identified high probability areas (134.5 ac). It is our understanding, based on the management summary, transmittal letter, and July 30, 2008, phone conversation with Mike Swanda that the majority of the APE was not subject to archaeological survey due to the disturbed nature of the landscape. The majority of the Area of Potential Effects (APE) has been subject to severe land disturbance activities including levee construction, canal and borrow excavation, residential and commercial development, and road construction. At this time, we concur with the management summary findings that within the identified high and low probability areas of the Area of Potential Effects (APE) no historic properties will be affected by the proposed project.

Please review the enclosed technical comments and photocopied pages with comments or corrections noted. We request that you make adjustments, as appropriate, in the subsequent report for this project. If you should have any questions please contact Stacie Palmer in the Division of Archaeology by email at spalmer@crt.state.la.us or by phone at (225) 342-5737.

Sincerely,

Robert Collins
Deputy State Historic Preservation Officer
Ms. Elizabeth Wiggins
August 1, 2008
Page 2

RC:SP:s

Enclosures: as stated

Cc: David Kelley
Coastal Environments, Inc.
1260 Main St.
Baton Rouge, LA 70802
Technical Comments:

1. Please include a title page, abstract, table of contents, list of figures, and list of tables.

2. Introduction – Please include a description of the disposition (temporary and final) of field notes, maps, photographs, etc.

3. Environmental Setting – Please discuss the potential for buried deposits within the APE.

4. Previous Investigations – Please clearly state which surveys have been conducted within the APE.

5. Previous Investigations – The Gagliano Survey (1975) conducted within the APE needs to be identified on the map.

6. Previous Investigations – Are all the surveys discussed located within 1 mile of this particular portion of IER 12 or are they for the entire IER 12?

7. Please include a copy of the Scope of Work referred to in the transmittal letter, as an appendix to the management summary.

8. It would be helpful if a large format map could be provided of the APE and the associated 27 items listed in Table 1 to see where these items are in relation to the high probability areas that were surveyed.

9. Methodology – Include a description of the bank line survey (including probing); auger testing and pedestrian survey carried out within the identified high probability areas.

10. Methodology – Clearly state why the low probability areas were not subject to archaeological survey.

11. Results – Clearly state the number of acres surveyed in each area (A, B, C and Gate Option) and the number of shovel test pits excavated in each area.
Management Summary: Reconnaissance Survey of the Belle Chasse to Harvey-Westwego Segment (IER 12), West Bank and Vicinity Hurricane Protection Levee, Jefferson, Orleans, and Plaquemines Parishes, Louisiana

June 2008

Coastal Environments, Inc.
1260 Main Street
Baton Rouge, Louisiana

Prepared for:

New Orleans District
U.S. Army Corps of Engineers
New Orleans, Louisiana
modifications to nine pump stations (Figure 1). This includes 27 items, listed in Table 1. CEMVN is undertaking these improvements in order to protect the portions of the Greater New Orleans Area situated on the Mississippi River’s right descending bank from storm surges associated with tropical weather events. The scope of work for the Belle Chasse-Westwego Segment calls for a 500 ft (152 m) survey corridor on both the flood and protected sides of the levee centerline, for a total of 3757.6 ac (1520.6 ha) within the primary alternative route (Alternative 1). An Alternative 1B would fill in the Estelle Outfall Canal from the Old Estelle Pump Station east to Bayou Barataria, building a levee over this fill, adding another 171.2 ac (69.2 ha) to the total. Three additional alternates, identified as Southern Closure Options 1 to 3, are found near the western terminus, covering an additional 1037.5 ac (419.9 ha) of wetlands. The so-called Gate Option is another alternate, consisting of a floodgate and levee/canal system at the southern end of the Belle Chasse-Westwego levee (Figure 2). This option, and three alternates associated with it, cover an additional 1019.4 ac (412.5 ha) of marsh, cypress swamp, and drained wetlands. The total Area of Potential Effects for the levee segment is 5985.7 ac (2422.3 ha).

**Natural Setting**

Located along the backslope of the Mississippi River’s natural levee, the project corridor lies within the Barataria Basin of southeast Louisiana, a broad, low region dominated by wetlands. This area was once characterized almost entirely by cypress swamps and freshwater marshes, but forced drainage and filling has drastically altered the environment of much of the protected side of the levee. Only the project corridor at the far eastern end of the Gulf Intracoastal Waterway Alternate (GIWW) approaches the modern Mississippi levee. The flood side of the levee is largely marsh and swamp, although subsidence has created areas of open water in the marsh. Man-made levees along the Mississippi have prevented fresh water and sediments from reaching the marsh, further accelerating its deterioration.

The near-surface geomorphology of the region has been mapped by the U.S. Army Corps of Engineers (USACE 1996a; b), and known channels are shown in Figures 3 and 4.
Table 1. Items within the Belle Chasse Westwego Survey Area.

<table>
<thead>
<tr>
<th>Viscinity Item #</th>
<th>Item Description</th>
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<tbody>
<tr>
<td>WBV 1</td>
<td>Sector Gate to Boosntown Floodwall</td>
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<td>WBV 2a</td>
<td>Bousntown Floodwalls</td>
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<td>Boosntown to Hero PS Floodwalls</td>
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<td>WBV 3</td>
<td>Hero PS to Algiers Canal Floodwall</td>
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<tr>
<td>WBV 7</td>
<td>Planters PS Fronting Protection and Modifications</td>
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<tr>
<td>WBV 8</td>
<td>S&amp;WB PS #13 Fronting Protection and Modifications</td>
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<tr>
<td>WBV 10</td>
<td>Belle Chasse PS #1 (Plaquemines PS) Fronting Protection and</td>
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<td>WBV 11</td>
<td>Belle Chasse PS #2 Fronting Protection and Modifications</td>
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<td>WBV 14a</td>
<td>Estelle PS to Vicinity of Lapalco Overpass</td>
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<td>WBV 14g</td>
<td>Estelle PS Vicinity Floodwalls</td>
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<td>WBV 14b</td>
<td>Old Estelle PS to V-line Levee</td>
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<td>WBV 23</td>
<td>New Estelle PS Fronting Protection</td>
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<td>WBV 33</td>
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<td>WBV 38</td>
<td>Cousins Pump Station</td>
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<td>Cousins Discharge Channel Floodwalls</td>
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<td>Whitney Barataria PS Fronting Protection and Modification</td>
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<td>WBV 47</td>
<td>Algiers Lock to Belle Chasse Hwy (West)</td>
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<td>WBV 48</td>
<td>Belle Chasse Hwy to Algiers Lock (East)</td>
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<tr>
<td>WBV 49</td>
<td>Hero Levee to Belle Chasse Hwy (East)</td>
</tr>
</tbody>
</table>

corridor. Other closely-related Plaquemine Delta distributaries are found within the confines of the Gate Option.

Soils

Soil types in the general vicinity of the project corridor vary depending upon the distance from the Mississippi River and its distributaries. In terms of elevation, the project area is located at or near sea level. The majority of the Belle Chasse-Westwego Segment is located in drained or undrained wetlands and the soils are indicative of this. Most of the soils within the area are classifiable as Westwego Clays, Schriever Clays, or Barbary, Rita and Allemands Mucks, (Figure 5), indicating formation in frequently flooded or permanently wet environments (NRCS WebSoilSurvey 2007). Barbary soils are classified as level, very poorly drained soils that have a mucky surface layer underlain by clayey materials, and are derived from flooded swamp environments. Soils of Allemands and Rita associations are
Introduction

In January and May 2008, Coastal Environments, Inc. (CEI) undertook a cultural resources reconnaissance for the U.S. Army Corps of Engineers, Mississippi Valley Division, New Orleans District (CEMVN) of a portion of the West Bank and Vicinity Hurricane Protection Levee in Jefferson, Orleans, and Plaquemines Parish, Louisiana, in advance of proposed improvements. These improvements, comprising an undertaking by a Federal agency, are subject to the processes mandated by Section 106 of the National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969. Under these laws and regulations, the CEMVN must take into account the effect of this proposed project on cultural resources within the project right-of-way. area of potential effects (APE).

The area in question, (hereafter, the Belle Chasse-Westwego Segment) under Interim Environmental Report (IER) 12, includes 31 mi (49.9 km) of levee, a proposed 18,800 ft (8730 m) of floodwalls, modifications to 18 existing gates, and fronting protection
Figure 1. Aerial photograph showing the Belle Chasse-Westwego Segment (IER 12) for the West Bank Hurricane Protection Levee.

A single distributary, possibly marked on nineteenth century maps as Bayou Gazeland, crosses the GIWW alternate at the Planters Canal, and was mapped by Roger Saucier (1963, 1994) as part of the Unknown Bayou distributary of the St. Bernard Delta. Other distributaries formed to the southeast of the project area as part of the Plaquemines Delta, and one of these is now occupied by Bayou Barataria at the southeastern terminus of the study.
Colonel Alvin B. Lee  
District Engineer  
U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

Enclosed is the Fish and Wildlife Coordination Act Report for the Individual Environmental Report (IER) 12, Improved Protection from Harvey to Algiers, Jefferson, Orleans and Plaquemines Parishes, Louisiana. The preferred alternative was developed through proactive coordination between the U.S. Army Corps of Engineers and the natural resource agencies. The preferred alternative would include construction of navigable floodgate and ancillary structures on the GIWW south of the confluence of the Algiers and Harvey Canals and construction of approximately 4,200 linear feet of new floodwall along the north bank of the Gulf Intracoastal Waterway and within the Bayou aux Carpes 404 (c) designated area. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the V-levee would be also raised to the 100-year level of protection.

This report is transmitted under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and has been provided to the Louisiana Department of Wildlife and Fisheries and the National Oceanic and Atmospheric Administration’s (NOAA), National Marine Fisheries Service (NOAA’s NMFS), and their comments are incorporated.

Should your staff have any questions regarding the enclosed report, please have them contact Angela Trahan of this office at 337/291-3137.

Sincerely,

[Signature]

James F. Boggs  
Supervisor  
Louisiana Field Office

Enclosures
cc: EPA, Dallas, TX
FWS, Atlanta, GA (ES/HC)
Corps, Planning Division, New Orleans, LA
Jean Lafitte National Historical Park and Preserve, New Orleans, LA
NMFS, Baton Rouge, LA
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
Fish and Wildlife Coordination Act Report

Individual Environmental Report (IER) 12, Harvey to Algiers

U.S. FISH & WILDLIFE SERVICE

PROVIDED TO
NEW ORLEANS DISTRICT
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

PREPARED BY
ANGELA TRAHAN
FISH AND WILDLIFE BIOLOGIST

U.S. FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
LAFAYETTE, LOUISIANA
February 2009

U.S. FISH AND WILDLIFE SERVICE – SOUTHEAST REGION
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Executive Summary

The U.S. Fish and Wildlife Service (Service) has prepared the attached Fish and Wildlife Coordination Act Report for the proposed Westbank and Vicinity of New Orleans (WBV), Harvey to Algiers, 100-year level hurricane protection project, Individual Environmental Report 12 (IER 12). The Corps of Engineers, New Orleans District (Corps) is preparing, that IER under the approval of the Council on Environmental Quality (CEQ). IERs will partially fulfill the Corps compliance with the National Environmental Policy Act of 1969 (83 Stat. 582, as amended; 42 U.S.C. 4321-4347). IERs are a CEQ approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in the IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps to upgrade two existing hurricane protection projects (i.e., WBV and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana.

This report addresses IER 12 and contains a description of the existing fish and wildlife resources of the project area, discusses future with- and without-project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the proposed project. This report incorporates and supplements our Fish and Wildlife Coordination Act (FWCA) Reports that addressed impacts and mitigation features for the WBV (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) Hurricane Protection project, and the November 26, 2007, Draft Programmatic FWCA Report that addresses the hurricane protection improvements authorized in Supplemental 4. Impacts and mitigation needs resulting from government and contractor provided borrow areas are being addressed in separate IERs; therefore this report will not address those project features. This document constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This report has been provided to the Louisiana Department of Wildlife and Fisheries and the National Oceanic and Atmospheric Administration’s (NOAA), National Marine Fisheries Service (NOAA’s NMFS), and their comments are incorporated (Appendix A).

The IER 12 study area is located in the upper Barataria Basin and includes the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins along the west bank of the Mississippi River in Jefferson, Orleans and Plaquemines Parishes, Louisiana. The Jean Lafitte National Historical Park and Preserve (JLNHP) and the Bayou aux Carpes wetland complex are located to the south of the Harvey-Westwego sub-basin and are managed by the National Park Service (NPS). The Bayou aux Carpes wetland complex is subject to an Environmental Protection Agency (EPA) Final Determination under the Clean Water Act (CWA) Section 404(c) invoked in 1985, and according to the EPA Final Determination, the discharge of any dredged or fill material within the approximately 3,200-acre site, referred to as the EPA CWA Bayou aux Carpes 404 (c) area, is restricted.
Study area wetlands support nationally important fish and wildlife resources including flotant marsh and cypress swamp. Factors that will strongly influence future fish and wildlife resource conditions outside of the protection levees include freshwater and sediment input and loss of coastal wetlands. Regardless of which of the above factors ultimately has the greatest influence, emergent wetlands within, and adjacent to, the project area will probably experience losses due to subsidence, erosion, and relative sea-level rise.

During the alternatives analysis, the no-action alternative and the alternative to raise the existing Hurricane Protection System to a 100-year level of protection were considered. The no-action alternative would not be implemented because it fails to provide the authorized level of protection to the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins. The Corps also considered a series of alternative gate locations within the project area that would minimize the need for parallel protection. One of these alternatives included constructing a sector gate across the EPA CWA Bayou aux Carpes 404 (c) area. That alternative was considered to have significant impacts to fish and wildlife resources and the EPA CWA Bayou aux Carpes 404 (c) area.

Developed through proactive coordination between the EPA, NPS, and the Corps, the preferred alternative would include construction of navigable floodgate and ancillary structures on the Gulf Intracoastal Waterway (GIWW) south of the confluence of the Algiers and Harvey Canals and upstream of the Hero Canal. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the V-levee would be raised to the 100-year level of protection [i.e., approximately 14 to 16 foot elevation North American Vertical Datum of 1988 (NAVD 88)]. Approximately 4,200 linear feet of floodwall would be constructed within a 100-foot-wide right-of-way along the periphery of the GIWW and the EPA CWA Bayou aux Carpes 404 (c) area to connect the proposed GIWW navigable floodgate with the existing flood protection system. Existing levees and floodwalls along Algiers and Harvey Canals will be incorporated into the protected side of the closure complex and would be integrated as features of the parallel protection system retention basin. Expansions of existing rights-of-way along several levee reaches would occur as a result of bringing those existing levees up to authorized levels of protection in order to provide necessary storm water retention during major storm events. To ensure habitat functions of the Bayou aux Carpes drainage area are maintained, the proposed action includes several environmental augmentations along the Old Estelle pump station outfall canal and within the Bayou aux Carpes drainage area which will provide sheet flow and hydrologic exchange into, and within, the EPA CWA Bayou aux Carpes 404 (c) area.

Implementation of the preferred alternative would directly impact 252 acres of hydrologically-altered bottomland hardwood habitat, 2.4 acres of wet bottomland hardwood habitat, and approximately 75 acres of swamp habitat. Of those impacts approximately 2.4 acres of wet bottomland hardwood and 7.2 acres of swamp habitat (i.e., 9.6 acres) occur within the EPA CWA Bayou aux Carpes 404 (c) area along the GIWW interface. According to our Habitat Assessment Methodology (HAM) and Wetland Value Assessment (WVA) analyses the preferred alternative would result in the direct loss of 177.1 and 38.4 average annual habitat units (AAHUs), of bottomland hardwood forest and swamp, respectively. Mitigation for unavoidable
losses of wet and non-wet bottomland hardwoods and swamp habitat, caused by project features will be evaluated through a complementary comprehensive mitigation IER. However, mitigation for unavoidable impacts to the EPA CWA Bayou aux Carpes 404 (c) area would be provided concurrently with flood protection features and within the EPA CWA Bayou aux Carpes 404 (c) area, provided that EPA grants authorization to use the EPA CWA Bayou aux Carpes 404 (c) area. Aside from mitigation and flood protection features, environmental augmentation of the EPA CWA Bayou aux Carpes 404 (c) area may also be implemented as a project feature to ensure construction and maintenance of the flood protection features would not adversely impact the EPA CWA Bayou aux Carpes 404 (c) area. Proposed augmentations could supplement hydrologic exchange within approximately 3,000 acres of flotant marsh, cypress swamp, and wetland scrub-shrub habitat. To ensure that appropriate measures are implemented to maintain the quality of the area, the Corps’ Engineer Research and Development Center (ERDC) will be conducting modeling of existing hydrologic conditions within the Bayou aux Carpes drainage area and the effects of directing additional flow and nutrients into the that wetland complex.

The Service does not object to providing improved hurricane protection to the greater New Orleans area provided the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation:

1. Flood protection and ancillary features such as staging areas and access roads should be designed and positioned so that destruction of wetlands and non-wet bottomland hardwoods are avoided or minimized to the greatest extent possible.

2. The Corps should fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

3. The enclosure of wetlands with new levee alignments should be minimized to the fullest extent. When enclosure of wetlands is unavoidable, non-development easements on enclosed wetlands should be acquired, or hydrologic connections with adjacent, un-enclosed wetlands should be maintained. Such actions will serve to minimize secondary impacts from development and hydrologic alteration.

4. Material removed during project construction (i.e., dredging Algiers Canal, repositioning the WBV levee landward to accommodate the GIWW gate, and dredging along the GIWW bank line to install the flow control structure) should be tested to determine suitability as borrow material for levee construction and the presence of contaminants. The Corps should continue to coordinate with the natural resource agencies to determine the best use of that material.

5. A maintenance dredging management plan for material dredged from the Algiers Canal should be developed for the life of the project.

6. The Corps should avoid impacts to the EPA CWA Bayou aux Carpes 404 (c) area, if feasible. If not feasible the Corps should continue coordination with the NPS and EPA regarding any proposed project feature that may impact that area. Points of contacts for the agencies potentially impacted by project features are: National Park Service (NPS), contact
Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov) and Ms. Barbara Keeler (214) 665-6698 with the EPA.

7. Construction within the EPA CWA Bayou aux Carpes 404 (c) area should not commence until the EPA’s decision to modify the designation to accommodate discharges into that area has been resolved.

8. Hydrologic, nutrient, and contaminant modeling should be conducted to determine the best arrangement of environmental augmentation features (i.e., location of gaps and water control structures), if any, in the Bayou aux Carpes 404 (c) area.

9. Environmental augmentation features developed through the EPA 404 (c) modification procedures should be incorporated as project features, and the IER should be supplemented to address any additional augmentation features proposed through that process.

10. If hydraulic modeling demonstrates that environmental augmentation features are beneficial, operational plans to maximize freshwater retention or redirect freshwater flows into the EPA CWA Bayou aux Carpes 404 (c) area should be coordinated with the natural resource agencies, especially EPA and NPS. To accommodate changing goals and restoration needs, water control structures should be designed to incorporate operational flexibility through an adaptive management program.

11. The project’s first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation and augmentation features. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of the shoreline protection features, the Corps should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.

12. To facilitate necessary adaptive management, the Corps in coordination with the natural resource agencies, should develop a monitoring plan. That monitoring plan should address hydrologic, nutrient, and contaminant changes throughout the system. The performance and funding of the monitoring of mitigation and augmentation features should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure that local cost share obligations are met on behalf of the public interest.

13. Because of the sensitivity and significance of the EPA CWA Bayou aux Carpes 404 (c) area every effort should be made to minimize impacts during construction of the floodwall and navigational gate. Construction activities within the EPA CWA Bayou aux Carpes 404 (c) area should adhere to the following guidelines to avoid adverse impacts to that site:

A. Construction should be performed from the water side (i.e., Bayou Barataria/GIWW
side) rather than from the 404(c) side;

B. Construction of the floodwall within the EPA CWA Bayou aux Carpes 404 (c) area should be constructed within a 100-foot corridor width from the GIWW into the 404(c) area. No additional area within the 404(c) site would be required for the floodwall or any other construction;

C. The Corps should investigate and utilize innovative techniques to design and build a structure with the narrowest footprint possible; and,

D. Should existing oil and gas pipeline ROWs require relocation, impacts associated with those relocations should be avoided and minimized to the greatest extent possible.

14. If a proposed project feature is changed significantly or is not implemented within one year of the date of this report, the Corps should reinitiate coordination with each office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

15. Adverse impacts to bald eagle nesting locations and wading bird colonies should be avoided through careful design of project features and timing of construction. A qualified biologist should inspect the proposed work site for the presence of undocumented wading bird nesting colonies and bald eagles during the nesting season (i.e., February 16 through October 31 for wading bird nesting colonies, and October through mid-May for bald eagles).

16. To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present). In addition, we recommend that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests, and should avoid affecting them during the breeding season.

17. If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation should be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary and those results should be forwarded to this office.

18. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

19. Forested areas cleared for staging areas and temporary construction zones should be managed for invasive species (i.e., Chinese tallowtree) after the completion of the project.
20. Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

21. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the Service, NMFS, LDWF, EPA, NPS, and the Louisiana Department of Natural Resources (LDNR). The Service should be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

22. If mitigation lands are purchased for inclusion within Federally of State managed lands, those lands must meet certain requirements; therefore the land manager of that management area should be contacted early in the planning phase regarding such requirements.

23. If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

24. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable.

25. Any flood protection water control structure sited in a canal, bayou, or navigation channel that does not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

26. Flood protection water control structures should remain completely open except during storm events, unless otherwise determined by the natural resource agencies.

27. Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered, and coordination should continue with the natural resource agencies to ensure fish passage features are incorporated to the fullest extent practicable.

28. To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

29. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.
30. Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

31. Any proposed change in mitigation or augmentation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

32. A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the Corps, the Service, NMFS, EPA, LDNR and LDWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.
INTRODUCTION

The U.S. Army Corps of Engineers, New Orleans District (Corps) is preparing an Individual Environmental Report (IER 12) for flood protection for the multi-basin area composed of Belle Chasse, Gretna-Algiers, Harvey-Westwego in Jefferson, Orleans, and Plaquemines Parishes, Louisiana. That IER is being prepared under the approval of the Council on Environmental Quality (CEQ) that will partially fulfill the Corps compliance with the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347). IERs are a CEQ approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4) and Public Law 110-28, U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental). Those laws authorized the Corps to upgrade two existing hurricane protection projects [i.e., Westbank and Vicinity of New Orleans (WBV) and Lake Pontchartrain and Vicinity (LPV)] in the Greater New Orleans area in southeast Louisiana.

This report contains a description of the existing fish and wildlife resources of the project area, discusses future with- and without-project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the proposed project. This report incorporates and supplements our Fish and Wildlife Coordination Act (FWCA) Reports that addressed impacts and mitigation features for the WBV (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the Lake Pontchartrain and Vicinity (dated July 25, 1984, and January 17, 1992) Hurricane Protection projects, and the November 26, 2007, Draft Programmatic FWCA Report that addresses the hurricane protection improvements authorized in Supplemental 4. Impacts and mitigation needs resulting from government and contractor provided borrow areas have been addressed in an October 25, 2007, and a November 1, 2007, FWCA reports, respectively, therefore this report will not address those project features. This document constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This report has been provided to the Louisiana Department of Wildlife and Fisheries and the National Oceanic and Atmospheric Administration’s (NOAA), National Marine Fisheries Service (NOAA’s NMFS), and their comments are incorporated (Appendix A).

DESCRIPTION OF THE STUDY AREA

The IER 12 study area is located in the upper Barataria Basin and includes the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins along the west bank of the Mississippi River in Jefferson, Orleans and Plaquemines Parishes, Louisiana. Dividing the sub-basins are Harvey and Algiers Canals which drain into the Gulf Intracoastal Waterway (GIWW) at their confluence. Hero Canal defines the southern boundary of the Belle Chase sub-basin and the southeastern boundary of the study area. The Old Estelle pump station (PS) outfall canal and the WBV hurricane protection system’s V-levee delineates the southeastern boundary of the Harvey-Westwego sub-basin. To the south of the V-levee are the Jean Lafitte National Historical Park.
and Preserve (NHPP) and the EPA CWA Bayou aux Carpes 404 (c) wetland complex. Within the existing WBV hurricane protection system, natural levees and lower lying wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development.

Figure 1. IER 12 Study Area, WBV, Jefferson, Orleans and Plaquemines Parishes, Louisiana, and Existing Hurricane and Flood Protection Features).

**FISH AND WILDLIFE RESOURCES**

Habitat types in the project area include wet and non-wet bottomland hardwood habitat, cypress and tupelo swamp, scrub-shrub habitat, flotant marsh, open water, and developed areas. Open water areas are associated with the Harvey and Algiers Canals, Hero Canal, the GIWW (Bayou Barataria), the Old Estelle PS outfall canal, and interspersed open water areas within flotant marsh and swamp habitat. Due to urban development and a forced-drainage system, the hydrology of most of the forested habitat within the levee system has been altered. The forced-drainage system has been in operation for many years, and subsidence is evident throughout the areas enclosed by levees.

Wetlands (forested, marsh, and scrub-shrub) within the study area provide plant detritus to coastal waters downstream and thereby contribute to the production of commercially and recreationally important fishes and shellfishes. They also provide valuable water quality functions such as reduction of excessive dissolved nutrient levels, filtering of waterborne contaminants, and removal of suspended sediment. In addition, coastal wetlands buffer storm
surges reducing their damaging effect to man-made infrastructure within the coastal area. Factors that will strongly influence future fish and wildlife resource conditions outside of the protection levees include freshwater and sediment input and loss of coastal wetlands. Regardless of which of the above factors ultimately has the greatest influence, emergent wetlands within, and adjacent to, the project area will probably experience losses due to development, subsidence, erosion, and relative sea-level rise.

The Service has provided a FWCA Report for the authorized WBV hurricane protection project. That report contains a through discussion of the significant fish and wildlife resources (including habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein but the following information is provided to update the previously mentioned reports and provide IER specific information and recommendations.

An area within the Bayou aux Carpes wetland complex (Figure 2) adjacent to the JLNHPP was subject to an Environmental Protection Agency (EPA) Final Determination under the Clean Water Act (CWA) Section 404(c) in 1985. According to the EPA Final Determination, the discharge of any dredged or fill material within the approximately 3,200 acre site, referred to as the EPA CWA Bayou aux Carpes 404(c) area, is restricted. The EPA action allowed for three specific exceptions, none of which appears to apply to the Corps’ current hurricane protection proposal. Previous requests which have fallen outside those exceptions have been denied by EPA as being contrary to the CWA 404(c) determination. One such categorical denial prohibited the Corps from altering the alignment of the West Bank Hurricane Protection Levee such that it would encroach upon the EPA CWA Bayou aux Carpes 404(c) site.

On November 4, 2008, the Corps requested that EPA modify the designation for the EPA CWA Bayou aux Carpes 404(c) site designation to accommodate the Corps’ preferred alignment. The Service provided comments to EPA’s Request for Comments regarding the requested modification published in the Federal Register (Volume 74, No. 9, page 2072) on January 14, 2009 (Appendix B).

The EPA CWA Bayou aux Carpes 404(c) area action is one of only 12 such actions ever completed by EPA. Approximately 2,800 acres within the site are in Federal ownership and Congress is considering legislation to adjust the boundary of the Jean Lafitte NHPP, Barataria Preserve Unit to include the Bayou aux Carpes area. In the meantime, the National Park Service (NPS) has constructive possession of the area. Therefore, the Corps should continue to coordinate with both the NPS and EPA regarding any proposed project feature that may impact that area. For the NPS please contact Superintendent, David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management, David Muth, (504) 589-3882 extension 128 (david_muth@nps.gov). For the EPA please contact Ms. Barbara Keeler, 214/665-6698.
Figure 2. EPA CWA Bayou aux Carpes 404 (c) area.

The EPA CWA Bayou aux Carpes 404 (c) area is composed of two unique and critically important habitat types. Flotant marsh occurs along the northern portion of the area and transitions into cypress swamp habitat further to the south. The quality and health of these sensitive wetland habitats are greatly influenced by hydrologic parameters. Should water levels recede within flotant marsh, marsh vegetation could root into the soil drowning the vegetation when water levels rise again. Too much water flow can push flotant marsh vegetation out and create vast areas of open water. As flotant marsh vegetation thickens, new and larger plants (e.g., wax myrtle, red maple, and cypress) are supported by the mat of vegetation initiating the early successional stages of a cypress-tupelo swamp forest. Cypress and tupelo swamps also require hydrologic variations. Natural regeneration depends on periods of exceptionally long drought since cypress and tupelo seeds cannot germinate underwater. Cypress swamp habitat appears to be naturally regenerating as evident by saplings observed in the understory during recent field investigations. However, hydrologic stresses (e.g., spoil banks impeding water flow and producing ponding effects) may still be influencing sapling growth rates.

In 1985, the Service submitted a report to EPA detailing the value of the entire Bayou aux Carpes drainage area to fish and wildlife resources. The drainage area boundaries include the Harvey Canal/Bayou Barataria segment of the GIWW to the east and south, the Bayou des Familles ridge and Louisiana Highway 45 to the west, and the V-levee and Old Estelle PS outfall canal to the north. The area was historically drained by Bayou aux Carpes, a natural waterway; however, this
bayou was hydrologically disconnected when a plug was installed in the 1970s. Currently that plug may serve as a valuable function in keeping boat wakes from the GIWW from further eroding and widening the mouth of the bayou. The only flow exchange for this area is through the Southern Natural Gas (SNG) pipeline canal which runs north-south bisecting the Bayou aux Carpes drainage area. A few oil and gas canals branch off of the SNG pipeline canal connecting Bayou aux Carpes with the SNG pipeline canal. There are also several pipeline right-of-ways that traverse the area from east to west across the northern portion of the drainage area. It is highly probable that this system of canals and rights-of-way and their associated spoil banks influence the hydrology, impeding and directing flows throughout the area.

The Service’s 1985 Habitat Evaluation Procedures (HEP) analysis determined that bottomland hardwood and wooded swamp habitats in the drainage area rated moderate to high value for all species evaluated (i.e., gray squirrel, pileated woodpecker, North American mink, wood duck, great egret, American alligator, and common muskrat). Upland forested habitat rated low for gray squirrel and pileated woodpecker and was found to be optimum for mink. Scrub-shrub wetlands in the study area were found to be of high quality as wood duck wintering habitat and alligator habitat, and were moderate quality for mink, great egret, and muskrat. Fresh marsh rated high to moderate as alligator, mink, and muskrat habitat (U.S. Fish and Wildlife Service 1985).

The Bayou aux Carpes wetland complex provides valuable habitat for resident waterfowl and migratory game species (i.e., wood ducks, mallards, and other waterfowl) and non-game species (i.e., great blue herons and great egrets). Bald eagles and osprey have been observed in the area as well. Several species of non-game, resident and migratory birds that are known or expected to utilize the project area (e.g., red-headed woodpecker, prothonotary warbler, and wood thrush) have exhibited substantial population declines over the last 30 years, primarily as the result of habitat loss and fragmentation, and are of particular concern to the Service. The Bayou aux Carpes drainage area and associated habitats provide valuable spawning, feeding, and nursery habitat for recreationally-important freshwater fish such as largemouth bass, and various sunfishes; crustaceans such as crawfish and grass shrimp; and estuarine species such as striped mullet and blue crab. Analysis of samples collected in 1985 indicated that forage species (e.g., mosquitofish, threadfin shad, and golden top minnow) were the most abundant fish species. This diverse assemblage of fisheries species is indicative of a stable fisheries community in a relatively unstressed environment (U.S. Fish and Wildlife Service 1985). The Bayou aux Carpes drainage basin provides plant detritus to adjacent coastal waters, and such detritus is essential to the maintenance of commercially and recreationally important fisheries. In addition to their habitat values, those wetlands provide floodwater storage, and aid in water quality maintenance by reducing excessive dissolved nutrient levels and removing suspended sediments.

At this time, the Service is unaware of any threatened or endangered species or their critical habitat within the project area. However, the project-area forested wetlands provide nesting habitat for the bald eagle (Haliaeetus leucocephalus), and a bald eagle nest was documented within the Bayou aux Carpes drainage area in 2007. The bald eagle was officially removed from the List of Endangered and Threatened Species on August 8, 2007. Bald eagles nest in Louisiana from October through mid-May. Eagles typically nest in mature trees (e.g., bald cypress,
sycamore, willow, etc.) near fresh to intermediate marshes or open water in the southeastern Parishes. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (i.e., organochlorine pesticides and lead).

Breeding bald eagles occupy “territories” that they will typically defend against intrusion by other eagles, and that they likely return to each year. A territory may include one or more alternate nests that are built and maintained by the eagles, but which may not be used for nesting in a given year. Potential nest trees within a nesting territory may, therefore, provide important alternative bald eagle nest sites. Nest sites typically include at least one perch with a clear view of the water or area where the eagles usually forage. Shoreline trees or snags located near large water bodies provide the visibility and accessibility needed to locate aquatic prey. Bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. Disturbance during this critical period may lead to nest abandonment, cracked and chilled eggs, and exposure of small young to the elements. Human activity near a nest late in the nesting cycle may also cause flightless birds to jump from the nest tree, thus reducing their chance of survival.

Although the bald eagle has been removed from the List of Endangered and Threatened Species, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute “disturbance,” which is prohibited by the BGIPA. A copy of the NBEM Guidelines is available at: <http://www.fws.gov/southeast/es/baldeagle/NationalBaldEagleManagementGuidelines.pdf>. Those guidelines recommend: (1) maintaining a specified distance between the activity and the nest (buffer area); (2) maintaining natural areas (preferably forested) between the activity and nest trees (landscape buffers); and (3) avoiding certain activities during the breeding season. On-site personnel should be informed of the possible presence of nesting bald eagles within the project boundary, and should identify, avoid, and immediately report any such nests to this office. If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary. Results of that determination should be provided to this office. The Service’s Division of Migratory Birds for the Southeast Region (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting such consultations. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

The proposed study area is known to support colonial nesting waterbirds. Colonies may be present that are not currently listed in the database maintained by the LDWF. That database is updated primarily by monitoring the colony sites that were previously surveyed during the 1980s. Until a new, comprehensive coast-wide survey is conducted to determine the location of newly-established nesting colonies, we recommend that a qualified biologist inspect the proposed work
site for the presence of undocumented nesting colonies during the nesting season. To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15. exact dates may vary within this window depending on species present). In addition, we recommend that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests, and should avoid affecting them during the breeding season.

**Future Fish and Wildlife Resources**

The combination of subsidence and sea level rise is called submergence or land sinking. As the land sinks the wetlands become inundated with higher water levels stressing wetland vegetation. Even cypress-tupelo swamps can be stressed by prolonged inundation, thus leading to plant death and conversion to open water. Other major causes of wetland losses within the study area include altered hydrology, storms, saltwater intrusion (caused by marine processes invading fresher wetlands), shoreline erosion, herbivory, and development activities including the direct and indirect impacts of dredge and fill (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). The continued conversion of wetlands and forested habitat to open water or developed land represent the most serious fish and wildlife-related problems in the study area. Those losses could be expected to cause significant declines in coastal fish and shellfish production and in the study area’s carrying capacity for numerous migratory waterfowl, wading birds, other migratory birds, alligators, furbears, and game mammals. Wetland losses will also reduce storm surge protection of developed lands, and will likely contribute to water quality degradation associated with excessive nutrient inputs.

**ALTERNATIVES UNDER CONSIDERATION**

During the alternatives analysis, the no-action alternative and the alternative to raise the existing Hurricane Protection System to a 100-year level of protection were considered. The no-action alternative would not be implemented because it fails to provide the authorized level of protection to the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins. The Corps also considered a series of alternative gate locations within the project area that would reduce the length of parallel levee protection. One of these alternatives included constructing a sector gate across the EPA CWA Bayou aux Carpes 404 (c) area. That alternative would have significant impacts to fish and wildlife resources and EPA CWA 404 (c) designated wetlands. The following are brief descriptions of the alternatives:

**Alternative 1:**
A floodgate and permanent by-pass channel in the GIWW below the confluence of the Algiers and Harvey Canals with the flood wall bisecting the Bayou aux Carpes 404 (c) designated area;

**Alternative 2 [Gulf Intracoastal Waterway- West Closure Complex (GIWW WCC)]:**
Floodgate and permanent by-pass channel in the GIWW below the confluence of the Algiers and Harvey Canals with 100-year floodwall protection proposed along the periphery of the EPA
CWA Bayou aux Carpes 404 (c) area and the GIWW and continuing around to the V-levee;

Alternative 3:
Sector floodgate in the Algiers Canal with 100-year floodwall protection along the Harvey Canal to the Lapalco floodgate continuing along the existing WBV flood protection levee alignment;

Alternative 4:
Parallel levee protection to raise the existing levees and floodwalls along Algiers and Harvey Canals to the 100-year level of protection. The Lapalco floodgate and the Cousins PS discharge channel walls would also be raised to the 100-year level of protection.

Proposed Action

The GIWW WCC alternative (Alternative 2) was developed through proactive coordination primarily between the EPA, NPS, and the Corps. The GIWW WCC alternative would include construction of a navigable floodgate on the GIWW south of the confluence of the Algiers and Harvey Canals and upstream of the Hero Canal. A pumping station and a secondary by-pass canal/flow control structure would be constructed adjacent to the navigable floodgate. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the WBV, V-levee would be raised to the 100-year level of protection [i.e., approximately 14 to 16 foot elevation North American Vertical Datum of 1988 (NAVD 88)]. Approximately 4,200 linear feet of floodwall would be constructed within a 100-foot-wide new right-of-way along the periphery of the GIWW and the EPA CWA Bayou aux Carpes 404 (c) area to connect the proposed GIWW navigable floodgate with the existing flood protection system. Armoring of the floodwall along the GIWW is anticipated for protection against barge collisions and wave erosion.

Existing levees and floodwalls along Algiers and Harvey Canals will be incorporated into the protected side of the closure complex and would be integrated as features of the parallel protection system retention basin. Those levees would be lifted to the former authorized level of protection, and existing pump stations within the proposed detention basin would receive fronting protection and back flow prevention which would required additional right-of-way impacts. Approximately 700,000 cubic yards of material in the Algiers Canal would be dredged in order to maintain a still water level of less than 6 feet (NAVD 88) in the retention basin. Material dredged would be placed within the Jean Lafitte NHPP for marsh restoration along Lake Salvador.

Features of the structure that would cross the GIWW include a 150-to-300-foot-wide navigation channel closure gate and a 100-to-200-foot-wide bypass channel closure gate built to a protection elevation of 16 feet (NAVD 88), or greater, and tied into the nearest flood protection levee. A pumping station would provide positive backwater prevention. The bypass channel would be constructed to allow navigation on the GIWW during construction of the retaining structure, pumps and gates and will be used in the event of the closure of the primary channel structure. A water control structure is also proposed on the Old Estelle PS outfall canal.
In addition to levee and floodwall construction the proposed action includes several environmental augmentations to ensure that adverse impacts to the Bayou aux Carpes 404 (c) area are avoided. The southern side of the Old Estelle pump station outfall canal would be gapped to provide evenly distributed sheet flow into the EPA CWA Bayou aux Carpes 404 (c) area. After analysis of hydrologic modeling, exiting obstructions (e.g., spoil banks, access roads) within the EPA CWA Bayou aux Carpes 404 (c) area may also be augmented, including modifying the shell plug at Bayou aux Carpes where it historically connected to Bayou Barataria to provide hydrological exchange. Long-term monitoring of the affects of the proposed flood protection system and augmentation features on the Bayou aux Carpes wetland complex would be conducted. Should monitoring indicate that augmentation features have an adverse affect on the EPA CWA Bayou aux Carpes 404 (c) area, flow from the Old Estelle pump station would be redirected away from the CWA 404 (c) area and through the proposed water control structure at the end of the Old Estelle outfall canal and into the GIWW.

In the GIWW adjacent to the EPA CWA Bayou aux Carpes 404 (c) area and south of the navigation channel closure gate, 2,000 linear feet of foreshore dike protection would be constructed in front of the channel bank to prevent scouring or bank erosion within the EPA CWA Bayou aux Carpes 404 (c) area associated with discharge from the pump station.

The GIWW WCC alternative provides 100-year protection based upon improvements, enhancements, and construction confined to the GIWW reach in concert with tie-ins to improvements to the Hero Canal Levee (IER #13) and the V-line Levee (IER #14).

**EVALUATION METHOD**

Direct impacts to bottomland hardwood and swamp habitat were quantified by acreage and habitat quality (i.e., average annual habitat units or AAHUs) and are presented in Table 1 (Appendix B). The Service used the Louisiana Department of Natural Resources Habitat Assessment Methodology (HAM) to quantify the impacts of proposed project features on upland and wetland bottomland hardwood habitat and used the Wetland Value Assessment (WVA) methodology to quantify the impacts on swamp habitat. The habitat assessment models for bottomland hardwoods within the Louisiana Coastal Zone utilized in this evaluation were modified from those developed in the Service’s Habitat Evaluation Procedures (HEP). For each habitat type, those models define an assemblage of variables considered important to the suitability of an area to support a diversity of fish and wildlife species. The HAM, however, is a community-level evaluation instead of the species-based approach used with HEP. The WVA is used to evaluate coastal restoration projects, and is similar to the Service’s HEP, in that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. As with HEP, the WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for fresh/intermediate marsh, brackish marsh, and saline marsh. Further explanation of how impacts/benefits are assessed with the HAM and WVA and an explanation of the assumptions affecting habitat suitability (i.e., quality) index (HSI) values for each target year for impacts to bottomland hardwood and swamp habitat are available for review at the Service’s Lafayette, Louisiana, field office.
### Table 1: Potential Impacts from Algiers-Harvey 100-year Hurricane Protection Project

<table>
<thead>
<tr>
<th>protected side (hydrologically altered)</th>
<th>floodside (hydrologically connected)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pasture (acres)</td>
</tr>
<tr>
<td>Algiers Eastbank Levee Expansion</td>
<td>---</td>
</tr>
<tr>
<td>Algiers Westbank Levee Exp</td>
<td>---</td>
</tr>
<tr>
<td>East Bank Navigational Structure</td>
<td>---</td>
</tr>
<tr>
<td>EBNS- staging areas</td>
<td>63.6</td>
</tr>
<tr>
<td>Levee Exp N of Estelle O/F canal</td>
<td>---</td>
</tr>
<tr>
<td>Levee Exp W of 404c</td>
<td>---</td>
</tr>
<tr>
<td>Levee Exp W of Harvey</td>
<td>---</td>
</tr>
<tr>
<td>Floodwall construction 404c</td>
<td>---</td>
</tr>
<tr>
<td>Total Acres (392.6)</td>
<td>63.6</td>
</tr>
<tr>
<td>Total AAHUs lost</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Total BLH protected side = 232 ac, 175.1 AAHUs
Total BLH flood side (404c) = 2.4 ac, 2.0 AAHUs
Total swamp flood side = 67.5 ac + 7.2 ac in 404c = 74.7 ac, 38.4 AAHUs

Acreage values estimated from 2005 aerial photography and LIDAR data in ArcGIS.

As indicated in Table 1, based on our HAM and WVA analyses (Appendix C) project implementation would result in the direct loss of 254.4 and 75 acres, and 177.1 and 38.4 AAHUs, of bottomland hardwood forest and swamp, respectively. Implementation of the preferred alternative would directly impact 252 acres of hydrologically-altered bottomland hardwood habitat, 2.4 acres of wet bottomland hardwood habitat, and approximately 75 acres of swamp habitat. Of those impacts approximately 2.4 acres of wet bottomland hardwood and 7.2 acres of swamp habitat (i.e., 9.6 acres) occur within the EPA CWA Bayou aux Carpes 404 (c) area along the GIWW interface.

**PROJECT IMPACTS**

Proposed project impacts associated with the GIWW WCC alternative would result primarily from construction of new levees, expansion of levee rights-of-way and associated features. Although some construction will occur in cleared areas and on existing levees, project implementation will directly impact wet and non-wet bottomland hardwoods and tupelo swamp that provide medium to high habitat value for diverse fish and wildlife resources. While some construction staging and processing areas are located in open, non-forested areas, approximately...
7 acres of bottomland hardwood forest associated with one staging location would be impacted.

Direct impacts to 252 acres of hydrologically-altered (i.e., non-wet) bottomland hardwood habitat would occur as a result of the GIWW WCC alternative. Impacts would be associated with expanding the existing flood protection levee right-of-way to bring it to the authorized level of protection and with realigning and expanding the levee on the south bank of the GIWW to accommodate the proposed bypass channel, navigable floodgate, pump station and a current reduction flow structure. The footprint of the proposed pump station would also impact non-wet bottomland hardwood habitat; however, by repositioning the levee landward an undetermined amount of previously-altered bottomland hardwood habitat would be returned to a natural overbank flooding regime.

Direct impacts to 2.4 acres of bottomland hardwood habitat and 7.2 acres of swamp habitat would occur as a result of constructing a new floodwall within a 100-foot right-of-way along the EPA CWA Bayou aux Carpes 404 (c) area and the GIWW interface. Impacts are also associated with floodside armoring of the proposed floodwall. Construction of this floodwall and armoring would impact riparian habitat and disrupt wildlife passage between the Bayou aux Carpes wetland complex and adjacent habitats. Riparian habitats are particularly valuable to wildlife as transition zones between aquatic and forested habitats, and contribute vital elements to fishery resources in the form of detritus, shade, and in-stream cover.

Although proposed impacts to the EPA CWA Bayou aux Carpes 404 (c) area have been minimized, the discharges of any dredged or fill material within the EPA CWA Bayou aux Carpes 404 (c) area is currently restricted and would require the EPA to modify the CWA Section 404 (c) determination. To ensure that potential impacts resulting from the construction of a flood protection structure/barrier do not compromise the value of this nationally-significant wetland ecosystem, the Corps is proposing to incorporate features into the proposed hurricane protection project to maintain the integrity EPA CWA Bayou aux Carpes 404 (c) area habitat (i.e., flotant marsh and cypress swamp). Storm water discharge from the Old Estelle pump station would be directed into the EPA CWA Bayou aux Carpes 404 (c) area by strategically gapping along the southern edge of the canal spoil bank. The Corps also proposes to modify interior hydrologic obstructions and the Bayou aux Carpes shell plug to provide additional hydrological exchange, if deemed necessary. To ensure that appropriate measures are implemented to maintain the function and quality of the wetland complex, the Corps’ Engineer Research and Development Center (ERDC) will be conducting modeling of existing hydrologic conditions within the Bayou aux Carpes drainage area and the effects of directing additional flow and nutrients into the that wetland complex.

On the protected side of the navigation structure the Algiers and Harvey Canals would be integrated as features of the parallel protection system retention basin. Approximately 700,000 cubic yards in the Algiers Canal would be dredged in order to maintain a still water level of less than 6 feet (NAVD 88) in the retention basin. Existing tidal fluctuations within the retention basin would not be affected during normal conditions. That material would be used beneficially to create marsh along the Lake Salvador shoreline within the Jean Lafitte NHPP.
Development is ongoing within the hurricane protection levees; therefore, the Service has assumed that, for this specific IER, project-induced development within enclosed wetlands would be insignificant. However, project impacts to non-wet bottomland hardwoods and swamp habitat as a result of flood protection improvements should be mitigated.

**FISH AND WILDLIFE CONSERVATION AND MITIGATION MEASURES**

The President's Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process. Based on current and expected future without-project conditions, the planning goal of the Service is to develop a balanced project, i.e., one that is responsive to demonstrated hurricane protection needs while addressing the co-equal need for fish and wildlife resource conservation.

The Service's Mitigation Policy ([Federal Register](https://www.federalregister.gov), Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of forested wetlands and marsh for fish and wildlife and the relative scarcity of that habitat type, those wetlands are usually designated as Resource Category 2 habitats, the mitigation goal for which is no net loss of in-kind habitat value. Potential direct and indirect impacts to flotant marsh have been avoided by aligning the floodwall along the periphery of the Bayou aux Carpes wetland complex. While the preferred alignment has resulted in greater impacts to forested wetlands, the proposed flood protection structure would enclose fewer wetland acres, and the damaging hydrologic affects associated with bisecting the Bayou aux Carpes flotant marsh with a structural barrier would be avoided. Therefore, remaining direct project impacts to forested wetlands should be mitigated via in-kind compensatory replacement of the habitat values lost. Degraded (i.e., non-wet) bottomland hardwood forest and any wet pastures that may be impacted, however, are placed in Resource Category 3 due to their reduced value to wildlife, fisheries and lost/degraded wetland functions. Project impacts to wetlands will be minimized to some extent by hauling in material for the levee. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value.

Mitigation for unavoidable losses of wet and non-wet bottomland hardwoods and swamp habitat, caused by project features will be evaluated through a complementary comprehensive mitigation
IER. However, mitigation for unavoidable impacts to the EPA CWA Bayou aux Carpes 404 (c) area should be provided concurrently with flood protection features and within the EPA CWA Bayou aux Carpes 404 (c) area, provided EPA determines that modification of the 404 (c) designation is warranted.

We commend the Corps efforts to ensure fish and wildlife habitats within the EPA CWA Bayou aux Carpes 404 (c) area are maintained by augmenting the proposed hurricane protection project. Because of the hydrologically sensitive nature of the flotant marsh and cypress swamp habitat, the implementation and design of proposed augmentations to the EPA CWA Bayou aux Carpes 404 (c) area should be closely coordinated with the results ERDC hydrologic investigations. The natural resource agencies, particularly the NPS and EPA, should be intimately involved in determining what hydrologic parameters should be investigated, reviewing the results of the investigations, and developing the best solution to maintaining and improving the hydrology of the flotant marsh and cypress swamp habitats. Depending on the results of those investigations, a plan should be designed and implemented to modify hydrologic and nutrient inflow effects to the Bayou aux Carpes area (e.g., gapping the Estelle Pump Station Outfall Canal, gapping or grading down interior canal banks such as the Southern Natural Gas and Shell pipeline canals, and/or modifying the shell plug at Bayou aux Carpes). Should proposed long-term monitoring efforts reveal that any of the proposed augmentation features would result in adverse impacts, the Corps should restore those features to pre-project conditions in coordination with the natural resource agencies.

To minimize impacts associated with removing additional borrow from forested areas, material dredged from the Algiers Canal and removed during project construction (i.e., repositioning the WBV, levee landward to accommodate the GIWW gate, and dredging along the GIWW bankline to install the flow control structure) should be tested to determine its suitability for levee construction. According to 2005 sediment sampling conducted for maintenance of the Inner Harbor Navigation Canal (IHNC) project in Orleans Parish, Louisiana, some sediment collected from GIWW and IHNC was considered unsuitable for open water disposal, and other options for disposal were necessary. Material dredged from the GIWW/Algiers Canal should be tested for contaminants, and the Corps should continue to coordinate with the natural resource agencies to determine the best use of that material. Should the material be used beneficially on NPS lands, the Corps should continue to coordinate with that agency. Please contact Superintendent, David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management, David Muth, (504) 589-3882 extension 128 (david_muth@nps.gov).

**SERVICE POSITION AND RECOMMENDATIONS**

Construction of the increased flood protection would result in direct impacts to 177.1 and 38.5 AAHUs, of bottomland hardwood forest and swamp, respectively. The Service does not object to providing improved hurricane protection to the greater New Orleans area provided the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation:
1. Flood protection and ancillary features such as staging areas and access roads should be designed and positioned so that destruction of wetlands and non-wet bottomland hardwoods are avoided or minimized to the greatest extent possible.

2. The Corps should fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

3. The enclosure of wetlands with new levee alignments should be minimized to the fullest extent. When enclosure of wetlands is unavoidable, non-development easements on enclosed wetlands should be acquired, or hydrologic connections with adjacent, un-enclosed wetlands should be maintained. Such actions will serve to minimize secondary impacts from development and hydrologic alteration.

4. Material removed during project construction (i.e., dredging Algiers Canal, repositioning the WBV levee landward to accommodate the GIWW gate, and dredging along the GIWW bank line to install the flow control structure) should be tested to determine suitability as borrow material for levee construction and the presence of contaminants. The Corps should continue to coordinate with the natural resource agencies to determine the best use of that material.

5. A maintenance dredging management plan for material dredged from the Algiers Canal should be developed for the life of the project.

6. The Corps should avoid impacts to the Bayou aux Carpes CWA 404 (c) site, if feasible. If not feasible the Corps should continue coordination with the NPS and EPA regarding any proposed project feature that may impact that area. Points of contacts for the agencies potentially impacted by project features are: National Park Service (NPS), contact Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov) and Ms. Barbara Keeler (214) 665-6698 with the EPA.

7. Construction within the Bayou aux Carpes CWA Section 404 (c) site should not commence until the EPA’s decision to modify the designation to accommodate discharges into that area has been resolved.

8. Hydrologic, nutrient, and contaminant modeling should be conducted to determine the best arrangement of environmental augmentation features (i.e., location of gaps and water control structures), if any, in the Bayou aux Carpes 404 (c) area.

9. Environmental augmentation features developed through the EPA 404 (c) modification procedures should be incorporated as project features, and the IER should be supplemented to address any additional augmentation features proposed through that process.
10. If hydraulic modeling demonstrates that environmental augmentation features are beneficial, operational plans to maximize freshwater retention or redirect freshwater flows into the Bayou aux Carpes 404 (c) area should be coordinated with the natural resource agencies, especially EPA and NPS. To accommodate changing goals and restoration needs, water control structures should be designed to incorporate operational flexibility through an adaptive management program.

11. The project's first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation and augmentation features. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of the shoreline protection features, the Corps should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.

12. To facilitate necessary adaptive management, the Corps in coordination with the natural resource agencies, should develop a monitoring plan. That monitoring plan should address hydrologic, nutrient, and contaminant changes throughout the system. The performance and funding of the monitoring of mitigation and augmentation features should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure that local cost share obligations are met on behalf of the public interest.

13. Because of the sensitivity and significance of the Bayou aux Carpes 404 (c) area every effort should be made to minimize impacts during construction of the floodwall and navigational gate. Construction activities within the Bayou aux Carpes 404 (c) area should adhere to the following guidelines to avoid adverse impacts to the Bayou aux Carpes 404 (c) area:

   A. Construction should be performed from the water side (i.e., Bayou Barataria/GIWW side) rather than from the 404(c) side;

   B. Construction of the floodwall within the Bayou aux Carpes 404 (c) area should be constructed within a 100-foot corridor width from the GIWW into the 404(c) area. No additional area within the 404(c) site would be required for the floodwall or any other construction;

   C. The Corps should investigate and utilize innovative techniques to design and build a structure with the narrowest footprint possible; and,

   D. Should existing oil and gas pipeline ROWs require relocation, impacts associated with those relocations should be avoided and minimized to the greatest extent possible.

14. If a proposed project feature is changed significantly or is not implemented within one year of the date of this report, the Corps should reinitiate coordination with each office to ensure
that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

15. Adverse impacts to bald eagle nesting locations and wading bird colonies should be avoided through careful design of project features and timing of construction. A qualified biologist should inspect the proposed work site for the presence of undocumented wading bird nesting colonies and bald eagles during the nesting season (i.e., February 16 through October 31 for wading bird nesting colonies, and October through mid-May for bald eagles).

16. To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present). In addition, we recommend that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests, and should avoid affecting them during the breeding season.

17. If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation should be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary and those results should be forwarded to this office.

18. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

19. Forested areas cleared for staging areas and temporary construction zones should be managed for invasive species (i.e., Chinese tallowtree) after the completion of the project.

20. Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

21. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the Service, NMFS, LDWF, EPA, NPS, and the Louisiana Department of Natural Resources (LDNR). The Service should be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

22. If mitigation lands are purchased for inclusion within Federally of State managed lands, those lands must meet certain requirements; therefore the land manager of that management
area should be contacted early in the planning phase regarding such requirements.

23. If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

24. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable.

25. Any flood protection water control structure sited in a canal, bayou, or navigation channel that does not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

26. Flood protection water control structures should remain completely open except during storm events, unless otherwise determined by the natural resource agencies.

27. Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered, and coordination should continue with the natural resource agencies to ensure fish passage features are incorporated to the fullest extent practicable.

28. To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

29. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.

30. Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

31. Any proposed change in mitigation or augmentation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

32. A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the Corps, the Service, NMFS, EPA, LDNR and LDWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.
LITERATURE CITED


Appendix A

Agency Coordination
Mr. James F. Boggs, Field Supervisor
Louisiana Field Office
U.S. Fish and Wildlife Service
646 Cajundome Blvd., Suite 400
Lafayette, Louisiana  70506

Dear Mr. Boggs:

NOAA’s National Marine Fisheries Service (NMFS) has received the draft Fish and Wildlife Coordination Act Report (Report) on the Individual Environmental Report (IER) 12 transmitted for our review by your letter dated October 27, 2008. The Report discusses the U.S. Fish and Wildlife Services’ findings and recommendations associated with plans to elevate hurricane protection features of the West Bank and Vicinity, Harvey to Algiers, project in Jefferson, Orleans and Plaquemines Parishes, Louisiana. Portions of the recommended plan would be located in a wetland complex subject to an Environmental Protection Agency Final Determination under Section 404(c) of the Clean Water Act.

NMFS has reviewed the Report and concurs with the recommended fish and wildlife conservation recommendations detailed in the document. In addition, NMFS believes the document adequately quantifies potential project-related impacts to wetlands and forested habitats that could result from the implementation of the proposed plan. As such, NMFS has no revisions to the Report to recommend.

We appreciate the opportunity to review and comment on this Report.

Sincerely,

Miles M. Croom
Assistant Regional Director
Habitat Conservation Division

c:
LA DNR, CMD, Consistency
F/SER46 - Swafford
Files
January 22, 2009

Mr. James F. Boggs, Supervisor
Louisiana Field Office
Fish and Wildlife Service
646 Cajundome Blvd.
Lafayette, LA 70506

Notice Date: December 24, 2008

Dear Mr. Boggs:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced notice. Based upon this review, the following has been determined:

LDWF’s concerns have been well addressed by the recommendations provided in the U.S. Fish and Wildlife Service report. However, the department would like to remain part of any Bayou aux Carpes management plan development, as well as have opportunity to review any modifications, and additional impacts.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this report. Please do not hesitate to contact Habitat Section biologist Matthew Weigel at 225-763-3587 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Program Manager

mw

c: Matthew Weigel, Biologist
Appendix B

FWS's February 9, 2009, Letter Regarding
EPA's Clean Water Act Section 404 (c) Designation
Ms. Barbara Keeler (6WQ-EC)
Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Dear Ms. Keeler:

Please reference the Environmental Protection Agency’s (EPA) Notice of Public Hearing and Request for Comments published in the Federal Register (Volume 74, No. 9, pg. 2072) on January 14, 2009. The U.S. Army Corps of Engineers (Corps), New Orleans District, has requested an amendment to EPA’s Clean Water Act (CWA) Section 404 (c) designation which prohibits discharges of dredged or fill material into the Bayou aux Carpes Site in Jefferson Parish, Louisiana. That amendment is requested to allow the Corps to construct the proposed Westbank and Vicinity of New Orleans (WBV), Harvey to Algiers, 100-year level hurricane protection project, Individual Environmental Report 12 (IER 12), which is authorized in accordance with Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). The EPA has requested comments as to whether the 1985 Bayou aux Carpes CWA Section 404 (c) EPA Final Determination should be modified as requested by the Corps. The Service submits the following comments in accordance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 et seq.), Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

The Service recognizes the importance of the Bayou aux Carpes wetland complex to fish and wildlife resources and believes that the designation is warranted to protect these sensitive areas from development. In cooperation with Federal and State partners, the Corps has minimized potential direct and indirect impacts to significant flotant marsh and cypress swamp habitat by aligning the floodwall along the periphery of the Bayou aux Carpes CWA Section 404 (c) site. While the preferred alignment has resulted in greater direct impacts to forested wetlands, those forested wetlands at one time were previously altered by fill material. The preferred alignment would enclose fewer wetland acres, and avoid the damaging hydrologic consequences associated with bisecting the Bayou aux Carpes flotant marsh with a structural barrier. Moreover, unlike the Harvey Canal-Bayou Barataria Levee project which was the catalyst for EPA’s determination, the preferred alternative alignment would avoid inclusion of the Bayou aux Carpes flotant and cypress swamp complex into the flood protection system and subsequently placing the area under
pumped drainage.

During the alternatives analysis for IER 12, the Corps considered a series of alternative gate locations within the project area that would minimize the need for parallel protection. One of these alternatives included constructing a sector gate across the Bayou aux Carpes CWA Section 404 (c) site and was initially the Corps' preferred alternative. The proposed floodwall alignment within the Bayou aux Carpes CWA Section 404 (c) site would have, not only directly impacted high-quality flotant marsh and forested wetlands, but would have isolated approximately 500 acres of flotant marsh by placing them within the flood protection system. Constructing a floodwall across flotant marsh would disrupt the dynamic hydrologic conditions characteristic of a flotant marsh and would disrupt the natural hydrologic regimes within the entire Bayou aux Carpes wetland complex negatively impacting significant fish and wildlife resources. As proposed, the preferred alternative would minimize impacts by avoiding bisecting the Bayou aux Carpes CWA Section 404 (c) site and by implementing innovative design and construction techniques (e.g., floodwall design, construction sequencing).

At this time, the Service is unaware of any threatened or endangered species or their critical habitat within the proposed hurricane protection system project footprint for IER 12. However, the project-area forested wetlands provide nesting habitat for the bald eagle (*Haliaeetus leucocephalus*), and a bald eagle nest was documented within the Bayou aux Carpes drainage area in 2007. This should be considered when designing environmental augmentation features. The bald eagle was officially removed from the List of Endangered and Threatened Species on August 8, 2007. Bald eagles nest in Louisiana from October through mid-May. Eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water in the southeastern Parishes. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (i.e., organochlorine pesticides and lead). Although the bald eagle has been removed from the List of Endangered and Threatened Species, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute “disturbance,” which is prohibited by the BGEPA. The Service’s Division of Migratory Birds for the Southeast Region (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting such consultations. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

Direct impacts to bottomland hardwood and swamp habitat associated with the preferred alternative were quantified by acreage and habitat quality (i.e., average annual habitat units or AAHUs). The Service used the Louisiana Department of Natural Resources Habitat Assessment Methodology (HAM) to quantify the impacts of proposed project features on upland and wetland bottomland hardwood habitat and used the Wetland Value Assessment (WVA) methodology to quantify the impacts on swamp habitat. The Service determined that direct impacts to approximately 9.6 acres of forested habitat (i.e., 2.4 acres of bottomland hardwood habitat and 7.2 acres of swamp habitat) within the proposed 100-foot right-of-way of the Bayou aux Carpes CWA Section 404 (c) site would result in the loss of 6.1 AAHUs. Riparian habitat and
associated fish and wildlife resources would be minimally reduced within the Bayou aux Carpes CWA Section 404 (c) site. Mitigation for unavoidable losses of wet and non-wet bottomland hardwoods and swamp habitat, caused by project features of the entire hurricane protection system will be evaluated through a complementary comprehensive mitigation IER. However, should this designation be amended and the Corps’ proposed alternative authorized, mitigation for unavoidable impacts to the Bayou aux Carpes 404 (c) area would be provided concurrently with flood protection features and within the Bayou aux Carpes 404 (c) area.

To ensure that potential impacts resulting from the construction of a flood protection structure do not compromise the value of this nationally-significant wetland ecosystem and to maintain the integrity of the Bayou aux Carpes CWA Section 404 (c) site, the Corps is proposing to incorporate environmental augmentation features into the proposed hurricane protection project. Stormwater from the Old Estelle Pump Station canal is currently being directed into the GIWW bypassing the Bayou aux Carpes wetland complex. Because of the invaluable water quality functions wetlands provide, stormwater will be redirected through the Bayou aux Carpes CWA Section 404 (c) site which would restore the natural process of nutrient cycling and reduce the risk of eutrophication in the lower basin waterbodies, provided modeling results support that action. Proposed augmentations could supplement hydrologic exchange within approximately 3,000 acres of flotant marsh, cypress swamp, and wetland scrub-shrub habitat.

Although complete avoidance of the Bayou aux Carpes CWA Section 404 (c) site would be preferred, it is the Service’s opinion that amending the designation as proposed would not have an unacceptable adverse effect on fish and wildlife resources within the Bayou aux Carpes wetland complex. The Corps has incorporated proposed environmental augmentation features as a feature of the proposed project. Provided that hydrologic modeling supports implementation of those features, the Service believes that those augmentations coupled with long-term monitoring will ensure that unforeseen impacts to the Bayou aux Carpes CWA Section 404 (c) site are avoided. On the condition that the Corps moves forward with modeling and design of the environmental augmentation features concurrently with hurricane protection features, the Service would not be opposed to EPA modifying the 1985 Bayou aux Carpes CWA Section 404 (c) EPA Final Determination.

We appreciate the opportunity to comment on the proposed amendment and look forward to the continued coordination with the EPA, the Corps, and other State and Federal resource agencies with regards to the proposed hurricane protection system project. Should you have any questions regarding our comments, please give me a call (337/291-3115).

Sincerely,

James F. Borgs
Supervisor
Louisiana Field Office
cc: FWS, Atlanta, GA (ES/HC)
    Corps, New Orleans, LA
    Jean Lafitte National Historical Park and Preserve, New Orleans, LA
    NMFS, Baton Rouge, LA
    LDWF, Baton Rouge, LA
    LDNR, CMD, Baton Rouge, LA
Appendix C

Wetland Value Assessment
### COMMUNITY HABITAT SUITABILITY MODEL

**Bottomland Hardwoods**

**Condition:** Future With Project

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**Project... IER 12, Alt 2, Mid-Late Succ. BLH**

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2/17/2009
## Community Habitat Suitability Model
### Bottomland Hardwoods

#### Project:  IER 12, Alt 2, Mid-Late Succ. BLH

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### Future With Project

#### Project:  IER 12, Alt 2, Mid-Late Succ. BLH

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**HSI = 0.76**

217/2009
# AAHU Calculation, Bottomland Hardwoods

**Project:** IER 12, Alt 2, Mid-La'e Succ. BLH

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Total

- CHUs = 46.85
- AAHU = 0.54

## Future Without Project

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Total

- CHUs = 7554.68
- AAHU = 151.69

### Net Change in CHUs Due to Project

A. Future With Project CHUs = 46.85
B. Future Without Project CHUs = 7554.68
Net Change (FWP - FWOP) = -7507.83

### Net Change in AAHU Due to Project

A. Future With Project AAHU = 0.54
B. Future Without Project AAHU = -151.29
Net Change (FWP - FWOP) = -150.75

2/17/2009
## COMMUNITY HABITAT SUITABILITY MODEL
### Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH early successional  
**Acres:** 39  
**Condition:** Future With Project

### IER # 12 - Appendix I (Final CAR)

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<td>Distance</td>
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**HSI** = \( 0.31 \)

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**Project:** IER 12, Alt 2, BLH early successional  
**FWP**

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<td>V1 Species Assoc</td>
<td>Class</td>
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<td>Age</td>
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<tr>
<td></td>
<td>dbh</td>
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<tr>
<td>V3 Understory / Midstory</td>
<td>Understory %</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Midstory %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4 Hydrology</td>
<td>Class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V5 Forest Size</td>
<td>Class</td>
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<td>Values %</td>
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<td>Forest / marsh Abandoned Ag Pasture / Hay Active Ag Development</td>
<td></td>
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<tr>
<td>V7 Disturbance</td>
<td>Class</td>
<td></td>
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<td></td>
<td>Type</td>
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<td></td>
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<tr>
<td></td>
<td>Distance</td>
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**HSI** = \( 0.31 \)

---

2/17/2009
## Community Habitat Suitability Model

### Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH early successional  
**Acres:** 39

**Condition:** Future Without Project

### Table 1:  
**IER # 12 - Appendix I (Final CAR)**

<table>
<thead>
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<td>dbh</td>
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</tr>
<tr>
<td></td>
<td>Midstory %</td>
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<tr>
<td></td>
<td>1.00</td>
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<td></td>
</tr>
<tr>
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<td>Class</td>
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<td>0.90</td>
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<tr>
<td></td>
<td>Forest / marsh</td>
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<tr>
<td></td>
<td>Abandoned Ag</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Pasture / Hay</td>
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<td></td>
<td>Development</td>
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<tr>
<td></td>
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**HSI = 0.31**  
**HSI = 0.33**  
**HSI = 0.61**

### Table 2:  
**IER 12, Alt 2, BLH early successional**

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<td></td>
<td>dbh</td>
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<tr>
<td>V3 Understory / Midstory</td>
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</tr>
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<td></td>
<td>Midstory %</td>
<td>60</td>
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<td>V4 Hydrology</td>
<td>Class</td>
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<td>Forest / marsh</td>
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<tr>
<td></td>
<td>Abandoned Ag</td>
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<td></td>
<td>Pasture / Hay</td>
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<td>Active Ag</td>
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**HSI = 0.69**  
**HSI =**  
**HSI =**

*2/17/2009*
## AAHU CALCULATION, Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH early successional

### Future With Project

<table>
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<tr>
<th>TY</th>
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<th>Total HUs</th>
<th>Cumulative HUs</th>
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<td>4.69</td>
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**Total**

<table>
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<tr>
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### Future Without Project

<table>
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<th>x HSI</th>
<th>Total HUs</th>
<th>Cumulative HUs</th>
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**Total**

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<td>22.38</td>
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### NET CHANGE IN CHUs DUE TO PROJECT

- **A.** Future With Project CHUs = 4.69
- **B.** Future Without Project CHUs = 1118.99
- Net Change (FWP - FWOP) = -1114.30

### NET CHANGE IN AAHU DUE TO PROJECT

- **A.** Future With Project AAHU = 0.00
- **B.** Future Without Project AAHU = 22.38
- Net Change (FWP - FWOP) = -22.38
### COMMUNITY HABITAT SUITABILITY MODEL

**Bottomland Hardwoods**

#### Project: IER 12, Alt 2, BLH east staging area

**Acres:** 6.9

**Condition:** Future With Project

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<th>Class/Value</th>
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<td>0.72</td>
<td>60</td>
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<td>29</td>
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<tr>
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<td>Pasture/Hay</td>
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<td>29</td>
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<td>11</td>
<td></td>
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<td>Class</td>
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<td>0.26</td>
<td>Class</td>
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<td>Class</td>
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**HSI = 0.10**

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**Project: IER 12, Alt 2, BLH east staging area**

**FWP**

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<th>Class/Value</th>
<th>SI</th>
<th>Class/Value</th>
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<td>dbh</td>
<td>0.00</td>
<td>dbh</td>
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<tr>
<td></td>
<td>Midstory %</td>
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<td>Midstory %</td>
<td>80</td>
<td>Midstory %</td>
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<td>0.50</td>
<td>Class</td>
<td>0.50</td>
</tr>
<tr>
<td>V5 Forest Size</td>
<td>Class</td>
<td>5.00</td>
<td>Class</td>
<td>1.00</td>
<td>Class</td>
<td>1.00</td>
</tr>
<tr>
<td>V6 Surrounding Land Use</td>
<td>Values %</td>
<td>60</td>
<td>0.72</td>
<td>60</td>
<td>0.72</td>
<td>60</td>
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<td>60</td>
<td>0.72</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Abandoned Ag</td>
<td>29</td>
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<td>29</td>
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<tr>
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<td>Pasture/Hay</td>
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<td>Class</td>
<td>0.26</td>
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<td>0.26</td>
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<td>Class</td>
<td>1.00</td>
<td>Class</td>
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**HSI = 0.04**

---

2/17/2009
### Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH east staging area  
**Acres:** 6.9

**Condition:** Future Without Project

#### Variable | TY 0 | TY 1 | TY 20
--- | --- | --- | ---
**Class/Value** | SI | Class/Value | SI | Class/Value | SI
--- | --- | --- | --- | --- | ---
**V1** Species Assoc. | Class | 4 | 0.80 | 4 | 0.80 | 4 | 0.80
**V2** Maturity (Age or dbh, not both) | Age | 17.8 | 0.85 | Age | 18.08 | 0.87 | Age | 18.27 | 0.86
**V3** Understory / Midstory | 80% | 0.80 | 0.80 | 0.80 | 0.80 | 1.00
**V4** Hydrology | Class | 50 | 0.50 | Class | 50 | 0.50 | Class | 50 | 0.50
**V5** Forest Size | Class | 4 | 0.80 | 4 | 0.80 | 4 | 0.80
**V6** Surrounding Land Use | Values % | 60 | 0.72 | 60 | 0.72 | 60 | 0.72
**V7** Disturbance | Class | 2 | 0.26 | Class | 2 | 0.26 | Class | 2 | 0.26
**Total HSI:** 0.71

#### Variable | TY 50 | TY | TY
--- | --- | --- | ---
**Class/Value** | SI | Class/Value | SI | Class/Value | SI
--- | --- | --- | --- | --- | ---
**V1** Species Assoc. | Class | 5 | 1.00 | Class | 5 | 1.00
**V2** Maturity (Age or dbh, not both) | Age | 21.19 | 1.00 | Age | 21.19 | 1.00 | Age | 21.19 | 1.00
**V3** Understory / Midstory | 45% | 1.00 | Understory % | 40 | 1.00 | Understory % | 40 | 1.00 | Understory % | 40 | 1.00
**V4** Hydrology | Class | 1 | 0.10 | Class | 1 | 0.10
**V5** Forest Size | Class | 4 | 0.80 | Class | 4 | 0.80
**V6** Surrounding Land Use | Values % | 60 | 0.72 | Values % | 60 | 0.72 | Values % | 60 | 0.72
**V7** Disturbance | Class | 2 | 0.26 | Class | 2 | 0.26 | Class | 2 | 0.26
**Total HSI:** 0.65

---

**Note:** 2/17/2009
### AAHU Calculation, Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH east staging area

<table>
<thead>
<tr>
<th>Future With Project</th>
<th>Total HUs</th>
<th>Cumulative HUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>TY</td>
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<td>x HSI</td>
</tr>
<tr>
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<td>6.9</td>
<td>0.72</td>
</tr>
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<tr>
<td>4</td>
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<tr>
<td>56</td>
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<td>0.85</td>
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Total HUs = 111.92
AAHUs = 2.24

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<th>Cumulative HUs</th>
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<tr>
<td>56</td>
<td>6.9</td>
<td>0.55</td>
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Total HUs = 241.65
AAHUs = 4.83

**Net Change in CHUs Due to Project**

A. Future With Project CHUs = 111.92
B. Future Without Project CHUs = 241.65
Net Change (FWP - FWOP) = -129.73

**Net Change in AAHUs Due to Project**

A. Future With Project AAHUs = 2.24
B. Future Without Project AAHUs = 4.83
Net Change (FWP - FWOP) = -2.59
## WETLAND VALUE ASSESSMENT COMMUNITY MODEL

### Swamp

**Project**: IER 12, Riparian BLH & Swamp  
**Project Area**: 68  
**Condition**: Future Without Project

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2/17/2009
### WETLAND VALUE ASSESSMENT COMMUNITY MODEL

#### Swamp

**Condition:** Future With Project

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**HSI =**

### Project IER 12, Riparian BLH & Swamp

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**HSI =**

2/17/2009
# AAHU CALCULATION

**Project:** IER 12, Riparian BLH & Swamp

## Future Without Project

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**Total**

- CHUs = 1726.99
- AAHU's = 34.52

## Future With Project

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**Total**

- CHUs = 9.73
- AAHU's = 0.19

## Net Change in AAHU's Due to Project

A. Future With Project AAHU's = 0.19
B. Future Without Project AAHU's = 34.52
Net Change (FWP - FWOP) = -34.33
### COMMUNITY HABITAT SUITABILITY MODEL

**Bottomland Hardwoods**

**Project:** IER 12, Alt 2, 404c BLH

**Acres:** 2.4

**Condition:** Future With Project

**Variable**  | **TY 0** | **TY 1** | **TY 50**
---|---|---|---
**Class/Value** | **SI** | **Class/Value** | **SI** | **Class/Value** | **SI**

#### V1 - Species Assoc
- **Class**
- **Age** 4 (0.80)
- **dbh** 35 (0.70)

#### V2 - Maturity
- **Age**
- **dbh**

#### V3 - Understory / Midstory
- **Understory %**
- **Midstory %**

#### V4 - Hydrology
- **Class**

#### V5 - Forest Size
- **Class**

#### V6 - Surrounding Land Use
- **Forest / marsh** 73 (0.83)
- **Abandoned Ag** 24
- **Pasture / Hay** 3

#### V7 - Disturbance
- **Type**
- **Distance**

**HSI** = 0.77

---

**Project:** IER 12, Alt 2, 404c BLH

**FWP**

---

**Variable**  | **TY** | **TY** | **TY**
---|---|---|---
**Class/Value** | **SI** | **Class/Value** | **SI** | **Class/Value** | **SI**

#### V1 - Species Assoc
- **Class**

#### V2 - Maturity
- **Age**
- **dbh**

#### V3 - Understory / Midstory
- **Understory %**
- **Midstory %**

#### V4 - Hydrology
- **Class**

#### V5 - Forest Size
- **Class**

#### V6 - Surrounding Land Use
- **Values %**

#### V7 - Disturbance
- **Type**
- **Distance**

**HSI** = 

---

2/17/2009
### Community Habitat Suitability Model

**Bottomland Hardwoods**

**Condition:** Future Without Project

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**HSI = 0.77**

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**Project:** IER 12, Alt 2, 404c BLH

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**HSI = 0.85**

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2/17/2009
### AAHU CALCULATION, Bottomland Hardwoods

**Project:** IER 12, Alt 2, 404c BLH

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</table>

Total

| CHUs = | 0.62 |
| AAHUs = | 0.61 |

#### Future Without Project

<table>
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Total

| CHUs = | 100.04 |
| AAHUs = | 2.60 |

**NET CHANGE IN CHUs DUE TO PROJECT**

A. Future With Project CHUs = 0.52
B. Future Without Project CHUs = 100.04
Net Change (FWP - FWOP) = 99.52

**NET CHANGE IN AAHUs DUE TO PROJECT**

A. Future With Project AAHUs = 0.01
B. Future Without Project AAHUs = 2.60
Net Change (FWP - FWOP) = -2.59
# WETLAND VALUE ASSESSMENT COMMUNITY MODEL

**Swamp**

**Project:** IER 12, 404c Tupelo Swamp  
**Project Area:** 7.2

**Condition:** Future Without Project

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**HSI** = 0.48

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**HSI** = 0.48

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2/17/2009
# Wetland Value Assessment Community Model

## Swamp

**Condition:** Future With Project

### Project Area

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**Project:** IER 12 404c Tupelo Swamp

**FVP**

**IER #12 - Appendix I (Final CAR)**

2/17/2009
# AAHU CALCULATION

**Project:** IER 12, 404c Tupelo Swamp

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**Net Change in AAHUs Due to Project**

A. Future With Project AAHU | = | 0.02 |
B. Future Without Project AAHU | = | 4.12 |
Net Change (FWP - FWOP) | = | -4.10 |

2/17/2009
Colonel Alvin B. Lee  
District Engineer  
U.S. Army Corps of Engineers  
Post Office Box 60267  
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

Enclosed is the Draft Fish and Wildlife Coordination Act Report for the Individual Environmental Report (IER) 12, Improved Protection from Harvey to Algiers, Jefferson, Orleans and Plaquemines Parishes, Louisiana. The preferred alternative was developed through proactive coordination between the U.S. Army Corps of Engineers and the natural resource agencies. The preferred alternative would include construction of navigable floodgate and ancillary structures on the GIWW south of the confluence of the Algiers and Harvey Canals and construction of approximately 4,200 linear feet of new floodwall along the north bank of the Gulf Intracoastal Waterway and within the Bayou aux Carpes 404 (c) designated area. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the V-levee would be also raised to the 100-year level of protection.

This draft report is transmitted under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and is being coordinated with the Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service. Comments by those agencies will be attached to our final report.

Should your staff have any questions regarding the enclosed draft report, please have them contact Angela Trahan of this office at 337/291-3137.

Sincerely,

[Signature]

James F. Boggs  
Supervisor  
Louisiana Field Office

Enclosures
cc: EPA, Dallas, TX
    FWS, Atlanta, GA (ES/HC)
    Jean Lafitte National Historical Park and Preserve, New Orleans, LA
    NMFS, Baton Rouge, LA
    LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
Draft
Fish and Wildlife Coordination Act Report

Individual Environmental Report (IER) 12,
Harvey to Algiers

U.S. FISH & WILDLIFE SERVICE

PROVIDED TO
NEW ORLEANS DISTRICT
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

PREPARED BY
ANGELA TRAHAN
FISH AND WILDLIFE BIOLOGIST

U.S. FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
LAFAYETTE, LOUISIANA
DECEMBER 2008

U.S. FISH AND WILDLIFE SERVICE – SOUTHEAST REGION
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Executive Summary

The U.S. Fish and Wildlife Service (Service) has prepared the attached Fish and Wildlife Coordination Act Report for the proposed Westbank and Vicinity of New Orleans (WBV), Harvey to Algiers, 100-year level hurricane protection project, Individual Environmental Report 12 (IER 12). The Corps of Engineers, New Orleans District (Corps) is preparing, those IERs under the approval of the Council on Environmental Quality (CEQ). The IERs will partially fulfill the Corps compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347). IERs are a CEQ approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in the IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps to upgrade two existing hurricane protection projects (i.e., WBV and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana.

This report addresses IER 12 and contains a description of the existing fish and wildlife resources of the project area, discusses future with- and without-project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the proposed project. This report incorporates and supplements our Fish and Wildlife Coordination Act (FWCA) Reports that addressed impacts and mitigation features for the WBV (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) Hurricane Protection project, and the November 26, 2007, Draft Programmatic FWCA Report that addresses the hurricane protection improvements authorized in Supplemental 4. Impacts and mitigation needs resulting from government and contractor provided borrow areas are being addressed in separate IERs; therefore this report will not address those project features. This draft document does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This draft report has been provided to the Louisiana Department of Wildlife and Fisheries (LDWF) and the National Oceanic and Atmospheric Administration’s, National Marine Fisheries Service (NOAA’s NMFS), and their comments will be incorporated in the final report.

The IER 12 study area is located in the upper Barataria Basin and includes the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins along the west bank of the Mississippi River in Jefferson, Orleans and Plaquemines Parishes, Louisiana. The Jean Lafitte National Historical Park and Preserve (JLNHP) and the Bayou aux Carpes wetland complex are located to the south of the Harvey-Westwego sub-basin and are managed by the National Park Service (NPS). The Bayou aux Carpes wetland complex is subject to an Environmental Protection Agency (EPA) Final Determination under the Clean Water Act (CWA) Section 404(c) invoked in 1985, and according to the EPA Final Determination, the discharge of any dredged or fill material within the approximately 3,200-acre site, referred to as the Bayou aux Carpes CWA Section 404(c) area [Bayou aux Carpes 404 (c) area], is restricted.

Study area wetlands support nationally important fish and wildlife resources including floatant marsh and cypress swamp. Factors that will strongly influence future fish and wildlife resource
conditions outside of the protection levees include freshwater and sediment input and loss of coastal wetlands. Regardless of which of the above factors ultimately has the greatest influence, emergent wetlands within, and adjacent to, the project area will probably experience losses due to subsidence, erosion, and relative sea-level rise.

During the alternatives analysis, the no-action alternative and the alternative to raise the existing Hurricane Protection System to a 100-year level of protection were considered. The no-action alternative would not be implemented because it fails to provide the authorized level of protection to the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins. The Corps also considered a series of alternative gate locations within the project area that would minimize the need for parallel protection. One of these alternatives included constructing a sector gate across the Bayou aux Carpes 404 (c) area. That alternative was considered to have significant impacts to fish and wildlife resources and EPA CWA, Section 404 (c) designated wetlands.

Developed through proactive coordination between the EPA, NPS, and the Corps, the preferred alternative would include construction of navigable floodgate and ancillary structures on the Gulf Intracoastal Waterway (GIWW) south of the confluence of the Algiers and Harvey Canals and upstream of the Hero Canal. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the V-levee would be raised to the 100-year level of protection [i.e., approximately 14 to 16 foot elevation North American Vertical Datum of 1988 (NAVD 88)]. Approximately 4,200 linear feet of floodwall would be constructed within a 100-foot-wide right-of-way along the periphery of the GIWW and the Bayou aux Carpes 404 (c) area to connect the proposed GIWW navigable floodgate with the existing flood protection system. Existing levees and floodwalls along Algiers and Harvey Canals will be incorporated into the protected side of the closure complex and would be integrated as features of the parallel protection system retention basin. Expansions of existing rights-of-way along several levee reaches would occur as a result of bringing those existing levees up to authorized levels of protection in order to provide necessary storm water retention during major storm events. To ensure habitat functions of the Bayou aux Carpes drainage area are maintained, the proposed action includes several environmental augmentations along the Old Estelle pump station outfall canal and within the Bayou aux Carpes drainage area which will provide sheet flow and hydrologic exchange into, and within, the Bayou aux Carpes 404(c) area.

Implementation of the preferred alternative would directly impact 252 acres of hydrologically-altered bottomland hardwood habitat, 2.4 acres of wet bottomland hardwood habitat, and approximately 75 acres of swamp habitat. Of those impacts approximately 2.4 acres of wet bottomland hardwood and 7.4 acres of swamp habitat (i.e., 9.8 acres) occur within the Bayou aux Carpes 404 (c) area along the GIWW interface. According to our Habitat Assessment Methodology (HAM) and Wetland Value Assessment (WVA) analyses the preferred alternative would result in the direct loss of 179.2 and 38.5 average annual habitat units (AAHUs), of bottomland hardwood forest and swamp, respectively. Mitigation for unavoidable losses of wet and non-wet bottomland hardwoods and swamp habitat, caused by project features will be evaluated through a complementary comprehensive mitigation IER. However, mitigation for unavoidable impacts to the Bayou aux Carpes 404 (c) area would be provided concurrently with flood protection features and within the Bayou aux Carpes 404 (c) area, provided that EPA grants
authorization to use the Bayou aux Carpes 404 (c) area. Aside from mitigation and flood protection features, environmental augmentation of the Bayou aux Carpes 404 (c) area may also be implemented as a project feature to ensure construction and maintenance of the flood protection features would not adversely impact the Bayou aux Carpes 404 (c) area. Proposed augmentations could supplement hydrologic exchange within approximately 3,000 acres of flotant marsh, cypress swamp, and wetland shrub-shrub habitat. To ensure that appropriate measures are implemented to maintain the quality of the area, the Corps’ Engineer Research and Development Center (ERDC) will be conducting modeling of existing hydrologic conditions within the Bayou aux Carpes drainage area and the effects of directing additional flow and nutrients into the that wetland complex.

The Service does not object to providing improved hurricane protection to the greater New Orleans area provided the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation:

1. Flood protection and ancillary features such as staging areas and access roads should be designed and positioned so that destruction of wetlands and non-wet bottomland hardwoods are avoided or minimized to the greatest extent possible.

2. The Corps should fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

3. The enclosure of wetlands with new levee alignments should be minimized to the fullest extent. When enclosure of wetlands is unavoidable, non-development easements on enclosed wetlands should be acquired, or hydrologic connections with adjacent, un-enclosed wetlands should be maintained. Such actions will serve to minimize secondary impacts from development and hydrologic alteration.

4. Material removed during project construction (i.e., dredging Algiers Canal, repositioning the WBV, levee landward to accommodate the GlWW gate, and dredging along the GlWW bank line to install the flow control structure) should be tested to determine suitability as borrow material for levee construction and the presence of contaminants. The Corps should continue to coordinate with the natural resource agencies to determine the best use of that material.

5. A maintenance dredging management plan for material dredged from the Algiers Canal should be developed for the life of the project.

6. The Corps should avoid impacts to the Bayou aux Carpes 404 (c) area, if feasible. If not feasible the Corps should continue coordination with the NPS and EPA regarding any proposed project feature that may impact that area. Points of contacts for the agencies potentially impacted by project features are: National Park Service (NPS), contact Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov) and Ms. Barbara Keeler (214) 665-6698 with the EPA.
7. Hydrologic, nutrient, and contaminant modeling should be conducted to determine the best arrangement of environmental augmentation features (i.e., location of gaps and water control structures), if any, in the Bayou aux Carpes 404 (c) area.

8. Environmental augmentation features developed through the EPA 404 (c) modification procedures should be incorporated as project features, and the IER should be supplemented to address any additional augmentation features proposed through that process.

9. If hydraulic modeling demonstrates that environmental augmentation features are beneficial, operational plans to maximize freshwater retention or redirect freshwater flows into the Bayou aux Carpes 404 (c) area should be coordinated with the natural resource agencies, especially EPA and NPS. To accommodate changing goals and restoration needs, water control structures should be designed to incorporate operational flexibility through an adaptive management program.

10. The project’s first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation and augmentation features. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of the shoreline protection features, the Corps should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.

11. To facilitate necessary adaptive management, the Corps in coordination with the natural resource agencies, should develop a monitoring plan. That monitoring plan should address hydrologic, nutrient, and contaminant changes throughout the system. The performance and funding of the monitoring of mitigation and augmentation features should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure that local cost share obligations are met on behalf of the public interest.

12. Because of the sensitivity and significance of the Bayou aux Carpes 404 (c) area every effort should be made to minimize impacts during construction of the floodwall and navigational gate. Construction activities within the Bayou aux Carpes 404 (c) area should adhere to the following guidelines to avoid adverse impacts to the Bayou aux Carpes 404 (c) area:

A. Construction should be performed from the water side (i.e., Bayou Barataria/GIWW side) rather than from the 404(c) side;

B. Construction of the floodwall within the Bayou aux Carpes 404 (c) area should be constructed within a 100-foot corridor width from the GIWW into the 404(c) area. No additional area within the 404(c) site would be required for the floodwall or any other construction;

C. The Corps should investigate and utilize innovative techniques to design and build a structure with the narrowest footprint possible; and,
D. Should existing oil and gas pipeline ROWs require relocation, impacts associated with those relocations should be avoided and minimized to the greatest extent possible.

13. If a proposed project feature is changed significantly or is not implemented within one year of the date of this report, the Corps should reinitiate coordination with each office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

14. Adverse impacts to bald eagle nesting locations and wading bird colonies should be avoided through careful design of project features and timing of construction. A qualified biologist should inspect the proposed work site for the presence of undocumented wading bird nesting colonies and bald eagles during the nesting season (i.e., February 16 through October 31 for wading bird nesting colonies, and October through mid-May for bald eagles).

15. To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present). In addition, we recommend that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests, and should avoid affecting them during the breeding season.

16. If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation should be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary and those results should be forwarded to this office.

17. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

18. Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

19. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the Service, NMFS, LDWF, EPA, NPS, and the Louisiana Department of Natural Resources (LDNR). The Service should be provided an opportunity to review and submit recommendations on the all work addressed in those reports.
20. If mitigation lands are purchased for inclusion within Federally of State managed lands, those lands must meet certain requirements; therefore the land manager of that management area should be contacted early in the planning phase regarding such requirements.

21. If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

22. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable.

23. Any flood protection water control structure sited in a canal, bayou, or navigation channel that does not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

24. Flood protection water control structures should remain completely open except during storm events, unless otherwise determined by the natural resource agencies.

25. Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered, and coordination should continue with the natural resource agencies to ensure fish passage features are incorporated to the fullest extent practicable.

26. To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

27. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.

28. Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

29. Any proposed change in mitigation or augmentation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

30. A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the Corps, the Service, NMFS, EPA, LDNR and LDWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.
INTRODUCTION

The U.S. Army Corps of Engineers, New Orleans District (Corps) is preparing an Individual Environmental Report (IER 12) for flood protection for the multi-basin area composed of Belle Chasse, Gretna-Algiers, Harvey-Westwego in Jefferson, Orleans, and Plaquemines Parishes, Louisiana. That IER is being prepared under the approval of the Council on Environmental Quality (CEQ) that will partially fulfill the Corps compliance with the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347). IERs are a CEQ approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4) and Public Law 110-28, U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental). These laws authorized the Corps to upgrade two existing hurricane protection projects [i.e., Westbank and Vicinity of New Orleans (WBV) and Lake Pontchartrain and Vicinity (LPV)] in the Greater New Orleans area in southeast Louisiana.

This report contains a description of the existing fish and wildlife resources of the project area, discusses future with- and without-project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the proposed project. This report incorporates and supplements our Fish and Wildlife Coordination Act (FWCA) Reports that addressed impacts and mitigation features for the WBV (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the Lake Pontchartrain and Vicinity (dated July 25, 1984, and January 17, 1992) Hurricane Protection projects, and the November 26, 2007, Draft Programmatic FWCA Report that addresses the hurricane protection improvements authorized in Supplemental 4. Impacts and mitigation needs resulting from government and contractor provided borrow areas have been addressed in an October 25, 2007, and a November 1, 2007, FWCA reports, respectively, therefore this report will not address those project features. This draft document does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This draft report has been provided to the Louisiana Department of Wildlife and Fisheries (LDWF) and the National Oceanic and Atmospheric Administration’s, National Marine Fisheries Service (NOAA’s NMFS), and their comments will be incorporated in the final report.

DESCRIPTION OF THE STUDY AREA

The IER 12 study area is located in the upper Barataria Basin and includes the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins along the west bank of the Mississippi River in Jefferson, Orleans and Plaquemines Parishes, Louisiana. Dividing the sub-basins are Harvey and Algiers Canals which drain into the Gulf Intracoastal Waterway (GIWW) at their confluence. Hero Canal defines the southern boundary of the Belle Chase sub-basin and the southeastern boundary of the study area. The Old Estelle pump station (PS) outfall canal and the WBV
hurricane protection system's V-levee delineates the southeastern boundary of the Harvey-Westwego sub-basin. To the south of the V-levee are the Jean Lafitte National Historical Park and Preserve (NHPP) and the Bayou aux Carpes 404 (c) wetland complex. Within the existing WBV hurricane protection system, natural levees and lower lying wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development.

Figure 1. IER 12 Study Area, WBV, Jefferson, Orleans and Plaquemines Parishes, Louisiana, and Existing Hurricane and Flood Protection Features).

FISH AND WILDLIFE RESOURCES

Habitat types in the project area include wet and non-wet bottomland hardwood habitat, cypress and tupelo swamp, scrub-shrub habitat, flotant marsh, open water, and developed areas. Open water areas are associated with the Harvey and Algiers Canals, Hero Canal, the GIWW (Bayou Barataria), the Old Estelle PS outfall canal, and interspersed open water areas within flotant marsh and swamp habitat. Due to urban development and a forced-drainage system, the hydrology of most of the forested habitat within the levee system has been altered. The forced-drainage system has been in operation for many years, and subsidence is evident throughout the areas enclosed by levees.

Wetlands (forested, marsh, and scrub-shrub) within the study area provide plant detritus to coastal waters downstream and thereby contribute to the production of commercially and recreationally important fishes and shellfishes. They also provide valuable water quality functions such as reduction of excessive dissolved nutrient levels, filtering of waterborne
contaminants, and removal of suspended sediment. In addition, coastal wetlands buffer storm surges reducing their damaging effect to man-made infrastructure within the coastal area. Factors that will strongly influence future fish and wildlife resource conditions outside of the protection levees include freshwater and sediment input and loss of coastal wetlands. Regardless of which of the above factors ultimately has the greatest influence, emergent wetlands within, and adjacent to, the project area will probably experience losses due to development, subsidence, erosion, and relative sea-level rise.

The Service has provided a FWCA Report for the authorized WBV hurricane protection project. That report contains a through discussion of the significant fish and wildlife resources (including habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein but the following information is provided to update the previously mentioned reports and provide IER specific information and recommendations.

An area within the Bayou aux Carpes wetland complex (Figure 2) adjacent to the JLNHPP was subject to an Environmental Protection Agency (EPA) Final Determination under the Clean Water Act (CWA) Section 404(c) in 1985. According to the EPA Final Determination, the discharge of any dredged or fill material within the approximately 3,200 acre site, referred to as the Bayou aux Carpes 404(c) area, is restricted. The EPA action allowed for three specific exceptions, none of which appears to apply to the Corps' current hurricane protection proposal. Previous requests which have fallen outside those exceptions have been denied by EPA as being contrary to the CWA 404(c) determination. One such categorical denial prohibited the Corps from altering the alignment of the West Bank Hurricane Protection Levee such that it would encroach upon the Bayou aux Carpes 404(c) area.

The EPA 404(c) action was intended as an advance notification to the public and agencies of the government's determination under the CWA Section 404 for the area, in the sense of planning aid coordination. In light of this existing determination, we would expect the NEPA work on the portion of the levee forming the 404(c) boundary to thoroughly evaluate the range of feasible alternatives and their environmental impacts, as well as documenting the Corps' legal and regulatory authority for any alternative that would entail impacts to the Bayou aux Carpes 404(c) area.

The Bayou aux Carpes 404(c) action is one of only 12 such actions ever completed by EPA. Approximately 2,800 acres within the site are in Federal ownership and Congress is considering legislation to adjust the boundary of the Jean Lafitte NHPP, Barataria Preserve Unit to include the Bayou aux Carpes area. In the meantime, the National Park Service (NPS) has constructive possession of the area. Therefore, the Corps should contact both the NPS and EPA regarding any proposed project feature that may impact that area. For the NPS please contact Superintendent, David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov), or Chief of Resource Management, David Muth, (504) 589-3882 extension 128 (david_muth@nps.gov). For the EPA please contact Ms. Barbara Keeler, 214/665-6698.
The Bayou aux Carpes 404 (c) area is composed of two unique and critically important habitat types. Flotant marsh occurs along the northern portion of the area and transitions into cypress swamp habitat further to the south. The quality and health of these sensitive wetland habitats are greatly influenced by hydrologic parameters. Should water levels recede within flotant marsh, marsh vegetation could root into the soil drowning the vegetation when water levels rise again. Too much water flow can push flotant marsh vegetation out and create vast areas of open water. As flotant marsh vegetation thickens, new and larger plants (e.g., wax myrtle, red maple, and cypress) are supported by the mat of vegetation initiating the early successional stages of a cypress-tupelo swamp forest. Cypress and tupelo swamps also require hydrologic variations. Natural regeneration depends on periods of exceptionally long drought since cypress and tupelo seeds cannot germinate underwater. Cypress swamp habitat appears to be naturally regenerating as evident by saplings observed in the understory during recent field investigations. However, hydrologic stresses (e.g., spoil banks impeding water flow and producing ponding effects) may still be influencing sapling growth rates.

In 1985, the Service submitted a report to EPA detailing the value of the entire Bayou aux Carpes drainage area to fish and wildlife resources. The drainage area boundaries include the Harvey Canal/Bayou Barataria segment of the GIWW to the east and south, the Bayou des Familles ridge and Louisiana Highway 45 to the west, and the V-levee and Old Estelle PS outfall canal to the
north. The area was historically drained by Bayou aux Carpes, a natural waterway; however, this bayou was hydrologically disconnected when a plug was installed in the 1970s. Currently that plug may serve as a valuable function in keeping boat wakes from the GIWW from further eroding and widening the mouth of the bayou. The only flow exchange for this area is through the Southern Natural Gas (SNG) pipeline canal which runs north-south bisecting the Bayou aux Carpes drainage area. A few oil and gas canals branch off of the SNG pipeline canal connecting Bayou aux Carpes with the SNG pipeline canal. There are also several pipeline right-of-ways that traverse the area from east to west across the northern portion of the drainage area. It is highly probable that this system of canals and rights-of-way and their associated spoil banks influence the hydrology, impeding and directing flows throughout the area.

The Service’s 1985 Habitat Evaluation Procedures (HEP) analysis determined that bottomland hardwood and wooded swamp habitats in the drainage area rated moderate to high value for all species evaluated (i.e., gray squirrel, pileated woodpecker, North American mink, wood duck, great egret, American alligator, and common muskrat). Upland forested habitat rated low for gray squirrel and pileated woodpecker and was found to be optimum for mink. Scrub-shrub wetlands in the study area were found to be of high quality as wood duck wintering habitat and alligator habitat, and were moderate quality for mink, great egret, and muskrat. Fresh marsh rated high to moderate as alligator, mink, and muskrat habitat (U.S. Fish and Wildlife Service 1985).

The Bayou aux Carpes wetland complex provides valuable habitat for resident waterfowl and migratory game species (i.e. wood ducks, mallards, and other waterfowl) and non-game species (i.e., great blue herons and great egrets). Bald eagles and osprey have been observed in the area as well. Several species of non-game, resident and migratory birds that are known or expected to utilize the project area (e.g., red-headed woodpecker, prothonotary warbler, and wood thrush) have exhibited substantial population declines over the last 30 years, primarily as the result of habitat loss and fragmentation, and are of particular concern to the Service. The Bayou aux Carpes drainage area and associated habitats provide valuable spawning, feeding, and nursery habitat for recreationally-important freshwater fish such as largemouth bass, and various sunfishes; crustaceans such as crawfish and grass shrimp; and estuarine species such as striped mullet and blue crab. Analysis of samples collected in 1985 indicated that forage species (e.g., mosquito fish, threadfin shad, and golden top minnow) were the most abundant fish species. This diverse assemblage of fisheries species is indicative of a stable fisheries community in a relatively unstressed environment (U.S. Fish and Wildlife Service 1985). The Bayou aux Carpes drainage basin provides plant detritus to adjacent coastal waters, and such detritus is essential to the maintenance of commercially and recreationally important fisheries. In addition to their habitat values, those wetlands provide floodwater storage, and aid in water quality maintenance by reducing excessive dissolved nutrient levels and removing suspended sediments.

At this time, the Service is unaware of any threatened or endangered species or their critical habitat within the project area. However, the project-area forested wetlands provide nesting habitat for the bald eagle (Haliaeetus leucocephalus), and a bald eagle nest was documented within the Bayou aux Carpes drainage area in 2007. The bald eagle was officially removed from the List of Endangered and Threatened Species on August 8, 2007. Bald eagles nest in Louisiana
from October through mid-May. Eagles typically nest in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh to intermediate marshes or open water in the southeastern Parishes. Major threats to this species include habitat alteration, human disturbance, and environmental contaminants (i.e., organochlorine pesticides and lead).

Breeding bald eagles occupy “territories” that they will typically defend against intrusion by other eagles, and that they likely return to each year. A territory may include one or more alternate nests that are built and maintained by the eagles, but which may not be used for nesting in a given year. Potential nest trees within a nesting territory may, therefore, provide important alternative bald eagle nest sites. Nest sites typically include at least one perch with a clear view of the water or area where the eagles usually forage. Shoreline trees or snags located near large water bodies provide the visibility and accessibility needed to locate aquatic prey. Bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. Disturbance during this critical period may lead to nest abandonment, cracked and chilled eggs, and exposure of small young to the elements. Human activity near a nest late in the nesting cycle may also cause flightless birds to jump from the nest tree, thus reducing their chance of survival.

Although the bald eagle has been removed from the List of Endangered and Threatened Species, it continues to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations to minimize potential project impacts to bald eagles, particularly where such impacts may constitute “disturbance,” which is prohibited by the BGEPA. A copy of the NBEM Guidelines is available at: <http://www.fws.gov/southeast/es/baldeagle/NationalBaldEagleManagementGuidelines.pdf>. Those guidelines recommend: (1) maintaining a specified distance between the activity and the nest (buffer area); (2) maintaining natural areas (preferably forested) between the activity and nest trees (landscape buffers); and (3) avoiding certain activities during the breeding season. On-site personnel should be informed of the possible presence of nesting bald eagles within the project boundary, and should identify, avoid, and immediately report any such nests to this office. If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation must be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary. The Service’s Division of Migratory Birds for the Southeast Region (phone: 404/679-7051, e-mail: SEmigratorybirds@fws.gov) has the lead role in conducting such consultations. Should you need further assistance interpreting the guidelines or performing an on-line project evaluation, please contact this office.

The proposed study area is known to support colonial nesting waterbirds. Colonies may be present that are not currently listed in the database maintained by the LDWF. That database is updated primarily by monitoring the colony sites that were previously surveyed during the 1980s. Until a new, comprehensive coast-wide survey is conducted to determine the location of newly-established nesting colonies, we recommend that a qualified biologist inspect the proposed work
site for the presence of undocumented nesting colonies during the nesting season. To minimize
disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis,
and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a
rookery should be restricted to the non-nesting period (i.e., September 1 through February 15,
exact dates may vary within this window depending on species present). In addition, we
recommend that on-site contract personnel be informed of the need to identify colonial nesting
birds and their nests, and should avoid affecting them during the breeding season.

Future Fish and Wildlife Resources

The combination of subsidence and sea level rise is called submergence or land sinking. As the
land sinks the wetlands become inundated with higher water levels stressing wetland vegetation.
Even cypress-tupelo swamps can be stressed by prolonged inundation, thus leading to plant death
and conversion to open water. Other major causes of wetland losses within the study area
include altered hydrology, storms, saltwater intrusion (caused by marine processes invading
fresher wetlands), shoreline erosion, herbivory, and development activities including the direct
and indirect impacts of dredge and fill (Louisiana Coastal Wetlands Conservation and
Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). The
continued conversion of wetlands and forested habitat to open water or developed land represent
the most serious fish and wildlife-related problems in the study area. Those losses could be
expected to cause significant declines in coastal fish and shellfish production and in the study
area’s carrying capacity for numerous migratory waterfowl, wading birds, other migratory birds,
alligators, furbearers, and game mammals. Wetland losses will also reduce storm surge
protection of developed lands, and will likely contribute to water quality degradation associated
with excessive nutrient inputs.

ALTERNATIVES UNDER CONSIDERATION

During the alternatives analysis, the no-action alternative and the alternative to raise the existing
Hurricane Protection System to a 100-year level of protection were considered. The no-action
alternative would not be implemented because it fails to provide the authorized level of
protection to the Belle Chasse, Gretna-Algiers, and Harvey-Westwego sub-basins. The Corps
also considered a series of alternative gate locations within the project area that would reduce the
length of parallel levee protection. One of these alternatives included constructing a sector gate
across the Bayou aux Carpes 404 (c) area. That alternative would have significant impacts to
fish and wildlife resources and EPA 404 (c) designated wetlands. The following are brief
descriptions of the alternatives:

Alternative 1:
A floodgate and permanent by-pass channel in the GIWW below the confluence of the Algiers
and Harvey Canals with the flood wall bisecting the Bayou aux Carpes 404 (c) designated area;

Alternative 2 [Gulf Intracoastal Waterway - West Closure Complex (GIWW WCC)]:
Floodgate and permanent by-pass channel in the GIWW below the confluence of the Algiers and
Harvey Canals with 100-year floodwall protection proposed along the periphery of the Bayou aux
Carpes 404 (c) area and the GIWW and continuing around to the V-levee;

Alternative 3:
Sector floodgate in the Algiers Canal with 100-year floodwall protection along the Harvey Canal to the Lapalco floodgate continuing along the existing WBV flood protection levee alignment;

Alternative 4:
Parallel levee protection to raise the existing levees and floodwalls along Algiers and Harvey Canals to the 100-year level of protection. The Lapalco floodgate and the Cousins PS discharge channel walls would also be raised to the 100-year level of protection.

Proposed Action

The GIWW WCC alternative (Alternative 2) was developed through proactive coordination primarily between the EPA, NPS, and the Corps. The GIWW WCC alternative would include construction of a navigable floodgate on the GIWW south of the confluence of the Algiers and Harvey Canals and upstream of the Hero Canal. A pumping station and a secondary by-pass canal/flow control structure would be constructed adjacent to the navigable floodgate. The levees and floodwalls between the Old Estelle pumping station and the Harvey Canal, and south along the WBV, V-levee would be raised to the 100-year level of protection [i.e., approximately 14 to 16 foot elevation North American Vertical Datum of 1988(NAVD 88)]. Approximately 4,200 linear feet of floodwall would be constructed within a 100-foot-wide new right-of-way along the periphery of the GIWW and the Bayou aux Carpes 404 (c) area to connect the proposed GIWW navigable floodgate with the existing flood protection system. Armoring of the floodwall along the GIWW is anticipated for protection against barge collisions and wave erosion.

Existing levees and floodwalls along Algiers and Harvey Canals will be incorporated into the protected side of the closure complex and would be integrated as features of the parallel protection system retention basin. Those levees would be lifted to the former authorized level of protection, and existing pump stations within the proposed detention basin would receive fronting protection and back flow prevention which would required additional right-of-way impacts. Approximately 700,000 cubic yards of material in the Algiers Canal would be dredged in order to maintain a still water level of less than 6 feet (NAVD 88) in the retention basin. Material dredged would be placed within the Jean Lafitte NHPP for marsh restoration along Lake Salvador.

Features of the structure that would cross the GIWW include a 150-to-300-foot-wide navigation channel closure gate and a 100-to-200-foot-wide bypass channel closure gate built to a protection elevation of 16 feet (NAVD 88), or greater, and tied into the nearest flood protection levee. A pumping station would provide positive backwater prevention. The bypass channel would be constructed to allow navigation on the GIWW during construction of the retaining structure, pumps and gates and will be used in the event of the closure of the primary channel structure. A water control structure is also proposed on the Old Estelle PS outfall canal.

In addition to levee and floodwall construction the proposed action includes several environmental augmentations to ensure that adverse impacts to the Bayou aux Carpes 404 (c)
area are avoided. The southern side of the Old Estelle pump station outfall canal would be gapped to provide evenly distributed sheet flow into the Bayou aux Carpes 404(c) area. After analysis of hydrologic modeling, existing obstructions (e.g., spoil banks, access roads) within the Bayou aux Carpes 404 (c) area may also be augmented, including modifying the shell plug at Bayou aux Carpes where it historically connected to Bayou Barataria to provide hydrological exchange. Long-term monitoring of the affects of the proposed flood protection system and augmentation features on the Bayou aux Carpes wetland complex would be conducted. Should monitoring indicate that augmentation features have an adverse affect on the Bayou aux Carpes 404 (c) area, flow from the Old Estelle pump station would be redirected away from the 404 (c) area and through the proposed water control structure at the end of the Old Estelle outfall canal and into the GIWW.

In the GIWW adjacent to the Bayou aux Carpes 404 (c) area and south of the navigation channel closure gate, 2,000 linear feet of foreshore dike protection would be constructed in front of the channel bank to prevent scouring or bank erosion within the Bayou aux Carpes 404 (c) area associated with discharge from the pump station.

The GIWW WCC alternative provides 100-year protection based upon improvements, enhancements, and construction confined to the GIWW reach in concert with tie-ins to improvements to the Hero Canal Levee (IER #13) and the V-line Levee (IER #14).

**EVALUATION METHOD**

Direct impacts to bottomland hardwood and swamp habitat were quantified by acreage and habitat quality (i.e., average annual habitat units or AAHUs) and are presented in Table 1. The Service used the Louisiana Department of Natural Resources Habitat Assessment Methodology (HAM) to quantify the impacts of proposed project features on upland and wetland bottomland hardwood habitat and used the Wetland Value Assessment (WVA) methodology to quantify the impacts on swamp habitat. The habitat assessment models for bottomland hardwoods within the Louisiana Coastal Zone utilized in this evaluation were modified from those developed in the Service’s Habitat Evaluation Procedures (HEP). For each habitat type, those models define an assemblage of variables considered important to the suitability of an area to support a diversity of fish and wildlife species. The HAM, however, is a community-level evaluation instead of the species-based approach used with HEP. The WVA is used to evaluate coastal restoration projects, and is similar to the Service’s HEP, in that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. As with HEP, the WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for fresh/intermediate marsh, brackish marsh, and saline marsh. Further explanation of how impacts/benefits are assessed with the HAM and WVA and an explanation of the assumptions affecting habitat suitability (i.e., quality) index (HSI) values for each target year for impacts to bottomland hardwood and swamp habitat are available for review at the Service’s Lafayette, Louisiana, field office.
Table 1: Potential Impacts from Algiers-Harvey 100-year Hurricane Protection Project

<table>
<thead>
<tr>
<th></th>
<th>protected side (hydrologically altered)</th>
<th>floodside (hydrologically connected)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pasture (acres)</td>
<td>early successional BLH (PFO1Ad)</td>
</tr>
<tr>
<td>Algiers Eastbank Levee Expansion</td>
<td>---</td>
<td>1.2</td>
</tr>
<tr>
<td>Algiers Westbank Levee Exp</td>
<td>---</td>
<td>6.7</td>
</tr>
<tr>
<td>East Bank Nav Structure</td>
<td>---</td>
<td>7.8</td>
</tr>
<tr>
<td>ERNS-staging areas</td>
<td>63.6</td>
<td>---</td>
</tr>
<tr>
<td>Levee Exp N of Estelle O/F canal</td>
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<td>---</td>
</tr>
<tr>
<td>Levee Exp W of 404c</td>
<td>---</td>
<td>23.5</td>
</tr>
<tr>
<td>Levee Exp W of Harvey</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Floodwall construction 404c</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Total Acres (392.6)</td>
<td>63.6</td>
<td>39.2</td>
</tr>
<tr>
<td>Total AAHUs lost</td>
<td>0.0</td>
<td>22.3</td>
</tr>
</tbody>
</table>

Total BLH protected side = 252 ac, 177.3 AAHUs
Total BLH flood side (404c) = 2.4 ac, 1.9 AAHUs
Total swamp flood side = 67.5 ac + 7.4 ac in 404c = 74.9 ac, 38.5 AAHUs

As indicated in Table 1, based on our HAM and WVA analyses (Appendix A) project implementation would result in the direct loss of 255 and 75 acres, and 179.2 and 38.5 AAHUs, of bottomland hardwood forest and swamp, respectively. Implementation of the preferred alternative would directly impact 252 acres of hydrologically-altered bottomland hardwood habitat, 2.4 acres of wet bottomland hardwood habitat, and approximately 75 acres of swamp habitat. Of those impacts approximately 2.4 acres of wet bottomland hardwood and 7.4 acres of swamp habitat (i.e., 9.8 acres) occur within the Bayou aux Carpes 404 (c) area along the GIWW interface.

PROJECT IMPACTS

Proposed project impacts associated with the GIWW WCC alternative would result primarily from construction of new levees, expansion of levee rights-of-way and associated features. Although some construction will occur in cleared areas and on existing levees, project implementation will directly impact wet and non-wet bottomland hardwoods and tupelo swamp that provide medium to high habitat value for diverse fish and wildlife resources. While some construction staging and processing areas are located in open, non-forested areas, approximately
7 acres of bottomland hardwood forest associated with one staging location would be impacted.

Direct impacts to 252 acres of hydrologically-altered (i.e., non-wet) bottomland hardwood habitat would occur as a result of the GIWW WCC alternative. Impacts would be associated with expanding the existing flood protection levee right-of-way to bring it to the authorized level of protection and with realigning and expanding the levee on the south bank of the GIWW to accommodate the proposed bypass channel, navigable floodgate, pump station and a current reduction flow structure. The footprint of the proposed pump station would also impact non-wet bottomland hardwood habitat; however, by repositioning the levee landward an undetermined amount of previously-altered bottomland hardwood habitat would be returned to a natural overbank flooding regime.

Direct impacts to 2.4 acres of bottomland hardwood habitat and 7.4 acres of swamp habitat would occur as a result of constructing a new floodwall within a 100-foot right-of-way along the Bayou aux Carpes 404 (c) area and the GIWW interface. Impacts are also associated with floodside armoring of the proposed floodwall. Construction of this floodwall and armoring would impact riparian habitat and disrupt wildlife passage between the Bayou aux Carpes wetland complex and adjacent habitats. Riparian habitats are particularly valuable to wildlife as transition zones between aquatic and forested habitats, and contribute vital elements to fishery resources in the form of detritus, shade, and in-stream cover.

Although proposed impacts to the Bayou aux Carpes 404 (c) area have been minimized, the discharges of any dredged or fill material within the Bayou aux Carpes 404(c) area is currently restricted and would require the EPA to modify the CWA Section 404 (c) determination. To ensure that potential impacts resulting from the construction of a flood protection structure/barrier do not compromise the value of this nationally-significant wetland ecosystem, the Corps is proposing to incorporate features into the proposed hurricane protection project to maintain the integrity Bayou aux Carpe 404 (c) area habitat (i.e., floatant marsh and cypress swamp). Storm water discharge from the Old Estelle pump station would be directed into the Bayou aux Carpes 404 (c) area by strategically gapping along the southern edge of the canal spoil bank. The Corps also proposes to modify interior hydrologic obstructions and the Bayou aux Carpes shell plug to provide additional hydrological exchange, if deemed necessary. To ensure that appropriate measures are implemented to maintain the function and quality of the wetland complex, the Corps’ Engineer Research and Development Center (ERDC) will be conducting modeling of existing hydrologic conditions within the Bayou aux Carpes drainage area and the effects of directing additional flow and nutrients into the that wetland complex.

On the protected side of the navigation structure the Algiers and Harvey Canals would be integrated as features of the parallel protection system retention basin. Approximately 700,000 cubic yards in the Algiers Canal would be dredged in order to maintain a still water level of less than 6 feet (NAVD 88) in the retention basin. Existing tidal fluctuations within the retention basin would not be affected during normal conditions. That material would be used beneficially to create marsh along the Lake Salvador shoreline within the Jean Lafitte NHPP.
Development is ongoing within the hurricane protection levees; therefore, the Service has assumed that, for this specific IER, project-induced development within enclosed wetlands would be insignificant. However, project impacts to non-wet bottomland hardwoods and swamp habitat as a result of flood protection improvements should be mitigated.

**FISH AND WILDLIFE CONSERVATION AND MITIGATION MEASURES**

The President's Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process. Based on current and expected future without-project conditions, the planning goal of the Service is to develop a balanced project, i.e., one that is responsive to demonstrated hurricane protection needs while addressing the co-equal need for fish and wildlife resource conservation.

The Service's Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of forested wetlands and marsh for fish and wildlife and the relative scarcity of that habitat type, those wetlands are usually designated as Resource Category 2 habitats, the mitigation goal for which is no net loss of in-kind habitat value. Potential direct and indirect impacts to flotant marsh have been avoided by aligning the floodwall along the periphery of the Bayou aux Carpes wetland complex. While the preferred alignment has resulted in greater impacts to forested wetlands, the proposed flood protection structure would enclose fewer wetland acres, and the damaging hydrologic affects associated with bisecting the Bayou aux Carpes flotant marsh with a structural barrier would be avoided. Therefore, remaining direct project impacts to forested wetlands should be mitigated via in-kind compensatory replacement of the habitat values lost. Degraded (i.e., non-wet) bottomland hardwood forest and any wet pastures that may be impacted, however, are placed in Resource Category 3 due to their reduced value to wildlife, fisheries and lost/degraded wetland functions. Project impacts to wetlands will be minimized to some extent by hauling in material for the levee. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value.

Mitigation for unavoidable losses of wet and non-wet bottomland hardwoods and swamp habitat, caused by project features will be evaluated through a complementary comprehensive mitigation
IER. However, mitigation for unavoidable impacts to the Bayou aux Carpes 404 (c) area should be provided concurrently with flood protection features and within the Bayou aux Carpes 404 (c) area, provided EPA determines that modification of the 404 (c) designation is warranted.

We commend the Corps efforts to ensure fish and wildlife habitats within the Bayou aux Carpes 404 (c) area are maintained by augmenting the proposed hurricane protection project. Because of the hydrologically sensitive nature of the flotant marsh and cypress swamp habitat, the implementation and design of proposed augmentations to the Bayou aux Carpes 404 (c) area should be closely coordinated with the results ERDC hydrologic investigations. The natural resource agencies, particularly the NPS and EPA, should be intimately involved in determining what hydrologic parameters should be investigated, reviewing the results of the investigations, and developing the best solution to maintaining and improving the hydrology of the flotant marsh and cypress swamp habitats. Depending on the results of those investigations, a plan should be designed and implemented to modify hydrologic and nutrient inflow effects to the Bayou aux Carpes area (e.g., gapping the Estelle Pump Station Outfall Canal, gapping or grading down interior canal banks such as the Southern Natural Gas and Shell pipeline canals, and/or modifying the shell plug at Bayou aux Carpes). Should proposed long-term monitoring efforts reveal that any of the proposed augmentation features would result in adverse impacts, the Corps should restore those features to pre-project conditions in coordination with the natural resource agencies.

To minimize impacts associated with removing additional borrow from forested areas, material dredged from the Algiers Canal and removed during project construction (i.e., repositioning the WBV, levee landward to accommodate the GIWW gate, and dredging along the GIWW bankline to install the flow control structure) should be tested to determine its suitability for levee construction. According to 2005 sediment sampling conducted for maintenance of the Inner Harbor Navigation Canal (IHNC) project in Orleans Parish, Louisiana, some sediment collected from GIWW and IHNC was considered unsuitable for open water disposal, and other options for disposal were necessary. Material dredged from the GIWW/Algiers Canal should be tested for contaminants, and the Corps should continue to coordinate with the natural resource agencies to determine the best use of that material.

**SERVICE POSITION AND RECOMMENDATIONS**

Construction of the increased flood protection would result in direct impacts to 179.2 and 38.5 AAHUs, of bottomland hardwood forest and swamp, respectively. The Service does not object to providing improved hurricane protection to the greater New Orleans area provided the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation:

1. Flood protection and ancillary features such as staging areas and access roads should be designed and positioned so that destruction of wetlands and non-wet bottomland hardwoods are avoided or minimized to the greatest extent possible.
2. The Corps should fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

3. The enclosure of wetlands with new levee alignments should be minimized to the fullest extent. When enclosure of wetlands is unavoidable, non-development easements on enclosed wetlands should be acquired, or hydrologic connections with adjacent, un-enclosed wetlands should be maintained. Such actions will serve to minimize secondary impacts from development and hydrologic alteration.

4. Material removed during project construction (i.e., dredging Algiers Canal, repositioning the WBV, levee landward to accommodate the GIWW gate, and dredging along the GIWW bank line to install the flow control structure) should be tested to determine suitability as borrow material for levee construction and the presence of contaminants. The Corps should continue to coordinate with the natural resource agencies to determine the best use of that material.

5. A maintenance dredging management plan for material dredged from the Algiers Canal should be developed for the life of the project.

6. The Corps should avoid impacts to the Bayou aux Carpes 404 (c) area, if feasible. If not feasible the Corps should continue coordination with the NPS and EPA regarding any proposed project feature that may impact that area. Points of contacts for the agencies potentially impacted by project features are: National Park Service (NPS), contact Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov) and Ms. Barbara Keeler (214) 665-6698 with the EPA.

7. Hydrologic, nutrient, and contaminant modeling should be conducted to determine the best arrangement of environmental augmentation features (i.e., location of gaps and water control structures), if any, in the Bayou aux Carpes 404 (c) area.

8. Environmental augmentation features developed through the EPA 404 (c) modification procedures should be incorporated as project features, and the IER should be supplemented to address any additional augmentation features proposed through that process.

9. If hydraulic modeling demonstrates that environmental augmentation features are beneficial, operational plans to maximize freshwater retention or redirect freshwater flows into the Bayou aux Carpes 404 (c) area should be coordinated with the natural resource agencies, especially EPA and NPS. To accommodate changing goals and restoration needs, water control structures should be designed to incorporate operational flexibility through an adaptive management program.

10. The project’s first Project Cooperation Agreement (or similar document) should include
language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation and augmentation features. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of the shoreline protection features, the Corps should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.

11. To facilitate necessary adaptive management, the Corps in coordination with the natural resource agencies, should develop a monitoring plan. That monitoring plan should address hydrologic, nutrient, and contaminant changes throughout the system. The performance and funding of the monitoring of mitigation and augmentation features should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure that local cost share obligations are met on behalf of the public interest.

12. Because of the sensitivity and significance of the Bayou aux Carpes 404 (c) area every effort should be made to minimize impacts during construction of the floodwall and navigational gate. Construction activities within the Bayou aux Carpes 404 (c) area should adhere to the following guidelines to avoid adverse impacts to the Bayou aux Carpes 404 (c) area:

A. Construction should be performed from the water side (i.e., Bayou Barataria/GIWW side) rather than from the 404(c) side;

B. Construction of the floodwall within the Bayou aux Carpes 404 (c) area should be constructed within a 100-foot corridor width from the GIWW into the 404(c) area. No additional area within the 404(c) site would be required for the floodwall or any other construction;

C. The Corps should investigate and utilize innovative techniques to design and build a structure with the narrowest footprint possible; and,

D. Should existing oil and gas pipeline ROWs require relocation, impacts associated with those relocations should be avoided and minimized to the greatest extent possible.

13. If a proposed project feature is changed significantly or is not implemented within one year of the date of this report, the Corps should reinitiate coordination with each office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

14. Adverse impacts to bald eagle nesting locations and wading bird colonies should be avoided through careful design of project features and timing of construction. A qualified biologist should inspect the proposed work site for the presence of undocumented wading bird nesting colonies and bald eagles during the nesting season (i.e., February 16 through October 31 for wading bird nesting colonies, and October through mid-May for bald eagles).
15. To minimize disturbance to colonies containing nesting wading birds (i.e., herons, egrets, night-herons, ibis, and roseate spoonbills), anhingas, and/or cormorants, all activity occurring within 1,000 feet of a rookery should be restricted to the non-nesting period (i.e., September 1 through February 15, exact dates may vary within this window depending on species present). In addition, we recommend that on-site contract personnel be informed of the need to identify colonial nesting birds and their nests, and should avoid affecting them during the breeding season.

16. If a bald eagle nest is discovered within or adjacent to the proposed project area, then an evaluation should be performed to determine whether the project is likely to disturb nesting bald eagles. That evaluation may be conducted on-line at: http://www.fws.gov/southeast/es/baldeagle. Following completion of the evaluation, that website will provide a determination of whether additional consultation is necessary and those results should be forwarded to this office.

17. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

18. Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

19. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the Service, NMFS, LDWF, EPA, NPS, and the Louisiana Department of Natural Resources (LDNR). The Service should be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

20. If mitigation lands are purchased for inclusion within Federally of State managed lands, those lands must meet certain requirements; therefore the land manager of that management area should be contacted early in the planning phase regarding such requirements.

21. If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

22. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable.

23. Any flood protection water control structure sited in a canal, bayou, or navigation channel that does not maintain the pre-project cross section should be designed and operated with
multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

24. Flood protection water control structures should remain completely open except during storm events, unless otherwise determined by the natural resource agencies.

25. Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered, and coordination should continue with the natural resource agencies to ensure fish passage features are incorporated to the fullest extent practicable.

26. To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

27. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.

28. Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

29. Any proposed change in mitigation or augmentation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

30. A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the Corps, the Service, NMFS, EPA, LDNR and LDWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.
LITERATURE CITED


Appendix A

WVA Analysis
# Community Habitat Suitability Model
## Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH east staging area  
**Acres:** 6.9

**Condition:** Future With Project

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**HSI = 0.72**

---

**Project:** IER 12, Alt 2, BLH east staging area  
**FWP**

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<td>Class</td>
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<td>V6 Surrounding Land Use</td>
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**HSI = 0.04**

**HSI = 0.65**

**HSI =**

12/10/2008
# COMMUNITY HABITAT SUITABILITY MODEL

## Bottomland Hardwoods

**Project:** IER 12, All 2, BLH east staging area  
**Acres:** 6.9

**Condition:** Future Without Project

## Appendix I

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<td>Species Assoc.</td>
<td>Class</td>
<td>4</td>
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| V2       | Maturity  
(whorl age or dbh, not both) | Age | dbh | 17.8 | 0.85 | 18.08 | 0.87 | 18.27 | 0.89 |
| V3       | Understory / Midstory | Understory % | Midstory % | 60 | 0.83 | 60 | 0.83 | 0.95 | 0.90 |
| V4       | Hydrology | Class | 2 | 0.50 | 2 | 0.50 | 2 | 0.50 |
| V5       | Forest Size | Class | 4 | 0.60 | 4 | 0.60 | 4 | 0.60 |
| V6       | Surrounding Land Use | Values % | Forest | 60 | 0.72 | 60 | 0.72 | 60 | 0.72 |
|          | Abandoned Ag | 29 | 29 | 29 |
|          | Pasture / Hay | 11 | 11 | 11 |
| V7       | Disturbance | Class | Type | 2 | 0.26 | 2 | 0.26 | 2 | 0.26 |
|          | Distance | Class | 1 | 1 | 1 |

HSl = 0.71

---

## FWP

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<td>Species Assoc.</td>
<td>Class</td>
<td>Class</td>
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</table>
| V2       | Maturity  
(whorl age or dbh, not both) | Age | dbh | 21 | 1.00 | 21 | 1.00 |
| V3       | Understory / Midstory | Understory % | Midstory % | 45 | 1.00 | 45 | 1.00 |
| V4       | Hydrology | Class | Class |
| V5       | Forest Size | Class | Class |
| V6       | Surrounding Land Use | Values % | Forest | 69 | 0.72 | 69 | 0.72 |
|          | Abandoned Ag | 29 | 29 |
|          | Pasture / Hay | 11 | 11 |
| V7       | Disturbance | Class | Type | 2 | 0.26 | 2 | 0.26 | 2 | 0.26 |
|          | Distance | Class | 1 | 1 | 1 |

HSl = 0.66

---

12/19/2008
### AAHU CALCULATION, Bottomland Hardwoods

**Project:** IER 12, All 2, BLH east staging area

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**Total CHUs = 1.67**  
**AAHUs = 0.03**

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<th>Cumulative</th>
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**Total CHUs = 241.85**  
**AAHUs = 4.83**

### NET CHANGE IN CHUs DUE TO PROJECT

A. Future With Project CHUs = 1.67  
B. Future Without Project CHUs = 241.85  
Net Change (FWP - FWOP) = -230.98

### NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project AAHUs = 0.03  
B. Future Without Project AAHUs = 4.83  
Net Change (FWP - FWOP) = -4.80
### WETLAND VALUE ASSESSMENT COMMUNITY MODEL

**Swamp**

**Project:** IER 12, Riparian BLH & Swamp  
**Project Area:**  
**Condition:** Future Without Project

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**HSI** = 0.43

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**HSI** = 0.48  
**HSI** = 0.62  
**HSI** = 

12/19/2008
WETLAND VALUE ASSESSMENT COMMUNITY MODEL
Swamp

Project...... IER # 12, Riparian BLH & Swamp
FWP

Condition: Future With Project

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HIS = 0.43

Project Area.......... 68

12/19/2006
## AAHU Calculation

**Project:** IER 12, Riparian BLH & Swamp

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**Total**

- CHUs = 1726.09
- AAHU = 34.52

### Future With Project

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**Total**

- CHUs = 9.73
- AAHU = 0.19

### Net Change in AAHU due to Project

1. Future With Project AAHUs = 0.19
2. Future Without Project AAHUs = -34.53
3. Net Change (FWP - FWOP) = -34.33
**COMMUNITY HABITAT SUITABILITY MODEL**

**Bottomland Hardwoods**

**Project:** IER 12, All 2, 404c BLH  
**Acres:** 2.4

**Condition:** Future With Project

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# COMMUNITY HABITAT SUITABILITY MODEL
## Bottomland Hardwoods

**Project:** IER 12, Alt 2, 404c BLH  
**Acres:** 2.4

**Condition:** Future Without Project

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**HSI = 0.77**

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<tr>
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<td></td>
<td>Active Ag Development</td>
<td>24</td>
</tr>
<tr>
<td>V7 Disturbance Type</td>
<td>Class</td>
<td>2</td>
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**HSI = 0.85**

## TY 50

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<td>Values %</td>
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<td>Forest / marsh</td>
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<td>Abandoned Ag</td>
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<td>1</td>
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**HSI = 0.86**

12/10/2009
# AAHU CALCULATION, Bottomland Hardwoods

**Project:** IER 12, Ali 2, 404c BLH

## Future With Project

<table>
<thead>
<tr>
<th>TY</th>
<th>Acres</th>
<th>x HSI</th>
<th>Total HUs</th>
<th>Cumulative HUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.4</td>
<td>0.77</td>
<td>1.84</td>
<td>1.84</td>
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<tr>
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<td>0</td>
<td>0.01</td>
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<tr>
<td>50</td>
<td>0</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Total**

- CHUs = 3.44
- AAHU = 0.01

## Future Without Project

<table>
<thead>
<tr>
<th>TY</th>
<th>Acres</th>
<th>x HSI</th>
<th>Total HUs</th>
<th>Cumulative HUs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2.4</td>
<td>0.77</td>
<td>1.84</td>
<td>1.84</td>
</tr>
<tr>
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<td>2.4</td>
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<td>1.84</td>
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</table>

**Total**

- CHUs = 100.04
- AAHU = 2.00

## NET CHANGE IN CHUs DUE TO PROJECT

A. Future With Project CHUs = 3.44
B. Future Without Project CHUs = 100.04
**Net Change (FWP - FWOP) = -96.62**

## NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project AAHUs = 0.01
B. Future Without Project AAHUs = 0.00
**Net Change (FWP - FWOP) = -1.99**

12/19/2006
## Community Habitat Suitability Model
### Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH early successional  
**Acres:** 39

**Condition:** Future With Project

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<th>Class/Value</th>
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<td>Class</td>
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<td>Class</td>
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</tr>
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<tr>
<td>V3 Understory / Midstory</td>
<td>Understory %</td>
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<td>Understory %</td>
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<td>Midstory %</td>
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<td>Active Ag Development</td>
<td>16</td>
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<td>Class</td>
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**HSI** = 0.31

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**Project:** IER 12, Alt 2, BLH early successional  
**FWP**

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<td>Class</td>
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<td>Class</td>
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<td>Age</td>
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<tr>
<td>(map age or dbh, not both)</td>
<td>dbh</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>V3 Understory / Midstory</td>
<td>Understory %</td>
<td></td>
<td>Understory %</td>
<td></td>
<td>Understory %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Midstory %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Class</td>
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<td>Class</td>
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</tr>
<tr>
<td>V5 Forest Size</td>
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<td>Class</td>
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<td>Class</td>
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</tr>
<tr>
<td>V6 Surrounding Land Use</td>
<td>Values %</td>
<td></td>
<td>Values %</td>
<td></td>
<td>Values %</td>
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<td>V7 Disturbance</td>
<td>Type</td>
<td>Class</td>
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<td>Class</td>
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</table>

**HSI** = 0.17

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12/10/2008
## COMMUNITY HABITAT SUITABILITY MODEL
### Bottomland Hardwoods

**Project:** IER 12, Alt 2, BLH early successional  
**Acres:** 39

**Condition:** Future Without Project

### Table 1: HSI Calculation for Ty 0, Ty 1, and Ty 20

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<tr>
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<td>60.00</td>
<td>70.00</td>
</tr>
<tr>
<td></td>
<td>Midstory %</td>
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<td>30.00</td>
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<td>4.00</td>
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<td>84.00</td>
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<td>2.00</td>
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<tr>
<td></td>
<td>Pasture / Hay</td>
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<td>2.00</td>
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<td>Type</td>
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**HSI** = 0.31

### Table 2: HSI Calculation for Ty 50

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<td>V2 Maturity</td>
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<td></td>
<td>dbh</td>
<td>0.00</td>
</tr>
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<td>V3 Understory/Midstory</td>
<td>Understory %</td>
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<tr>
<td></td>
<td>Midstory %</td>
<td>70.00</td>
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<tr>
<td>V4 Hydrology</td>
<td>Class</td>
<td>2.00</td>
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<tr>
<td>V5 Forest Size</td>
<td>Class</td>
<td>4.00</td>
</tr>
<tr>
<td>V6 Surrounding Land Use</td>
<td>Values %</td>
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</tr>
<tr>
<td></td>
<td>Forest / marsh</td>
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<td>Abandoned Ag</td>
<td>2.00</td>
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<td></td>
<td>Pasture / Hay</td>
<td>2.00</td>
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<td></td>
<td>Active Ag Development</td>
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<td>Type</td>
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<tr>
<td></td>
<td>Distance</td>
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**HSI** = 0.69
# AAHU Calculation, Bottomland Hardwoods

**Project:** IER 12, All 2, BLH early successional

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<tr>
<th>Future With Project</th>
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<th>Cumulative</th>
</tr>
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<td>0.00</td>
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</table>

<table>
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<th>Total</th>
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<tbody>
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<td>x HSI</td>
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<tr>
<td></td>
<td>AAHU</td>
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</tbody>
</table>

**Net Change in CHUs Due to Project**

A. Future With Project CHUs = 4.09
B. Future Without Project CHUs = 1118.99
Net Change (FWP - FWOP) = 1114.90

**Net Change in AAHUs Due to Project**

A. Future With Project AAHUs = 0.08
B. Future Without Project AAHUs = 23.38
Net Change (FWP - FWOP) = -23.30

12/19/2008
## COMMUNITY HABITAT SUITABILITY MODEL

**Bottomland Hardwoods**

### Project Details
- IER 12, Alt 2, Mid-Late Succ. BLH
- Acres: 206
- Condition: Future With Project

### Tables

#### Table 1: HSI Values

<table>
<thead>
<tr>
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<th>Class/Value</th>
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<th>TY 1</th>
<th>TY 50</th>
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<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>0</td>
</tr>
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</tr>
<tr>
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<td>Midstory %</td>
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</tr>
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<td>V4 Hydrology</td>
<td>Class</td>
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<td>0.50</td>
<td>1</td>
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<tr>
<td>V6 Forest Size</td>
<td>Class</td>
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<td>0.60</td>
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<td>V6 Surrouding Land Use</td>
<td>Values %</td>
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**HSI = 0.68**

#### Table 2: HSI Values

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<td></td>
<td>dbh</td>
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<tr>
<td>V3 Understory/Midstory</td>
<td>Understory %</td>
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</tr>
<tr>
<td></td>
<td>Midstory %</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>V4 Hydrology</td>
<td>Class</td>
<td></td>
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<tr>
<td>V5 Forest Size</td>
<td>Class</td>
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<td>Values %</td>
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<td>Forest / marsh</td>
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**HSI =**

12/19/2000
### COMMUNITY HABITAT SUITABILITY MODEL

**Bottomland Hardwoods**

**Project:** IER 12, Alt 2, Mid-Late Succ. BLH  
**Acres:** 206

**Condition:** Future Without Project

#### Variable  
<table>
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<td>Age</td>
<td>4 0.80</td>
</tr>
<tr>
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<td>Maturity</td>
<td>Age</td>
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<td>dbh</td>
<td>15 0.68</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>27 0.89</td>
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<tr>
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<td>Understory / Midstory</td>
<td>%</td>
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<td></td>
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<td>%</td>
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<td>V5</td>
<td>Forest Size</td>
<td>%</td>
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<td>V6</td>
<td>Surrounding Land Use</td>
<td>Values %</td>
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**HSI = 0.68**

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<tr>
<td>V3</td>
<td>Understory / Midstory</td>
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<td></td>
<td></td>
<td>dbh</td>
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<tr>
<td>V4</td>
<td>Hydrology</td>
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<td>%</td>
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<td>Surrounding Land Use</td>
<td>Values %</td>
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**HSI = 0.76**
# AAHU CALCULATION, Bottomland Hardwoods

Project: IER 12, All 2, Mid-Late Succ. BLH

## Future With Project

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<th>Total HUs</th>
<th>Cumulative HUs</th>
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<td>0.00</td>
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Total CHUs = 48.85  
AAHUs = 9.92

## Future Without Project

<table>
<thead>
<tr>
<th>Year</th>
<th>Acres</th>
<th>$x$ HSI</th>
<th>Total HUs</th>
<th>Cumulative HUs</th>
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<td>0</td>
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<td>0.88</td>
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<td>206</td>
<td>0.75</td>
<td>157.37</td>
<td>463.61</td>
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Total CHUs = 7564.03  
AAHUs = 151.03

## NET CHANGE IN CHUs DUE TO PROJECT

A. Future With Project CHUs = 48.85
B. Future Without Project CHUs = 7564.03
Net Change (FWP - FWOP) = -7515.18

## NET CHANGE IN AAHUs DUE TO PROJECT

A. Future With Project AAHUs = 9.92
B. Future Without Project AAHUs = 151.03
Net Change (FWP - FWOP) = -141.11

12/19/2008
# WETLAND VALUE ASSESSMENT COMMUNITY MODEL

## Swamp

Project...... IER 12, 404c Tupelo Swamp  
Project Area........... 7.4

Condition: Future Without Project

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<td>Class/Value</td>
</tr>
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<td>Stand</td>
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<td>% Cover</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>V2</td>
<td>Stand</td>
<td>Maturity</td>
<td>Cypress %</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>V3</td>
<td>Water</td>
<td>Regime</td>
<td>Flow/Exchange</td>
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**HSI = 0.48**

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<td>Stand</td>
<td>Structure</td>
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<tr>
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<td>Stand</td>
<td>Maturity</td>
<td>Cypress %</td>
</tr>
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<td>V3</td>
<td>Water</td>
<td>Regime</td>
<td>Flow/Exchange</td>
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<tr>
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**HSI = 0.56**

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12/19/2006
### WETLAND VALUE ASSESSMENT COMMUNITY MODEL

#### Swamp

**Condition:** Future With Project

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<th>Class/Value</th>
<th>SI</th>
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<tr>
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**Project:** IER 12, 404c Tupelo Swamp

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<th>Class/Value</th>
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<tr>
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**HSI =** 0.48

12/19/2008
# AAHU Calculation

**Project:** IER 12, 404c Tupelo Swamp

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<th>Total HUs</th>
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<tr>
<td><strong>Total</strong></td>
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**CHUs = 211.71**  
**AAHUs = 4.23**

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<td>0.00</td>
</tr>
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<td><strong>Total</strong></td>
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</table>

**CHUs = 1.20**  
**AAHUs = 0.02**

**Net Change in AAHUs Due to Project**

A. Future With Project AAHUs = 0.02
B. Future Without Project AAHUs = 4.23
Net Change (FWP - FWOP) = -4.21
IER # 12 - Appendix I (b)

United States Department of the Interior

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

November 26, 2007

Colonel Alvin B. Lee
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee,

Please reference the Individual Environmental Reports (IER) being prepared under the approval of the Council on Environmental Quality (CEQ) that will partially fulfill the U.S. Army Corps of Engineers (Corps) compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347). IERs are a CEQ approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in those IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana. This draft report contains a description of resources in the project area and provides planning objectives and recommendations to minimize project impacts on those resources.

The proposed protection was authorized by Supplemental 4 which directed the Corps to proceed with engineering, design, modification, and construction, where necessary, of the Lake Pontchartrain and Vicinity and the West Bank and Vicinity Hurricane Protection Projects so those projects would provide 100-year hurricane protection. Procedurally, project construction has been authorized in the absence of the report of the Secretary of the Interior that is required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). In this case, the authorization process has prevented our agencies from following the normal procedures for fully complying with the FWCA. The FWCA requires that our Section 2(b) report be made an integral part of any report supporting further project authorization or administrative approval.

Because of the uncertainties regarding the project design, the project's impacts are undetermined at the current stage of planning, therefore, we cannot complete our evaluation of the IER's effects on fish and wildlife resources and cannot entirely fulfill our reporting responsibilities under Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). Accordingly, extensive additional Service involvement during subsequent detailed planning, engineering, design, and construction phase of each IER, along with more-definitive
IER # 12 - Appendix I (b)

project information that will be available during those planning phases, will be required so that
we can fulfill our responsibilities under that Act. Therefore, to fulfill the coordination and
reporting requirements of the FWCA, the Service will be providing post-authorization draft and
final supplemental 2(b) reports to this programmatic report for each IER. Therefore, this report
does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the
FWCA. This report has not been reviewed by the Louisiana Department of Wildlife and
Fisheries (LDWF) or the National Marine Fisheries Service (NMFS) but their comments on this
report will be provided under separate cover.

Should you or your staff have any questions regarding this letter and our attached report, please
contact David Walther (337/291-3122) of this office.

Sincerely,

[Signature]

James F. Boggs
Acting Supervisor
Louisiana Field Office

Attachment

cc: National Marine Fisheries Service, Baton Rouge, LA
    EPA, Dallas, TX
    LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
    LA Dept. of Natural Resources, CMD, Baton Rouge, LA
    LA Dept. of Natural Resources, CRD, Baton Rouge, LA
Draft Fish and Wildlife Coordination Act Report for the Individual Environmental Reports (IER)

Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4)

PROVIDED TO
NEW ORLEANS DISTRICT
U.S. ARMY CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

PREPARED BY
DAVID WALThER
FISH AND WILDLIFE BIOLOGIST

U.S. FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
LAFAYETTE, LOUISIANA
NOVEMBER 2007

U.S. FISH AND WILDLIFE SERVICE – SOUTHEAST REGION
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<tr>
<td>DESCRIPTION OF THE STUDY AREA</td>
<td>9</td>
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EXECUTIVE SUMMARY

The Corps of Engineers New Orleans District (Corps) is preparing Individual Environmental Reports (IER) under the approval of the Council on Environmental Quality (CEQ). Those IERs will partially fulfill the Corps compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347). IERs are CEQ approved alternative arrangements for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in those IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana. This draft report contains a description of resources in the project area and provides planning objectives and recommendations to minimize project impacts on those resources.

The proposed protection was authorized by Supplemental 4 which directed the Corps to proceed with engineering, design, modification, and construction, where necessary, of the Lake Pontchartrain and Vicinity and the West Bank and Vicinity Hurricane Protection Projects so those projects would provide 100-year hurricane protection. Procedurally, project construction has been authorized in the absence of the report of the Secretary of the Interior that is required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). In this case, the authorization process has prevented our agencies from following the normal procedures for fully complying with the FWCA. The FWCA requires that our Section 2(b) report be made an integral part of any report supporting further project authorization or administrative approval.

Because of the uncertainties regarding the project design, the project’s impacts are undetermined at the current stage of planning, therefore, we cannot complete our evaluation of the IER’s effects on fish and wildlife resources and cannot entirely fulfill our reporting responsibilities under Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). Accordingly, extensive additional Service involvement during subsequent detailed planning, engineering, design, and construction phased of each IER, along with more-definitive project information that will be available during those planning phases, will be required so that we can fulfill our responsibilities under that Act. Therefore, to fulfill the coordination and reporting requirements of the FWCA, the Service will be providing post-authorization draft and final supplemental 2(b) reports to this programmatic report for each IER. Therefore, this report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. This report has not been reviewed by the Louisiana Department of Wildlife and Fisheries (LDWF) or the National Marine Fisheries Service (NMFS) but their comments on this report will be provided under separate cover.

This report incorporates and supplements our FWCA Reports that addressed impacts and mitigation features for the Westbank and Vicinity of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the Lake Pontchartrain and Vicinity Hurricane (dated July 25, 1984, and January 17, 1992) Protection projects. Impacts and
mitigation needs resulting from government and contractor provided borrow areas have been addressed in an October 25, 2007, and a November 1, 2007, FWCA reports, respectively. Therefore, this report will not address those borrow impacts and future impacts will be addressed in FWCA supplements to those FWCA reports. In addition, specific recommendations for mitigation will be addressed in separate FWCA reports because mitigation is still within early planning phases and lacks sufficient details to be adequately addressed.

Construction of the increased flood protection would result in un-quantified habitat losses. The Service does not object to providing improved hurricane protection to the Greater New Orleans area provided the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation:

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

2. Minimize enclosure of wetlands with new levee alignments. When enclosing wetlands is unavoidable, acquire non-development easements on those wetlands, or maintain hydrologic connections with adjacent, un-enclosed wetlands to minimize secondary impacts from development and hydrologic alteration.

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

4. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

5. The project’s first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation features.

6. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the Service, NMFS, LDWF, Environmental Protection Agency (EPA) and Louisiana Department of Natural Resources (LDNR). The Service shall be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

7. The Corps should avoid impacts to public lands, if feasible. If not feasible the Corps should establish and continue coordination with agencies managing public lands that may be impacted by a project feature until construction of that feature is complete and prior to any subsequent maintenance. Points of contacts for the agencies potentially impacted by project features are: Kenneth Litzenberger, Project Leader for the Service’s Southeast National Wildlife Refuges and Jack Bohannan (985) 822-2000, Refuge Manager for the Bayou Sauvage National Wildlife Refuge (NWR), Office of State Parks contact Mr. John Lavin at 1-888-677-1400, National Park Service (NPS), contact Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504)
589-3882 extension 128, (david_muth@nps.gov) and for the 404(c) area contact the previously mentioned NPS personnel and Ms. Barbara Keeler (214) 665-6698 with the EPA.

8. If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

9. If mitigation lands are purchased for inclusion within a NWR those lands must meet certain requirements; a summary of some of those requirements is provided in Appendix A. Other land-managing natural resource agencies may have similar requirements that must be met prior to accepting mitigation lands; therefore if they are proposed as a manager of a mitigation site they should be contacted early in the planning phase regarding such requirements.

10. If a proposed project feature is changed significantly or is not implemented within one year of the date of our Endangered Species Act consultation letter, we recommend that the Corps reinitiate coordination with this office to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

11. In general, larger and more numerous openings in a protection levee better maintain estuarine dependent fishery migration. Therefore, as much opening as practicable, in number, size, and diversity of locations should be incorporated into project levees.

12. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable, especially structures located in tidal passes.

13. Flood protection water control structures should remain completely open except during storm events. Management of those structures should be developed in coordination with the Service, NMFS, LDWF, and LDNR.

14. Any flood protection water control structure sited in canals, bayous, or navigation channels that does not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

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

16. Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered.

17. To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet
per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

18. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.

19. Culverts should be installed in construction access roads unless otherwise recommended by the natural resource agencies. At a minimum, there should be one, 24-inch culvert placed every 500 feet and one at natural stream crossings. If the depth of water crossings allow, larger sized culverts should be used. Culvert spacing should be optimized on a case-by-case basis. A culvert may be necessary if the road is less than 500-feet long and an area would hydrologically isolated without that culvert.

20. Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

21. Levee alignments and water control structure alternatives should be selected to avoid the need for fishery organisms to pass through multiple structures (i.e., structures behind structures) to access an area.

22. Operational plans for water control structures should be developed to maximize the cross-sectional area open for as long as possible. Operations to maximize freshwater retention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible and such actions are recommended by the natural resource agencies.

23. The Corps shall fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

24. Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

25. Any proposed change in mitigation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

26. A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the Corps, the Service, NMFS, EPA, LDNR and LDWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.
INTRODUCTION

The Corps of Engineers New Orleans District (Corps) is preparing Individual Environmental Reports (IER) under the approval of the Council on Environmental Quality (CEQ). Those IERs will partially fulfill the Corps compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347). IERs are a CEQ approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in those IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana. This draft report contains a description of resources in the project area and provides planning objectives and recommendations to minimize project impacts on those resources.

Because of the uncertainties regarding the project design, the project's impacts are undetermined at the current stage of planning, therefore, we cannot complete our evaluation of the IER's effects on fish and wildlife resources and cannot entirely fulfill our reporting responsibilities under Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). Therefore, extensive additional Service involvement during subsequent detailed planning, engineering, design, and construction phases of each IER, along with more-definitive project information that will be available during those planning phases, will be required so that we can fulfill our responsibilities under that Act. Therefore, to fulfill the coordination and reporting requirements of the FWCA, the Service will be providing post-authorization draft and final supplemental 2(b) reports to this programmatic report for each IER.

This report incorporates and supplements our FWCA Reports that addressed impacts and mitigation features for the Westbank and Vicinity of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the Lake Pontchartrain and Vicinity Hurricane (dated July 25, 1984, and January 17, 1992) Protection projects. Impacts and mitigation needs resulting from government and contractor provided borrow areas have been addressed in an October 25, 2007, and a November 1, 2007, FWCA reports, respectively, therefore this report will not address those project features. This report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. It has not been reviewed by the Louisiana Department of Wildlife and Fisheries (LDWF) and the National Marine Fisheries Service (NMFS), but their comments on this report will be forwarded under separate cover.

DESCRIPTION OF THE STUDY AREA

The study area is located within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Portions of Jefferson, Orleans, St. Charles, St. Bernard and Plaquemines Parishes are included in the study area. Higher elevations occur on the natural levees of the
Mississippi River and its distributaries. Developed lands are primarily associated with natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development. Federal, State, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. Navigation channels such as the Gulf Intracoastal Waterway and the Mississippi River – Gulf Outlet are also prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals. Extensive wetlands and associated shallow open waters dominate the landscape outside the flood control levees. Major waterbodies include Lake Pontchartrain located north of the project area, the Mississippi River which bisects the project area, and Lake Borgne which is located on the eastern edge of the project area.

**FISH AND WILDLIFE RESOURCES**

**Description of Habitats**

Habitat types in the project area include forested wetlands (i.e., bottomland hardwoods and/or swamps), non-wet bottomland hardwoods, marsh, open water, and developed areas. Due to urban development and a forced-drainage system, the hydrology of most of the forested habitat has been altered. The forced-drainage system has been in operation for many years, and subsidence is evident throughout the areas enclosed by levees.

Wetlands (forested, marsh, and scrub-shrub) within the study area provide plant detritus to adjacent coastal waters and thereby contribute to the production of commercially and recreationally important fishes and shellfishes. Wetlands in the project area also provide valuable water quality functions such as reduction of excessive dissolved nutrient levels, filtering of waterborne contaminants, and removal of suspended sediment. In addition, coastal wetlands buffer storm surges reducing their damaging effect to man-made infrastructure within the coastal area.

Factors that will strongly influence future fish and wildlife resource conditions outside of the protection levees include freshwater input and loss of coastal wetlands. Depending upon the deterioration rate of marshes, the frequency of occasional short-term saltwater events may increase. Under that scenario, tidal action in the project area may increase gradually as the buffering effect of marshes is lost, and use of that area by estuarine-dependent fishes and shellfish tolerant of saltwater conditions would likely increase. Regardless of which of the above factors ultimately has the greatest influence, freshwater wetlands within and adjacent to the project area will probably experience losses due to development, subsidence, and erosion.

The ongoing loss of coastal Louisiana wetlands (approximately 1,149 square miles between 1956 and 2004; average loss rate of 24 square miles per year) was recently exacerbated by Hurricanes Katrina and Rita in 2005. Those hurricanes caused an initial loss of wetlands equivalent to 9 years (approximately 217 square miles) of mean annual losses. Louisiana wetlands provide 26 percent of the seafood landed in the contiguous United States and over 5 million migratory waterfowl utilize those wetlands every year. In addition, those wetlands provide protection to coastal towns, cities and their infrastructure, as well as important infrastructure for the nation’s
oil and gas industry.

Non-wet bottomland hardwoods within the project area also provide habitat for wildlife resources. Between 1932 and 1984, the acreage of bottomland hardwoods in Louisiana declined by 45 percent (Rudis and Birdsey 1986). By 1970, Jefferson Parish was classified as entirely urban or nonforested in the U.S. Forest Service's forest inventory with most of this loss resulting from development within non-wet areas inside the hurricane protection levees. A large percentage of the original bottomland hardwoods within the Mississippi River floodplain in the Deltaic Plain are located within levees. However, losses of that habitat type are not regulated or mitigated with the exception of impacts resulting from Corps projects as required by Section 906(b) of the Water Resources Development Act of 1986.

As previously mentioned, the Service has provided FWCA Reports for the two-subject protection projects. Those reports contain a thorough discussion of the significant fish and wildlife resources (including those habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein but the following brief descriptions are provided to update the previously mentioned information.

**Forested Habitats**

Forested habitats in the study area are divided into two major types: bottomland hardwood forests and cypress-tupelo swamps. Bottomland hardwood forests found in the project area occur primarily on the natural levees of the Mississippi River or former distributary channels. Dominant vegetation may include sugarberry, water oak, live oak, bitter pecan, black willow, American elm, Drummond red maple, Chinese tallow-tree, boxelder, green ash and elderberry. Most bottomland hardwoods that are located within the constructed hurricane protection projects have been degraded by forced drainage and resultant subsidence. Those areas are also often fragmented by development. Conversely, those bottomland hardwoods located outside the protection levees or in areas where structures through the levees maintain a hydrologic connection, still retain many wetland functions and values.

Cypress-tupelo swamps are located along the flanks of larger distributary ridges as a transition zone between bottomland hardwoods and lower-elevation marsh or scrub-shrub habitats. Cypress-tupelo swamps exist where there is little or no salinity, usually minimal daily tidal action and are usually flooded throughout most of the growing season. Bald cypress-tupelum are the dominant vegetation within this habitat type, however, Drummond red maple, green ash, and black willow are also common. Cypress swamps that are within the levee system and under forced drainage are often dominated by bald cypress, but vegetative species more typical of bottomland hardwoods will dominate the under- and mid-story vegetation. These sites will often have ecological functions closer to those of a bottomland hardwood. Because of their altered hydrology, these areas can potentially convert to sites dominated by bottomland hardwood species.
Marshes

Marsh types within the project area include fresh, intermediate, brackish, and saline. Fresh marshes occur at the upper ends of interdistributary basins and are often characterized by floating or semi-floating organic soils and minimal daily tidal action. Vegetation may include maidencane, bulrush, cattail, California bulrush, pennywort, giant cutgrass, American cupscale, spikerushes, bacopa, and alligatorweed. Associated open water habitats may often support extensive beds of floating-leaved and submerged aquatic vegetation including water hyacinth, Salvinia, duckweeds, American lotus, white water lily, water lettuce, coontail, Eurasian milfoil, hydrilla, pondweeds, naiads, fanwort, wild celery, water stargrass, elodea, and others.

Intermediate marshes are a transitional zone between fresh and brackish marshes and are often characterized by organic, semi-floating soils. Typically, intermediate marshes experience low levels of daily tidal action. Salinities are negligible or low throughout much of the year, with salinity peaks occurring during late summer and fall. Vegetation includes saltmeadow cordgrass, deer pea, three-cornered grass, cattail, bulrush, seashore paspalum, wild millet, fall panicum, and bacopa. Ponds and lakes within the intermediate marsh zone often support extensive submerged aquatic vegetation including southern naiad, Eurasian milfoil, and wigeongrass.

Brackish marshes are characterized by low to moderate daily tidal energy and by soils ranging from firm mineral soils to organic semi-floating soils. Freshwater conditions may prevail for several months during early spring; however, low to moderate salinities occur during much of the year, with peak salinities in the late summer or fall. Vegetation is usually dominated by saltmeadow cordgrass, but also includes saltgrass, three-cornered grass, leafy three-square, and deer pea. Shallow brackish marsh ponds occasionally support abundant beds of wigeongrass.

Saline marshes occur along the fringe of the coastal wetlands. Those marshes usually exhibit fairly firm mineral soils and experience moderate to high daily tidal energy. Vegetation is dominated by saltmarsh cordgrass but may also include saltgrass, saltmeadow cordgrass, black needle rush, and leafy three-square. Submerged aquatic vegetation is rare. Within the study area, intertidal mud flats are most common in saline marshes.

Scrub-Shrub Habitats

Scrub-shrub habitat is often found along the flanks of distributary ridges and in marshes altered by spoil deposition or drainage projects. Typically it is bordered by marsh at lower elevations and by developed areas, cypress-tupelo swamp, or bottomland hardwoods at higher elevations. Typical scrub-shrub vegetation includes elderberry, wax myrtle, buttonbush, black willow, Drummond red maple, Chinese tallow-tree, and groundselbush. Some scrub-shrub habitat is an early successional stage of bottomland hardwood forests.

Open-Water Habitats

Open-water habitat within the project area consists of ponds, lakes, canals, bays, and bayous. Natural marsh ponds and lakes are typically shallow, ranging in depth from 6 inches to over 2
feet. Typically, the smaller ponds are shallow and the larger lakes and bays are deeper. In fresh and low-salinity areas, ponds and lakes may support varying amounts of submerged and/or floating-leaved aquatic vegetation. Brackish and, much less frequently, saline marsh ponds and lakes may support wigeongrass beds.

Canals and larger bayous typically range in depth from 4 or 5 feet, to over 15 feet. Strong tidal flows may occur at times through those waterways, especially where they provide hydrologic connections to other large waterbodies. Such canals and bayous may have mud or clay bottoms that range from soft to firm. Dead-end canals and small bayous are typically shallow and their bottoms may be filled in to varying degrees with semi-fluid organic material. Erosion due to wave action and boat wakes, together with shading from overhanging woody vegetation, tends to retard the amount of intertidal marsh vegetation growing along the edges of those waterways.

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

**Developed Areas**

Developed habitats in the study area include residential and commercial areas, as well as roads and existing levees. Those habitats do not support significant wildlife use. Most of the development is located on higher elevations of the Mississippi River natural levees and former distributary channels; however, vast acreages of swamp and marsh have been placed under forced drainage systems and developed. Limited amounts of agricultural lands occur throughout the area; agriculture includes sugarcane farming, cattle production, and haying. Some development in wetlands is also occurring as result of permitted fill activities.

**Fishery/Aquatic Resources**

Drainage canals in the study area do not support significant fishery resources because of dense vegetation, poor water quality, and inadequate depth. Freshwater sport fishes present in the project area, but outside of the levees, include largemouth bass, crappie, bluegill, redbear sunfish, warmouth, channel catfish, and blue catfish. Other fishes likely to be present include yellow bullhead, freshwater drum, bowfin, carp, buffalo, and gar. Estuarine-dependent fishes and shellfishes such as Atlantic croaker, red drum, spot, sand seatout, spotted seatout, southern flounder, Gulf menhaden, striped mullet, brown shrimp, white shrimp, and blue crab are found in the intermediate to saline marshes.

Some of the waterbodies in the project area meet criteria for primary and secondary contact recreation and partially meets criteria for fish and wildlife propagation, while others do not meet the criteria for fish and wildlife propagation. Causes for not fully meeting fish and wildlife propagation criteria include excessive nutrients, organic enrichment, low dissolved oxygen levels, flow and habitat alteration, pathogens and noxious aquatic plants. Indicated sources of
those problems include hydromodification, habitat modification, recreational activities, and unspecified upstream sources. Municipal point sources, urban runoff, storm sewers, and onsite wastewater treatment systems are also known contributors to poor water quality in the area.

Deteriorating water quality in the Barataria Basin, at least partially correlated to wetlands loss and a commensurate reduction in the area's waste assimilation capacity, is a major problem affecting fish and wildlife in that portion of the study area. According to Bahr et al. (1983), factors that currently adversely affect water quality in the Barataria Basin are those generally related to urban development and associated urban pollution, altered land-use patterns, and hydrologic modifications (drainage, etc.) within the watershed. Two major human-related causes of water quality degradation include eutrophication and increased levels of toxic substances.

**Essential Fish Habitat**

Estuarine wetlands and associated shallow waters within the project area have been identified as Essential Fish Habitat (EFH) for both postlarval, juvenile and sub-adult stages of brown shrimp, white shrimp, and red drum, as well as the adult stages of those species in the nearshore and offshore reaches. EFH has also been designated for various life stages of Spanish mackerel, bluefish, cobia, and mangrove snapper in the nearshore, marine-portion of the project area and in the lower portions of the estuary. EFH requirements vary depending upon species and life stage. Categories of EFH in the project area include estuarine emergent wetlands, estuarine water column, submerged aquatic vegetation, and estuarine water bottoms. Detailed information on Federally managed fisheries and their EFH is provided in the 1998 generic amendment of the Fishery Management Plans for the Gulf of Mexico, prepared by the Gulf of Mexico Fishery Management Council (GMFMC). That generic amendment was prepared in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA); (P.L. 104-297). Estuarine-dependent species such as those listed above also serve as prey for other species managed under the MSFCMA by the GMFMC (e.g., red drum, mackerels, snappers, and groupers) and highly migratory species (e.g., billfishes and sharks) managed by the NMFS. Recommendations to minimize and/or avoid impacts to estuarine fishery species were developed by NMFS along with supporting literature and are included in Appendix B.

**Wildlife Resources**

Mammals known to occur in the project-area bottomland hardwoods and marshes include mink, raccoon, swamp rabbit, nutria, river otter, and muskrat. Those habitats also support a variety of birds including herons, egrets, ibises, least bittern, rails, gallinules, olivaceous cormorant, white pelican, pied-billed grebe, black-necked stilt, sandpipers, gulls, and terns. Forested and scrub-shrub habitats within the study area also provide habitat for many resident passerine birds and essential resting areas for many migratory songbirds including warblers, orioles, thrushes, vireos, tanagers, grosbeaks, buntings, flycatchers, and cuckoos. Many of these and other passerine birds have undergone a decline in population primarily due to habitat loss.

Given the extent of development and drainage, waterfowl use within the hurricane protection system is likely minimal, except in the adjacent wetlands outside the levees. Swamps, fresh and
intermediate marshes usually receive greater waterfowl utilization than brackish and saline marshes because they generally provide more waterfowl food. Migratory species expected to occur in the project area include gadwall, green-winged teal, blue-winged teal, northern shoveler, mallard, pintail, American wigeon, lesser scaup, ring-necked duck, redhead, and canvasback. Resident species expected to occur in that area include mottled duck and wood duck.

The study area also supports resident hawks and owls including the red-shouldered hawk, barn owl, common screech owl, great horned owl, and barred owl. The red-tailed hawk, marsh hawk, and American kestrel are seasonal residents which utilize habitats within the study area.

Amphibians such as the pig frog, bullfrog, leopard frog, cricket frog, and Gulf coast toad are expected to occur in the fresh and low salinity wetlands of the project area. Reptiles such as the American alligator, snapping turtle, softshell turtle, red-eared turtle, and diamond backed terrapin are also expected to occur in the project-area wetlands and waterbodies.

**Endangered and Threatened Species**

To aid the Corps in complying with their proactive consultation responsibilities under the Endangered Species Act (ESA), the Service provided a list of threatened and endangered species and their critical habitats within the coastal parishes of the New Orleans District in an August 7, 2006, letter to the Corps. The Service recommends that the Corps conduct ESA consultation on each IER as soon as plans are developed and impact locations are identified. If the plans are changed significantly or relocated, or work is not implemented within 1 year following that coordination, we recommend that the Corps reinitiate coordination with this office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

**Protected Species**

The Migratory Bird Treaty Act (MBTA) (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.) and the Bald and Golden Eagle Protection Act (BGAPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) offer additional protection to many bird species within the project area including colonial nesting birds and the bald eagle (*Haliaeetus leucocephalus*).

The project area is located where colonial nesting waterbirds may be present. LDWF currently maintains a database of these colonies locations. That database is updated primarily by monitoring the colony sites that were previously surveyed during the 1980s. Until a new, comprehensive coast-wide survey is conducted to determine the location of newly-established nesting colonies, we recommend that a qualified biologist inspect the proposed work sites for the presence of undocumented nesting colonies during the nesting season (e.g. February through September depending on the species). If colonies exist work should not be conducted within 1,000 feet of the colony during the nesting season.

Forested habitat in the project-area may provide nesting habitat for the bald eagle, which has officially been removed from the List of Endangered and Threatened Species as of August 8,
2007. Although the bald eagle has been removed from the threatened and endangered species list, it continues to be protected under the MBTA and the BGEPA. The Service developed the National Bald Eagle Management (NBEM) Guidelines to provide landowners, land managers, and others with information and recommendations regarding how to minimize potential project impacts to bald eagles, particularly where such impacts may constitute “disturbance,” which is prohibited by the BGEPA. Those guidelines recommend maintaining: (1) a specified distance between the activity and the nest (buffer area); (2) natural areas (preferably forested) between the activity and nest trees (landscape buffers); and (3) avoiding certain activities during the breeding season. The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest trees and provide for alternative or replacement nest trees. On-site personnel should be informed of the possible presence of nesting bald eagles within the project boundary, and should identify, avoid, and immediately report any such nests to this office. A copy of the NBEM Guidelines is available at: http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf. If after consulting those guidelines you need further assistance in determining the appropriate size and configuration of buffers or the timing of activities in the vicinity of a bald eagle nest, the please contact this office.

National Wildlife Refuges, Parks, 404(c) area

Located within the study area are the Bayou Segnette and the St. Bernard State Parks, which are operated by the Louisiana Department of Culture, Recreation and Tourism, Office of State Parks. Please contact Mr. John Lavin at 1-888-677-1400 regarding work on those areas.

The Barataria Preserve unit of Jean Lafitte National Historical Park and Preserve (JLNHPP) is located on the west bank of the Mississippi River and managed by the National Park Service (NPS). NPS has no authority to enter into agreements with others to allow uses which adversely affect park lands. Therefore, NPS lands cannot be directly utilized or adversely impacted by any flood control project feature unless authorized explicitly by congress. For additional information concerning NPS lands within the area please contact Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov).

An area adjacent to the Jean Lafitte National Historic Park and Preserve (JLNHPP) was subject to an Environmental Protection Agency (EPA) Final Determination under the Clean Water Act (CWA) Section 404(c) in 1985. According to the EPA Final Determination, the discharge of any dredged or fill material within the approximately 3200 acre site, referred to as the Bayou aux Carpes 404(c) area, is restricted. The EPA action allowed for three specific exceptions, none of which appears to apply to the Corps' current hurricane protection proposal. Previous requests which have fallen outside those exceptions have been denied by EPA as being contrary to the CWA 404(c) determination. One such categorical denial prohibited the Corps from altering the alignment of the West Bank Hurricane Protection Levee such that it would encroach upon the Bayou aux Carpes 404(c) area.
The EPA 404(c) action was intended as an advance notification to the public and agencies of the government's determination under the CWA Section 404 for the area, in the sense of planning aid coordination. In light of this existing determination, we would expect the NEPA work on the portion of the levee forming the 404(c) boundary to thoroughly evaluate the range of feasible alternatives and their environmental impacts, as well as documenting the Corps' legal and regulatory authority for any alternative that would entail impacts to the Bayou aux Carpes 404(c) area.

The Bayou aux Carpes 404(c) is one of only 11 such actions ever completed by EPA. Approximately 2,800 acres within the site are in Federal ownership and Congress is considering legislation to adjust the boundary of the Barataria Preserve to include the Bayou aux Carpes within the JLNHP. In the meantime, the National Park Service (NPS) has constructive possession of the area. Therefore, the Corps should contact both the NPS (see contacts above) and EPA (Ms. Barbara Keeler, 214/665-6698) regarding any proposed project feature that may impact that area.

The NPS also has constructive possession of additional Federal lands located adjacent to WBV14c. Congress is considering legislation to adjust the boundary of the Barataria Preserve to also include those lands (i.e., CIT tract) within the JLNHP.

The Service’s Bayou Sauvage National Wildlife Refuge is located in the eastern portion of the project area. The National Wildlife Refuge System Improvement Act of 1997 authorized that no new or expanded use of a refuge may be allowed unless it is first determined to be compatible. A compatibility determination is a written determination signed and dated by the Refuge Manager and Regional Refuge Chief, signifying that a proposed or existing use of a national wildlife refuge is a compatible use or is not a compatible use. A compatible use is defined as a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge. A compatibility determination is only required when the Service has jurisdiction over the use. For example, proposed uses that deal exclusively with air space, navigable waters or overly refuges where another Federal agency has primary jurisdiction over the area, would not be subject to compatibility.

Federal agencies proposing a project that includes features on a national wildlife refuge are encouraged to contact the Refuge Manager early in the planning process. The Refuge Manager will work with the project proponent to determine if the proposed project constitutes a "refuge use" subject to a compatibility determination. If the proposed project requires a compatibility determination, a concise description of the project (refuge use) including who, what, where, when, how and why will be needed to prepare the compatibility determination. In order to determine the anticipated impacts of use, the project proponent may be required to provide sufficient data and information sources to document any short-term, long-term, direct, indirect or cumulative impacts on refuge resources. Compatibility determinations will include a public review and comment before issuing a final determination.
All construction or maintenance activities (e.g., surveys, land clearing, etc.) on a National Wildlife Refuge (NWR) will require the Corps to obtain a Special Use Permit from the Refuge Manager; furthermore, all activities on that NWR must be coordinated with the Refuge Manager. Therefore, we recommend that the Corps request issuance of a Special Use Permit well in advance of conducting any work on the refuge. Please contact Kenneth Litzenberger, Project Leader for the Service's Southeast National Wildlife Refuges and Jack Bohannan (985) 822-2000, Refuge Manager for the Bayou Sauvage National Wildlife Refuge for further information on compatibility of flood control features, and for assistance in obtaining a Special Use Permit. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by the NWR.

If mitigation lands are purchased for inclusion within a NWR, those lands must meet certain requirements; a summary of some of those requirements is provided in Appendix A. Other land-managing natural resource agencies may have similar requirements that must be met prior to accepting mitigation lands; therefore if they are proposed as a manager of a mitigation site they should be contacted early in the planning phase regarding such requirements.

**Future Fish and Wildlife Resources**

The combination of subsidence and sea level rise is called submergence or land sinking. As the land sinks the wetlands become inundated with higher water levels, stressing most non-fresh marsh plants, bottomland hardwood plants and even cypress-tupelo swamps leading to plant death and conversion to open water. Other major causes of wetland losses within the study area include altered hydrology, storms, saltwater intrusion (caused by marine processes invading fresher wetlands), shoreline erosion, herbivory, and development activities including the direct and indirect impacts of dredge and fill (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). The continued conversion of wetlands and forested habitat to open water or developed land represent the most serious fish and wildlife-related problems in the study area. Those losses could be expected to cause significant declines in coastal fish and shellfish production and in the study area’s carrying capacity for numerous migratory waterfowl, wading birds, other migratory birds, alligators, furbearers, and game mammals. Wetland losses will also reduce storm surge protection of developed lands, and will likely contribute to water quality degradation associated with excessive nutrient inputs.

**ALTERNATIVES UNDER CONSIDERATION**

The proposed plan involves upgrading the existing flood protection levees, floodwalls, and floodgates around the Greater New Orleans area. Most improvements will be constructed partially, sometimes entirely, within the existing right-of-way (ROW). However, some proposed closures, i.e., the Inner Harbor Navigation Canal and the Gulf Intracoastal Waterway, would require new construction ROWs and may impact high quality habitats. Some alternatives that have been examined include expanding ROWs into the lower quality habitat side of a levee, utilizing floodwalls so that minimal expansion of ROWs would occur and incorporating subsoil
mixing that would also reduce the expansion of a levee ROW.

PROJECT IMPACTS

The Corps has not yet selected a recommended plan but is continuing to evaluate plans at several levels of protection for each IER. Although some construction will occur in developed areas and on existing levees, project implementation will also directly impact marshes, bottomland hardwoods, swamps, and shrub-scrub areas that provide low to high habitat values for diverse fish and wildlife resources. Project impacts would result primarily from levee rights-of-way (ROW) expansion and construction of levees, borrow pits, floodwalls, navigable floodgates, and associated features.

Development is ongoing within the hurricane protection levees; therefore, the Service has assumed that, for this specific project, project-induced development within enclosed wetlands will be insignificant. However, project impacts to non-wet bottomland hardwoods as a result of flood protection improvements should be mitigated.

To quantify anticipated project impacts to fish and wildlife resources, the Service will use the Wetland Value Assessment (WVA) methodology. The WVA was developed to evaluate restoration projects proposed for funding under Section 303 of the Coastal Wetlands Planning, Protection and Restoration Act. The WVA version utilized in this evaluation was modified by the Louisiana Department of Natural Resources to better determine impacts and mitigation needs in forested wetlands. Further explanation of how impacts/benefits are assessed with WVA and an explanation of the assumptions affecting HISI values for each target year will be available for review at the Fish and Wildlife Service’s (Service) Lafayette, Louisiana, field office. For tidally influenced marshes the National Marine Fisheries Service will have copies of those WVAs at their Baton Rouge, Louisiana office.

FISH AND WILDLIFE CONSERVATION MEASURES

The President’s Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process. Based on current and expected future without-project conditions, the planning goal of the Service is to develop a balanced project, i.e., one that is responsive to demonstrated hurricane protection needs while addressing the co-equal need for fish and wildlife resource conservation.
The Service’s Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of forested wetlands and marsh for fish and wildlife and the relative scarcity of that habitat type, those wetlands are usually designated as Resource Category 2 habitats, the mitigation goal for which is no net loss of in-kind habitat value. The degraded (i.e., non-wet) bottomland hardwood forest and any wet pastures that may be impacted, however, are placed in Resource Category 3 due to their reduced value to wildlife, fisheries and lost/degraded wetland functions. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value. Project impacts to wetlands will be minimized to some extent by hauling in material for the levee. Because the project is already, avoiding the project impacts altogether (i.e., the “no action” alternative) is not feasible. Therefore, remaining project impacts should be mitigated via compensatory replacement of the habitat values lost.

Toward that end, the Service recommends that the following planning objectives be adopted to guide future project studies.

1. Conserve important fish and wildlife habitat (i.e., bottomland hardwoods, cypress swamps, fresh and estuarine marsh and associated shallow open water habitats) by minimizing the acreage of those habitats directly affected by flood control features.

2. Minimize enclosure of wetlands with new levee alignments. When enclosing wetlands is unavoidable, acquire non-development easements on those wetlands, or maintain hydrologic connections with adjacent, un-enclosed wetlands to minimize secondary impacts from development and hydrologic alteration.

3. Operate water control structures in levees to allow for (or maintain) fish and shellfish access into enclosed wetland areas.

4. Avoid adverse impacts to bald eagle nesting locations and wading bird colonies through careful design of levees, other project features and timing of construction.

5. Fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

**SERVICE POSITION AND RECOMMENDATIONS**

Construction of the increased flood protection would result in un-quantified habitat losses. The Service does not object to providing improved hurricane protection to the Greater New Orleans area provided the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation:

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

2. Minimize enclosure of wetlands with new levee alignments. When enclosing wetlands is unavoidable, acquire non-development easements on those wetlands, or maintain hydrologic connections with adjacent, un-enclosed wetlands to minimize secondary impacts from development and hydrologic alteration.

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

4. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

5. The project’s first Project Cooperation Agreement (or similar document) should include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation features.

6. Further detailed planning of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, or other similar documents) should be coordinated with the Service, NMFS, LDWF, Environmental Protection Agency (EPA) and Louisiana Department of Natural Resources (LDNR). The Service shall be provided an opportunity to review and submit recommendations on the all work addressed in those reports.

7. The Corps should avoid impacts to public lands, if feasible. If not feasible the Corps should establish and continue coordination with agencies managing public lands that may be impacted by a project feature until construction of that feature is complete and prior to any subsequent maintenance. Points of contacts for the agencies potentially impacted by project features are: Kenneth Litzenberger, Project Leader for the Service’s Southeast National Wildlife Refuges and Jack Bohannan (985) 822-2000, Refuge Manager for the Bayou Sauvage National Wildlife Refuge (NWR), Office of State Parks contact Mr. John Lavin at 1-888-677-1400, National Park Service (NPS), contact Superintendent David Luchsinger, (504) 589-3882 extension 137 (david_luchsinger@nps.gov) or Chief of Resource Management David Muth (504) 589-3882 extension 128, (david_muth@nps.gov) and for the 404(c) area contact the previously mentioned NPS personnel and Ms. Barbara Keeler (214) 665-6698 with the EPA.

8. If applicable, a General Plan should be developed by the Corps, the Service, and the managing natural resource agency in accordance with Section 3(b) of the FWCA for mitigation lands.

9. If mitigation lands are purchased for inclusion within a NWR those lands must meet certain requirements; a summary of some of those requirements is provided in Appendix A. Other land-managing natural resource agencies may have similar requirements that must be met prior to accepting mitigation lands; therefore if they are proposed as a manager of a mitigation site they should be contacted early in the planning phase regarding such requirements.
10. If a proposed project feature is changed significantly or is not implemented within one year of the date of our Endangered Species Act consultation letter, we recommend that the Corps reinitiate coordination with this office to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

11. In general, larger and more numerous openings in a protection levee better maintain estuarine dependent fishery migration. Therefore, as much opening as practicable, in number, size, and diversity of locations should be incorporated into project levees.

12. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable, especially structures located in tidal passes.

13. Flood protection water control structures should remain completely open except during storm events. Management of those structures should be developed in coordination with the Service, NMFS, LDWF, and LDNR.

14. Any flood protection water control structure sited in canals, bayous, or navigation channels that does not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

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

16. Flood protection structures within a waterway should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered.

17. To the maximum extent practicable, structures should be designed and/or selected and installed such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet per second. However, this may not necessarily be applicable to tidal passes or other similar major exchange points.

18. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.

19. Culverts should be installed in construction access roads unless otherwise recommended by the natural resource agencies. At a minimum, there should be one, 24-inch culvert placed every 500 feet and one at natural stream crossings. If the depth of water crossings allow, larger sized culverts should be used. Culvert spacing should be optimized on a case-by-case basis. A culvert may be necessary if the road is less than 500-feet long and an area would hydrologically isolated without that culvert.
20. Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.

21. Levee alignments and water control structure alternatives should be selected to avoid the need for fishery organisms to pass through multiple structures (i.e., structures behind structures) to access an area.

22. Operational plans for water control structures should be developed to maximize the cross-sectional area open for as long as possible. Operations to maximize freshwater retention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible, and such actions are recommended by the natural resource agencies.

23. The Corps shall fully compensate for any unavoidable losses of wetland habitat or non-wet bottomland hardwoods caused by project features.

24. Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.

25. Any proposed change in mitigation features or plans should be coordinated in advance with the Service, NMFS, LDWF, EPA and LDNR.

26. A report documenting the status of mitigation implementation and maintenance should be prepared every three years by the managing agency and provided to the Corps, the Service, NMFS, EPA, LDNR and LDWF. That report should also describe future management activities, and identify any proposed changes to the existing management plan.
LITERATURE CITED


APPENDIX A

Summary of basic mitigation land requirements before land is transferred to the U.S. Fish and Wildlife Service

SUBJECT: Revised Summary of basic mitigation land requirements before land is transferred over to the Service.

The following represents a summary of basic mitigation land requirements before land is transferred over to the Service. This does not necessarily represent a comprehensive list, but does represent our best effort to identify all land requirements within reason.

1. For inclusion into the National Wildlife Refuge (NWR) system the lands must be located within a refuge’s acquisition boundary.

2. The Service must be provided copies of any easements/agreements for right-of-way on the property especially as it pertains to maintenance of such right-of-way, frequency of maintenance and costs associated with that maintenance if the maintenance is to be preformed by the landowner.

3. The area must be surveyed prior to acquisition by the United States or transfer to the Fish and Wildlife Service. The survey will be conducted by the Corps of Engineers (Corps) or an approved contractor. Boundaries must be marked and permanent monuments set at all corners. Copies of the surveyor notes, plats, etc. resulting from such survey must be provided to Service.

4. Language must be placed in the deed dedicating the mitigation land to fish and wildlife conservation in perpetuity.

5. When possible any restrictive covenants or liens shall be removed, especially if they could interfere with mitigation implementation, operation and/or maintenance.

6. Completion of a Level 1 survey for hazardous, toxic, and/or radioactive wastes with a copy being provided to the Service. If the Level 1 survey indicates the need for further investigations/surveys, those investigations/surveys must be completed and a copy provided to the Service. Lands having unremediated hazardous, toxic, and/or radioactive wastes present may not be accepted into a NWR. Remediated sites will be assessed for inclusion on a case-by-case basis. Documentation of the level of remediation is to be provided to the Service.

7. Funding mechanism for operation and maintenance of the mitigation lands and mitigation features (e.g., water control structures, timber stand improvements, etc.).

8. Documentation must be provided to the Service describing the mitigation goals and objectives in addition to a description of necessary operation and maintenance activities needed to accomplish the stated goals and objectives.
9. Mineral rights should be purchased. If it is not possible to purchase, then protection of surface rights via the following language:

"The vendors reserve for themselves, their successors and assigns, the right to explore, for, operate, produce, remove and transport, oil and gas from the lands herein described. The vendors reserve unto themselves, their successors and assigns, the right of ingress and egress over the said lands in pursuance of the reservations set forth above.

The land is now subject to oil and gas lease in favor of ______________________, as per lease of record in the records of ______________________, pages ___________ of Book ______________________, and the conveyance is subject to the rights of the lessee in said lease.

The oil and gas reservations made by the vendors herein in favor of themselves, their successors and assigns, shall be subject to the following stipulations, and any lease made by the vendors, their successors or assigns, subsequent to the date of this deed, shall contain the following stipulations for the protection of the vendee.

The vendors, their successors and assigns, agree that prior to entry upon the land for purposes of exploration, development or production of, oil and/or gas, they shall obtain a Special Use Permit from the U.S. Fish and Wildlife Service, which permit is for the purpose of providing for access and protecting the natural resources of the area for which the land was acquired, and whose terms and conditions will not unreasonably restrain the activities of the vendors, and their successors and assigns.

It is mutually understood between the parties that the intention of the Government in acquiring this area is to create a refuge for, and the protection of, wildlife in the area herein acquired, and the vendors will conform to, and be governed by, and the vendors herein bind themselves, their successors and assigns, agents and employees, to conform to, and be governed by, the rules and regulations pertaining to the protection of wildlife and refuge administration prescribed from time to time by the Secretary of the Interior or his/her authorized agent, the Director of Fish and Wildlife Service, except that such regulations shall not unreasonably restrain the exercise and use by the vendors, their successors and assigns, of the reservation set out in this agreement."

10. The Service would need a title commitment and policy in favor of United States of America that is in the American Land Title Association (ALTA) U.S. Policy 9/28/91 format as provided in Title Standards 2001.

If the title remains with the local-sharer or the Corps a General Plan as provided for under Section 3 of the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 et seq.) must be written. However, the Service may chose to not manage lands for which it does not have title.
APPENDIX B

National Marine Fisheries Service Baton Rouge Field Office

Recommendations for Fisheries Friendly Design and Operation of Hurricane and Flood Protection Water Control Structures and Supporting Appendices

SUMMARY

The purpose of this document is to: 1) identify design and operational guiding principles that would optimize passage of estuarine dependent marine fisheries species, or at least, minimize adverse impacts to their passage through hurricane and flood protection water control structures planned for the New Orleans District of the U.S. Army Corps of Engineers; and, 2) provide background literature for environmental justification and documentation. Specific projects for which this guidance should be considered include the Mississippi River and Tributaries, Morganza to the Gulf of Mexico Hurricane Protection Project; Donaldsonville to the Gulf Project; Supplemental Appropriations Projects, and the Louisiana Coastal Protection and Restoration Project (LACPR). However, these guiding principles would also pertain to any civil works projects that could include combinations of levees and/or water control structures. Project delivery teams should remain flexible to adapt these design principles on a case-by-case basis as new fishery resource information and project-specific hydraulics data become available.

In general, the ability of estuarine dependent marine fishery organisms to migrate to and from coastal habitats decreases as structural restrictions increase, thereby reducing fishery production. The physical ability (i.e., swimming speed) to navigate through a structure is not the only factor influencing fish passage. Both behavioral and physical responses govern migration and affect passage of fishery organisms through structures. These responses may vary by species and life stage. In addition, most marine fishery species are relatively planktonic in early life stages and are dependent on tidal movement to access coastal marsh nurseries areas. For this reason, in general, the greater the flow through a structure into a hydrologically affected wetland area, the greater the marine fishery production functions provided by that area.

Data on marine fishery species migrations in the Gulf of Mexico are too limited to allow the development of definitive design and operational considerations for water control structures that would guarantee the protection of marine fishery production. Anecdotal comparisons can be made with data from water intake and fish passage studies from the west and east coasts. It should not be assumed that structures that have been determined to provide sufficient drainage capacity also optimize or provide adequate fishery passage. More investigation is warranted to refine and adaptively manage water control structure design and operations to minimize adverse impacts to fishery passage. Case specific recommendations for some features under the Mississippi Tributaries, Morganza to the Gulf of Mexico Hurricane Protection Project and LACPR are provided in the appendices. In addition, biological background information is provided in the appendices to assist in preparation of environmental documents required by the National Environmental Policy Act (NEPA).
Summary of guiding principles for designing and operating flood protection water control structures to maintain marine fishery passage:

- Generally, bigger and more numerous openings in hurricane and flood protection levees better maintain estuarine dependent fishery migration. As much opening as practicable, in number, size, and diversity of location should be considered.
- Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable, especially structures located in tidal passes.
- Flood protection water control structures should remain completely open except during storm events.
- Any flood protection water control structure sited in canals, bayous, or navigation channels that do not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.
- The number and siting of openings in flood protection levees should be optimized to minimize the migratory distance from the opening to enclosed wetland habitats.
- Structures should include shoreline baffles and/or ramps (e.g., rock nibble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered.
- To the maximum extent practicable, structures should be designed and/or culverts selected such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet/second. This may not necessarily be applicable to tidal passes or other similar major exchange points.
- To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.
- Culverts should be installed in construction access roads unless otherwise recommended by the natural resource agencies. At a minimum, there should be one, 24-inch culvert placed every 500 feet and at natural stream crossings. If the depth of water crossings allow, larger sized culverts should be used. Culvert spacing should be optimized on a case-by-case basis. A culvert may be necessary if the road is less than 500-feet long and an area would hydrologically isolated without that culvert.
- Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.
- Levee alignments and water control structure alternatives should be selected to avoid the need for fishery organisms to pass through multiple structures (i.e., structures behind structures) to access an area.
- Operational plans should be developed to maximize the cross-sectional area open for as long as possible. Operations to maximize freshwater retention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible and such actions are recommended by the natural resource agencies.
INTRODUCTION

Various flood protection and environmental water control structures in hurricane protection levees are being designed and considered for inclusion with ongoing local and federal civil works projects within the boundaries of the New Orleans District. Design purposes of the structures vary and may include maintaining safe navigation and optimizing drainage and passage of fishery organisms. For the Morganza to the Gulf of Mexico hurricane protection project, an interagency Habitat Evaluation Team (HET) and NOAA's National Marine Fisheries Service (NMFS) identified economically important fishery species that should be considered when assessing structure impacts on estuarine fisheries migration. Both the federal and state governments manage some of these species. Primary species that could be affected by flood protection structures in Louisiana include brown shrimp, white shrimp, blue crab, red drum, black drum, spotted seatrout, sand seatrout, southern flounder, and gulf menhaden. Some information is included herein on forage species, the production of which is important to maintain as they serve as important links of the aquatic food web for many of the managed fishery species.

The Baton Rouge office of NMFS has developed preliminary design principles for hurricane and flood protection water control structures to reduce impacts to living marine resources, especially related to migrations of estuarine dependent species. The basis for the following recommended guiding principles is briefly discussed where supporting literature is available. Case specific examples for some features under the Mississippi River and Tributaries, Morganza to the Gulf of Mexico hurricane protection project and the Louisiana Coastal Protection and Restoration Project are provided in the appendices. Basic behavior and physiology effects on the passage of fishery organisms are discussed in detail in appendices C and D, to aid federal agencies in environmental evaluations and descriptions under NEPA.

This document has been developed in consideration of input from the interagency HET, university faculty, fish passage staff of various agencies, and cursory literature reviews. These design considerations are intended to address potential impacts to living marine resources pursuant to the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act. Impacts to resources managed under other authorities, such as the Endangered Species Act or the Marine Mammal Protection Act, are not addressed in this document.

GUIDING PRINCIPLES FOR DESIGNING FISHERIES FRIENDLY FLOOD PROTECTION WATER CONTROL STRUCTURES

1. Generally, bigger and more numerous openings in hurricane and flood protection levees better maintain estuarine dependent fishery migration. As much opening as practicable, in number, size, and diversity of location should be considered.

Most of Louisiana's commercial and recreational fishery species must have access to estuarine marshes to successfully complete some part of their life cycle (i.e., they are estuarine-dependent). Estuarine-dependent fishery productivity is a measure of standing crop (the number of fishery organisms present at a point in time) and the turnover rate (the rate at which the population is
replaced). All things being equal, fishery production would be lower following levee and water control construction if structures retard turnover rate. This would be the case even while standing crop may appear normal. Restrictions in tidal movement caused by water control structures and levees would result in degraded or substantially changed species composition, which could alter fishery production and/or displace fisheries.

Marine transient species emigrate (i.e., move from coastal marshes towards Gulf waters) towards higher salinity water; therefore, a structure that maintains the greatest degree of opening while allowing the project objectives to be met would be desirable (Rogers et al. 1992).

2. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable, especially structures located in tidal passes.

Water control structures should be designed to have a water flow capacity (and similar dimensions where possible) comparable to the waterway before construction. Restricted water exchange in marshes enclosed by levees and water control structures diminishes recruitment and standing stocks of species that must migrate from coastal spawning sites to marsh nurseries (Rogers et al. 1994). As the amount of hydrologic control increases, the effect on migration and production of marine transients and residents increases. Greater restriction decreases turn over rate of estuarine-dependent fishery organisms, which decreases their production (Rogers et al. 1992a). Slotted and fixed crest weirs have been found to delay immigration. As the degree of restriction increased from slotted weirs, to low elevation weir, and to fixed crest weirs, greater impacts to different fishery species and their emigration were observed.

Design considerations for hurricane and flood protection water control structures should include features to accommodate vertical and horizontal fishery distribution patterns within interior marsh tidal pathways and coastal passes. Fishery organisms exhibit preferences by species, life stage, and in some cases tide cycle, for vertical and horizontal distribution within smaller or interior marsh tidal connections (Table 1). Behavioral and physiological responses, such as diel vertical migration, affect these preferred distribution patterns.

Study of Keith Lake Pass in Texas revealed that all portions of the water column, both vertically and horizontally, are used by fishery organisms (Hartman et al. 1987). Most estuarine-dependent fishery species preferred the bottom or shore zones during flood tides, but were much denser near the shores of the pass, in slower moving water, on ebb tide. This lateral movement on slack to ebb tides appears to be a behavioral action to prevent displacement from the pass during ebb tide to accelerate movement to marsh nursery areas. The study identified the response to light cycles with midday densities greatest at bottom and densities greatest at surface during dawn to dusk. Similar within pass distribution patterns were reported by Sabins and Truesdale at Grand Isle, Louisiana (1974).

Table 1. Table on fishery preference within the water column (Marotz et al. 1990; Herke and Rogers 1985; Hartman et al. 1987; Sabins and Truesdale 1974). "**" denotes juveniles; "**n" denotes immigrating; "*m" denotes emigrating; "*n" denotes ebb tide; "**" denotes flood tide.
<table>
<thead>
<tr>
<th>Species</th>
<th>Vertical Distribution</th>
<th>Horizontal Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Surface</td>
<td>Mid-depth</td>
</tr>
<tr>
<td>brown shrimp (^b)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>white shrimp (^b)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>white shrimp (^c)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>blue crab</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>red drum (^b)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>red drum (^b)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>red drum (^c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bay anchovy</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>striped mullet</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Atlantic croaker (^a)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Atlantic croaker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spotted seatrout</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>sand seatrout</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>gulf menhaden</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>southern flounder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>black drum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Flood protection water control structures should remain completely open except during storm events.

Fish passage should be optimized by the duration that structures remain fully open. Rozas and Minello (1999) reported that even when water-control structures were open, the densities of transient species were low inside areas enclosed by levees and water control structures as compared to natural areas.

Fisheries migration that temporarily may be impacted with storm related closures are listed in Table 2. The degree of impact would be influenced by the timing and duration of a structure closure relative to peak migration.

Table 2. Migration of economically important fisheries in Louisiana that temporarily may be impacted with storm related closures.

<table>
<thead>
<tr>
<th>Species</th>
<th>Migration Period Overlapping with Hurricane Season</th>
</tr>
</thead>
<tbody>
<tr>
<td>brown shrimp</td>
<td>April - mid July</td>
</tr>
<tr>
<td>white shrimp</td>
<td>July - November</td>
</tr>
<tr>
<td>blue crab</td>
<td>June - September</td>
</tr>
<tr>
<td>spotted seatrout</td>
<td>April - October</td>
</tr>
<tr>
<td>sand seatrout</td>
<td>April - October</td>
</tr>
<tr>
<td>red drum</td>
<td>August - December</td>
</tr>
<tr>
<td>black drum</td>
<td>March - July</td>
</tr>
<tr>
<td>southern flounder</td>
<td>September - October</td>
</tr>
</tbody>
</table>

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4. Any flood protection water control structures sited in canals, bayous, or navigation channels that do not maintain the pre-project cross section should be designed and operated with multiple openings within the structure. This should include openings near both sides of the channel as well as an opening in the center of the channel that extends to the bottom.

Hartman et al. (1987) recommended structures not be constructed in a tidal pass. If a structure was constructed, they recommended the incorporation of several gates at several vertical and horizontal locations, with baffles near shore. Baffles near shore are to direct shore or near shore fish passage on ebb tidies through the available structure opening(s) (e.g., gates in wing walls).

Structures should be designed and operated with multiple openings if the pre-project water depth and widths of a channel are not maintained. Multiple openings are necessary to optimize passage of fishery organisms that prefer to migrate along the sides, bottom, and top of channels. For example, Rogers et al. (1992) recommended opening some vertical slots and top, middle, and bottom gates in a structure with multiple slots and gates.

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

The location and number of structures likely affects the abundance and distribution of estuarine fishery species within habitats that would be located on the protected side of levees and water control structures. Rogers et al. (1992) determined that marine transient species were most numerous nearest the structures, partially due to the proximity of the openings with respect to the area enclosed. Similarly, other studies have shown there is a decrease in fishery species abundance and diversity the greater the distance from the access point (Peterson and Turner 1994). This can become more pronounced if an environmental gradient (e.g., salinity) exists between an access point and the interior habitat located on the protected side of structures (Cashner 1994).

6. Structures should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered.

Study of Keith Lake Pass in Texas revealed vertical and horizontal distribution patterns of fishery organisms in the pass (Hartman et al. 1987). Estuarine-dependent fishery organisms preferred the bottom or near shore zones on flood tides. Most organisms appeared near shores of the pass on ebb tide in slower moving water. Baffles near shore are to direct shore or near shore fish passage through the structure.

Many fish migrate along the water bottom. Water control structures with crests or inverters higher than the lower portion of a channel could impede migration through the deep-water portions of channels. Ramps can provide a means to guide organisms over and through structures and increase access of fisheries organisms to enclosed habitat (Lafleur 1994). Various ramp designs
need to be investigated.

7. To the maximum extent practicable, structures should be designed and/or culverts selected such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet/second.

In this preliminary investigation, no studies were located that evaluated the impacts of swimming speeds for the fishery species and life stages of concern in Louisiana. To avoid preventing or reducing ingress or egress of fishery organisms, preliminary guidance on water velocities through structures in Louisiana could be based on anecdotal comparisons with data available on general swimming speeds from studies on the west and east coasts (Tables 3 and 4).

Swimming speeds of estuarine and marine fish and crustaceans is a function of shape, stage of development, length, ambient temperature, light, and duration required for swimming performance. For most species, absolute speed increases as size increases. Generally, fish swimming speeds range from 2-4 body lengths/second with burst speeds up to 5 body lengths/second (Meyers et al. 1986).

Water intake studies have shown that maintaining water velocities less than 0.5 ft/sec would protect most fish and their life stages from being adversely affected by those flows (USEPA 2004). The species and life stages of fish for that study could not be located at this time and further investigation for Gulf of Mexico species is warranted. They also recommended creating horizontal velocity fields to avoid adverse affects on fish because fish are able to orient to horizontal versus vertical flow. This could allow selective avoidance of water flows not preferred by fish or minimize disorientation or mortality rates caused by flows.

Eberhardt (personal communication) reported velocities exceeding 0.82 feet/second began to impede fish passage. Fish passage was decreased by 50% for velocities exceeding 2.6 feet/second. Based on evaluation of freshwater species, Gardner (2006) recommends keeping velocities through round culverts less than 1.8 ft/sec during 90% of the fish migration season. To improve fish passage through culverts, installing baffles within culverts should be considered to reduce flow velocity barriers for fish (Pacific Watershed Associates 1994).

Table 3. Water flow velocity thresholds for affecting fish passage or avoiding impingement within flows or on screens.

<table>
<thead>
<tr>
<th>Source</th>
<th>Water Flow Velocity (ft/sec)</th>
<th>Effect on Fish Passage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alyson Eberhardt, personal communication</td>
<td>0.82</td>
<td>Begin to impede</td>
</tr>
<tr>
<td></td>
<td>2.62</td>
<td>Decreased fish passage by 50%</td>
</tr>
<tr>
<td>Gardner 2006</td>
<td>1.8</td>
<td>Critical velocity (freshwater fish)</td>
</tr>
<tr>
<td>Meyers et al. 1986</td>
<td>&lt;0.49</td>
<td>To avoid impingement</td>
</tr>
</tbody>
</table>
Table 4. Sustained fish swimming speeds. Adapted from Meyers et al. (1986). Note that no data was located for the fisheries species and life stages for the Gulf of Mexico.

<table>
<thead>
<tr>
<th>Fish/life stage</th>
<th>Swimming Speeds (ft/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic herring</td>
<td>0.19 - 0.3</td>
</tr>
<tr>
<td>Mullet</td>
<td>4.19</td>
</tr>
<tr>
<td>Horse mackerel</td>
<td>4.46</td>
</tr>
<tr>
<td>Sole</td>
<td>0.19 - 0.3</td>
</tr>
<tr>
<td>Most larvae</td>
<td>0.82 - 0.98</td>
</tr>
</tbody>
</table>

Based on these limited data, larval fish could be adversely impacted by water flow rates exceeding 0.82 feet/second. Post-larval and juvenile stages of flounders could be impacted by flow rates around 1.0 ft/sec. Other species or larger life stages likely would not be adversely impacted until flow rates exceed 2.62 feet/second based on inferences from these data. Water flow velocity monitoring in the Terrebonne Basin by the U.S. Fish and Wildlife Service has found maximum flows through existing open channels exceeding 1.0 feet/second and in larger saline marsh channels and passes exceeding 2.0 feet/second.

If the spatial extent of flow velocity fields exceed the distance that can be traveled with sustained or burst swimming speeds of fishery organisms, those flows could prevent or reduce ingress or egress during the time which those flows exist. However, the degree of mortality from not being able to access nursery and foraging habitat is not known. High flow rates may aid passage of larval fish that primarily depend on passive transport for migratory distribution and access to estuarine habitat on the protected side of levees, if the high flows do not induce mortality from injury or fatigue. Water flow could exceed the fish swimming rates for short periods and still provide passage during low flows or during still water.

8. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.

Design considerations should include installing baffles within culverts to reduce flow velocity barriers (Pacific Watershed Associates 1994). Passage of salmon and herring species has been shown to be impaired by culverts. With baffles or other similar features, still water areas could be created to enhance fish passage.

If water control structures include plunge pools, the invert elevation of the structure could be equal to the depth of the plunge pool if the plunge pool is deeper than the pre-project water depth. This deeper invert would optimize passage of fisheries species, in particular bottom dweller species.

Fish often require visual cues for orientation and exhibit faster swimming speeds at increased
light levels. Herring type fish (e.g., gulf menhaden) are particularly sensitive to light levels. However, although herring exhibited a preference for unshaded portions of treatments during both day and night periods, as little as 1.4% of the ambient light was necessary for their passage through a culvert (Mosser and Terra 1999).

9. Culverts should be installed in construction access roads unless otherwise recommended by the resource agencies. At a minimum, there should be one, 24-inch culvert placed every 500 feet and at all water crossings. If the depth of water crossings allow, larger sized culverts should be used. Culvert spacing should be optimized on a case-by-case basis. A culvert may be necessary, even if the road is less than 500 feet long, if an area would be hydrologically isolated without that culvert.

10. Water control structures should be designed to allow rapid opening in the absence of an onsite power source after storm passage and return of normal water levels.

Regardless of structure size, designs and contingency plans should include means to rapidly open the water control structures when flooding risks subside after a storm. Designs and plans should include infrastructure, equipment, and staff necessary to open the structures even if onsite electricity is not available. Design safeguards should be developed to protect the structures from being damaged rendering them inoperable and locked in a closed configuration after passage of a storm.

11. Levee alignment and water control structure alternatives should be selected to avoid the need for fishery organisms to pass through multiple structures (i.e., structures behind structures) to access an area.

12. Operational plans should be developed to maximize the cross-sectional area open for as long as possible. Operations to maximize freshwater retention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible and such actions are recommended by the natural resource agencies.
LITERATURE CITED


APPENDIX C

BEHAVIOR

The physical ability (i.e., swimming speed) to navigate a structure is not the only factor influencing fish passage, especially for small structures. Behavioral responses to stimuli individually or interactively affect passage with physiological constraints or responses. Behavior generally can be categorized as schooling and non-schooling behavior.

SCHOOLING BEHAVIOR

Schooling behavior consists of strategies that provide hydrodynamic efficiency, reduced predation, increased efficiency in finding food, and increased reproductive success. Water control structures for flood protection impact large numbers of fishery organisms due to this group response. This could be because fish exhibit the tendency to approach and orient to other members of the species (i.e., bioaxis). This orientation confers a hydrodynamic advantage that is more efficient than individuals due primarily to vortices setup by lead fish. Schools function as a living organism where the group reacts to stimuli as an individual. It is this group reaction

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that influences greater affect on passage through water control structures.

NON-SCHOOLING BEHAVIOR
Agonistic, territorial, and hierarchical behaviors are examples of non-schooling behavior exhibited by fish. Agonistic and territorial behaviors are largely unknown for the listed estuarine and marine fishery species of concern and their life stages. Structures that create physically taxing water flow velocities and some low flow areas may encourage these behaviors as fish compete for resting areas similar to competition seen with fish competing for resting areas within shrimp trawls or behind rocks in river riffle/pool habitat. It is possible these behavioral responses overall may not be that influential on fish passage through a structure, but may come more into play during low flow conditions such as lower tides or slack tide. Hierarchical behavior can often be driven by a combination of physiological responses and will be discussed in that section. Overall, investigation on behavioral responses to water control structures is needed to avoid and minimize adversely impacting fishery passage if not optimizing it.

APPENDIX D

PHYSIOLOGICAL
Fishery species and life stages react differently to a current of water (i.e., rheotaxis). Generally, fish are better able to orient to horizontal verses vertical flow (Meyers et al. 1986).

Locomotion
There are two means for migratory transport of estuarine and marine fish and crustaceans: passive and active transport. Passive transport is drift of organisms carried by the tides and currents. Larval and post-larval fish and crustacean life stages are predominately transported passively by tides and currents. Passive transport via tidal forcing can play a strong role in migration of sub-adult and adult brown shrimp, white shrimp, and blue crabs. Active transport is movement by swimming, which is the primary means of locomotion for sub-adults and adult fish.

SWIMMING SPEED
Refer to guiding principles number 7 for details on swimming speeds relative to impacts on fish passage.

BEHAVIORAL/PHYSIOLOGY INTERACTION
Many fishery organisms exhibit hierarchical behavior. This is a direct response to stimuli, such as astronomical (e.g., tidal rhythm) or meteorological driven flows. For example, brown shrimp mediate transport by circadian or diel vertical migration. Brown shrimp move down in the water column or cease activity as the become negatively buoyant when low salinity and temperature water develop in estuaries with north winds associated with spring frontal. Brown shrimp activity resumes with their movement up in the water column with increasing water temperature, salinity, and hydrostatic pressure associated with the southerly gulf return following after a cold front (Rogers et al. 1993). Similar selective tidal stream transport was reported by Hartman et al. (1987). Fishery organisms identify tide changes by detecting altered velocity, salinity,
temperature, all of which can cue staging for immigration with an incoming tide. Future tidal pass or inlet studies are needed for better information on vertical distribution, depth preferences, and changes in buoyancy or behavior to evaluate active and passive transport of fishery organisms.

APPENDIX E

Reference Websites, Fish Passage Agency Representatives, and University Faculty

http://www.niwascience.co.nz/pubs/wa/11-2/passage

USACE Portland District, Fish Passage Team
http://www.nwp.usace.army.mil/pm/e/en_fish.asp

USACE, ERDC, Coastal Hydraulics Lab

USFWS Fish Passage Decision Support System
http://fpdss.fws.gov/index.jsp

NC State's Center for Transportation and the Environment website:
http://www.itre.ncsu.edu/
http://itre.ncsu.edu/CTE/gateway/downloads/FishPassage.pdf

FishXing software and learning systems for fish passage through culverts. This software is intended to assist engineers, hydrologists, and fish biologists in the evaluation and design of culverts for fish passage. It is free and available for download.
http://stream.fs.fed.us/fishxing/

- Allows for comparison of multiple culverts designs within a single project.
- Calculates hydraulic conditions within circular, box, pipe-arch, open-bottom arch, and embedded culverts.
- Contains default swimming abilities for numerous North American fish species.
- Contains three different options for defining tailwater elevations.
- Calculates water surface profiles through the culvert using gradually varied flow equations, including hydraulic jumps.
• Outputs tables and graphs summarizing the water velocities, water depths, outlet conditions, and lists the limiting fish passage conditions for each culvert.

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University of Texas Marine Science Institute
Lee Fuiman; lee@utmsi.utexas.edu
APPENDIX C
LATIN NAMES FOR SOME SPECIES DISCUSSED IN THE REPORT
AND/OR FOUND IN THE PROJECT AREA

PLANTS

American sycamore  
Black willow  
Box elder  
Chinese tallow-tree  
Cypress  
Eastern cottonwood  
Green ash  
Overcup oak  
Red maple  
Red mulberry  
Roughleaf dogwood  
Sugarberry  
Sweet pecan  
Water oak  
Willow oak  

Platanus occidentalis  
Saltix nigra  
Acer negundo  
Triadica sebifera  
Taxodium distichum  
Populus deltoides  
Fraxinus pennsylvanica  
Quercus lyrata  
Acer rubrum  
Morus rubra  
Cornus drummondi  
Celtis laevigata  
Carya illinoinsis  
Quercus nigra  
Quercus phellos

FISH

Banded pygmy sunfish  
Bigmouth buffalo  
Black crappie  
Blue catfish  
Bluegill  
Blue sucker  
Brook silverside  
Bullhead minnow  
Channel catfish  
Chub shiner  
Common carp  
Dollar sunfish  
Dusky darter  
Emerald shiner  
Flathead catfish  
Freshwater drum  
Ghost shiner  
Gizzard shad  
Golden shiner  
Golden topminnow  

Elassoma zonatum  
Ictiobus cyprinellus  
Pomoxis nigromaculatus  
Ictalurus furcatus  
Lepomis macrochirus  
Cycleptus elongates  
Labidesthes sicculus  
Pimephales vigilax  
Ictalurus punctatus  
Notropis poitieri  
Cyprinus carpio  
Lepomis marginatus  
Percina sciera  
Notropis atherinoides  
Pylodictis olivaris  
Aplodinotus grunniens  
Notropis buchanani  
Dorosoma cepedianum  
Notemigonus crysoleucas  
Fundulus chrysotus

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IER # 12 - Appendix I (b)

<table>
<thead>
<tr>
<th>Freshwater Fishes</th>
<th>Genera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldeye</td>
<td>Hiodon alosoides</td>
</tr>
<tr>
<td>Grass carp</td>
<td>Ctenopharyngodon idella</td>
</tr>
<tr>
<td>Green sunfish</td>
<td>Lepomis cyanellus</td>
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<tr>
<td>Inland silverside</td>
<td>Menidia beryllina</td>
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<tr>
<td>Largemouth bass</td>
<td>Micropterus salmoides</td>
</tr>
<tr>
<td>Logperch</td>
<td>Percina caprodes</td>
</tr>
<tr>
<td>Longear</td>
<td>Lepomis megalotis</td>
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<tr>
<td>Longnose gar</td>
<td>Lepisosteus osseus</td>
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<tr>
<td>Mimic shiner</td>
<td>Notropis volucellus</td>
</tr>
<tr>
<td>Mississippi silvery minnow</td>
<td>Hybognathus nuchalis</td>
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<tr>
<td>Orangespotted sunfish</td>
<td>Lepomis humilis</td>
</tr>
<tr>
<td>Pallid sturgeon</td>
<td>Scaphirhynchus albus</td>
</tr>
<tr>
<td>Paddlefish</td>
<td>Polyodon spathula</td>
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<td>Pugnose minnow</td>
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<td>Redear</td>
<td>Lepomis microlophus</td>
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<td>Red shiner</td>
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<tr>
<td>River carpsucker</td>
<td>Carpiodes carpio</td>
</tr>
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<td>River darter</td>
<td>Percina shumardi</td>
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<td>Shortnose gar</td>
<td>Lepisosteus platostomus</td>
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<tr>
<td>Shovelnose sturgeon</td>
<td>Scaphirhynchus platorynchus</td>
</tr>
<tr>
<td>Silverband shiner</td>
<td>Notropis shumardi</td>
</tr>
<tr>
<td>Silver chub</td>
<td>Macrhybopsis storriana</td>
</tr>
<tr>
<td>Skipjack</td>
<td>Alosa chrysocloris</td>
</tr>
<tr>
<td>Slough darter</td>
<td>Etheostoma gracile</td>
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<tr>
<td>Smallmouth buffalo</td>
<td>Ictiobus bubalus</td>
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<tr>
<td>Spotted bass</td>
<td>Micropterus punctulatus</td>
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<tr>
<td>Spotted gar</td>
<td>Lepisosteus oculatus</td>
</tr>
<tr>
<td>Striped bass</td>
<td>Morone saxatilis</td>
</tr>
<tr>
<td>Threadfin shad</td>
<td>Dorosoma petenense</td>
</tr>
<tr>
<td>Warmouth</td>
<td>Lepomis gulorus</td>
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<tr>
<td>Western mosquitofish</td>
<td>Gambusia affinis</td>
</tr>
<tr>
<td>White bass</td>
<td>Morone chrysops</td>
</tr>
<tr>
<td>White crappie</td>
<td>Pomoxis annularis</td>
</tr>
<tr>
<td>White-striped bass hybrid</td>
<td>Morone saxatilis x Morone chrysops</td>
</tr>
<tr>
<td>Yellow bass</td>
<td>Morone mississippiensis</td>
</tr>
<tr>
<td>Yellow bullhead</td>
<td>Ameirus natalis</td>
</tr>
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**AMPHIBIANS**

<table>
<thead>
<tr>
<th>Amphibians</th>
<th>Genus</th>
</tr>
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<tbody>
<tr>
<td>American bullfrog</td>
<td>Rana catesbeiana</td>
</tr>
<tr>
<td>Cope's gray treefrog</td>
<td>Hyla chrysoscelis</td>
</tr>
<tr>
<td>Dwarf salamander</td>
<td>Eurycea quadridigitata</td>
</tr>
<tr>
<td>Eastern narrow-mouthed toad</td>
<td>Gastrophryne carolinensis</td>
</tr>
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42
<table>
<thead>
<tr>
<th>Amphibians</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fowler's toad</td>
<td><em>Bufo fowleri</em></td>
</tr>
<tr>
<td>Green treefrog</td>
<td><em>Hyla cinerea</em></td>
</tr>
<tr>
<td>Northern cricket frog</td>
<td><em>Acris crepitans</em></td>
</tr>
<tr>
<td>Pig frog</td>
<td><em>Rana grylio</em></td>
</tr>
<tr>
<td>Small mouth salamander</td>
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**REPTILES**

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Appendix J: Alternative Design Detail Sheets

WCC Conceptual Detail #1
WCC Conceptual Detail #2
Planning, Programs, and
Project Management Division
Environmental Planning
and Compliance Branch

Mr. Lawrence E. Starfield
Deputy Regional Administrator
Environmental Protection Agency
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Dear Mr. Starfield:

The purpose of this letter is to request modification of the Environmental Protection Agency (EPA) Bayou aux Carpes 404 (c) Final Determination issued October 16, 1985. The US Army Corps of Engineers (Corps) requests that the EPA consider approving a modification that would allow the Corps to construct a segment of the West Bank and Vicinity Hurricane Protection Project / Hurricane and Storm Damage Risk Reduction System (HSDRRS) along the northeastern property boundary. The intent of the Corps proposed action is to reduce risk to the citizens of Greater New Orleans Metropolitan area by building a more resilient and reliable storm damage and risk reduction system. We can accomplish this by constructing an improved storm surge barrier system around the Bayou aux Carpes site, crossing the Gulf Intracoastal Waterway (GIWW) with a floodgate(s)/pumping station structure, and then tying into the existing Hero Canal Federal levee (GIWW West Closure Complex (GIWW WCC) alternative, see enclosed map and floodwall cross section).

The Corps has been working closely with EPA and other federal and state resource agency staff for several months to come up with the least environmentally damaging alternative that lowers the risk of storm surge damage to the greatest number of people in the area. It is our determination that the proposed action, GIWW WCC is the best alternative to provide the greatest level of risk reduction while minimizing environmental impacts. The Corps intends to make a final decision in the upcoming months concerning this project by circulating a draft of Individual Environmental Report (IER) # 12 and a Clean Water Act Section 404 (b) (1) public notice for a 30-day public comment period. Upon completion of the 30-day comment period, the Corps will review all comments received along with the data and analysis discussed in the IER in order to make a decision on the proposed action. The Corps will not make a decision on this portion of the proposed action until the EPA makes a determination on a modification to the Bayou aux Carpes 404 (c).
The proposed alternative would require the construction of a floodwall and earthen berm along the eastern boundary of the 404 (c) site. To construct this alternative the Corps would need to impact an area within the 404 (c) area no greater than 4,200 LF by 100 LF. This action would impact no greater than 9.6 acres along the west bank of the GIWW within the Bayou aux Carpes 404 (c) area. Please refer to the enclosed documentation that describes in detail the:

a. Need to modify the original HSDRRS alignment;

b. Need to modify the Bayou aux Carpes 404 (c) Final Determination;

c. Measures taken to ensure the avoidance and/or minimization of all adverse impacts to the Bayou aux Carpes 404 (c) area;

d. Planning and design considerations to avoid additional impacts from any reasonable foreseeable future flood protection measures (i.e., the Louisiana Coastal Protection and Restoration (LACPR) Study);

e. Plans for adequate site specific mitigation for all unavoidable adverse impacts to the Bayou aux Carpes 404 (c) area;

f. Review of projected wetland impacts as per Corps 404 (b)(1) guidelines and the EPA 404 (b)(1) and 404 (c) procedures found in 40 CFR Parts 230 & 231; and

g. Draft Path Forward with GIWW WCC.

Summarizing the above attachments: The Corps has determined that the GIWW WCC alternative, which alters the current system alignment, is the government’s proposed action for this segment of the HSDRRS because this alternative would provide the most reliable, time sensitive and cost effective solution with the least adverse environmental impacts. Though this alternative would impact the Bayou aux Carpes 404 (c) area, the Corps agrees that final design efforts would utilize all feasible engineering and construction practices to reduce impacts to these nationally significant wetlands. In order to minimize the footprint of the surge barrier component to no greater than 4,200 LF by 100 LF along the western side of the GIWW within the Bayou aux Carpes 404 (c) area, the Corps agrees to investigate and utilize innovative techniques to design and build a structure that incorporates a floodwall and earthen berm rather than an earthen levee. The Corps would also locate the GIWW floodgate(s) as close to the Harvey and Algiers Canals confluence as engineeringly feasible in order to minimize impacts to the 404 (c) area. To further ensure the minimization of adverse impacts within the 404 (c) area, construction of the floodwall and earthen berm / access road would occur from the GIWW side of the construction area. In addition, project feature augmentations, such as allowing Old Estelle effluent into the 404 (c) area by gapping the spoil bank and removing the shell plug at Bayou aux Carpes, are being studied and would be incorporated as project features if the results of the
environmental studies demonstrate that this proposed action would augment the Corps actions to minimize effects to the 404 (c) wetland habitat. Additional project feature augmentations, such as the gapping of other canal banks in the 404 (c) area are also being studied and would be incorporated into the project if it is found that the features further minimize impacts as a result of the Corps proposed action. The Corps agrees that mitigation for all unavoidable adverse impacts to the Bayou aux Carpes 404 (c) area would occur within the Bayou aux Carpes 404 (c) area and/or Jean Lafitte National and Historical Park. Mitigation projects would be designed and implemented concurrently with the design and construction of the floodwall and earthen berm / access road. Full mitigation within this unique environment may require mitigation in addition to acres indicated by the Wetland Value Assessment. The Corps further agrees to work in collaboration with the interagency team to monitor the area to ensure mitigation is successful in reaching its targeted goal and to utilize adaptive management efforts to ensure the project feature augmentations are assisting to minimize adverse impact within the 404 (c) area. The total funding required for the entire HSDRRS, $16.8 billion, has been appropriated by Congress. This funding includes funds for the design and construction of all HSDRRS mitigation measures. The Corps would ensure that all impacts due to upgrading structures currently outlining the Bayou aux Carpes 404 (c) area would occur on the protected side and would not impact the 404 (c) area. Lastly, the GIWW WCC proposed action, would have the greatest adaptability to accommodate an enlargement associated with future system upgrades, i.e., LACPR.

We recognize the significance of this request and greatly appreciate the cooperation the EPA has shown in working with the Corps in our efforts to construct the most reliable hurricane risk reduction system possible.

If you have any questions or concerns please contact Mr. Gib Owen by E-mail: gib.a.owen@usace.army.mil or by phone at (504) 862-1337.

Sincerely,

Alvin B. Lee
Colonel, US Army
District Commander

Enclosure

See page 4 for list of copies furnished.
Mr. Garret Graves  
Chairman  
Coastal Protection and Restoration  
Authority of Louisiana  
1051 North 3rd Street  
Capitol Annex Building  
Baton Rouge, Louisiana 70802

Mr. James McMenis  
LA Office of Coastal Protection  
8900 Jimmy Wedell Road  
Baton Rouge, Louisiana 70807

Mr. David Bindewald  
President  
Southeast Louisiana Flood Protection Authority - West Bank  
7001 River Road  
Marrero, Louisiana 70072

Mr. Jerry Spohrer  
Executive Director  
West Jeff Levee District  
7001 River Road  
Marrero, Louisiana 70072

Honorable Billy Nungesser  
Plaquemines Parish President  
8056 Highway 23, Suite 200  
Belle Chasse, Louisiana 70037

Mr. David Luchsinger  
Park Superintendent  
Jean Lafitte National Historic Park and Preserve  
419 Decatur Street  
New Orleans, Louisiana 70130-1035
CURRENT PROPOSED SITE PLAN

- LOCATION OF STRUCTURES WITHIN 404(C) AREA WOULD REMAIN AS SHOWN. MAXIMUM AREA OF IMPACT WOULD BE 100’ WIDE BY 4200’ LONG (9.6 acres).
- ORIENTATION OF PUMP STATION, GATE(S), BYPASS CHANNEL AND LEVEE ON EAST SIDE OF GIWW ARE NOT FINAL AND COULD CHANGE AS DESIGN PROGRESSES.
TYPICAL PROPOSED 404(C) WALL SECTION
(FINAL DESIGN WOULD BE COMPLETED IN PARTNERSHIP WITH EPA AND NPS)
a) The need to modify the current hurricane system alignment.

The US Army Corps of Engineers (Corps) has been studying the current HSDRRS alignment, and based upon factors associated with system reliability has determined that in order to provide the greatest risk reduction, certain segments of the system must follow an improved alignment. The proposed new alignment for this project, GIWW WCC alternative, would significantly reduce risk to nearly 286,000 people living on the West bank of the Mississippi River. By removing 27 miles of parallel protection from the primary line of defense, this more streamlined surge barrier reduces the number of potential failure points in the system, increases quality control and certainty of subsurface conditions during construction, and minimizes human impacts since the existing footprint of the current system would not be widened to 100 year level of protection (LOP). This is a critical lesson learned from Hurricane Katrina in 2005. Catastrophic failure due to breaching along the 17th Street and London Avenue Outfall canals and the Inner Harbor Navigational Canal (IHNC) occurred because expanses of parallel protection were an inadequate risk reduction measure for such complex and challenging environments (USACE 2008). The structures may have been designed and constructed properly; however, there was an overall failure to incorporate new technologies and new risk reduction measures into the previous risk reduction system (USACE 2008). Hurricane Katrina brought many issues to the forefront. A major issue that surfaced was extensive reaches of levee, floodwall and floodgates provide numerous possible points of failure within the system and reduce the ability to maintain strict quality control. Hurricane Katrina also demonstrated that structures need to be resilient and must be constructed with the ability to reduce risk while withstanding system overtopping. The structures must still hold back the majority of the storm front, while some water may overtop the structure. In addition, having multiple lines of defense, such as a second barrier behind the initial surge barrier, i.e., the existing line of defense at pre Katrina authorized elevations, would even further ensure risk reduction within an area.

The Corps Project Delivery Team (PDT) identified all possible alignments in the area. All the alternatives were then evaluated according to various criteria, and all non-reasonable alternatives, i.e., those alternatives with overwhelming engineering challenges, were eliminated. In general, assessing all possible alignments demonstrated two things: system reliability increases as the actual length of the surge barrier decreases (deeming a further south, more streamlined alignment as most reliable) and this further southern alignment, which offers the most system reliability and protection, proposes to impact the Bayou aux Carpes 404 (c) area. There were five surviving alternatives brought forward from a preliminary alternative evaluation process conducted in early 2007. Two of those five alternatives were further analyzed and then eliminated due to non-constructability. The three surviving alternatives were then brought forward and further evaluated according to system reliability, environmental impacts, schedule and cost. These three surviving alternatives and the evaluation process were presented to EPA staff along with other Federal and state resource agencies to solicit input. In collaboration with the EPA and NPS, the Corps PDT revisited a previous alternative from the original proposed southern alignment that would maintain system reliability and additionally would minimize adverse environmental impacts. This fourth alternative was
evaluated against the same four criteria, was presented to the Federal and state resource agencies and local stakeholders, and was brought forward as the government’s proposed action. Listed below are the proposed action and three other alternatives.

**The Proposed Action** - The GIWW WCC alternative would consist of the Corps along with its non-Federal partner, the State of Louisiana, constructing a floodwall and earthen/concrete barrier with an access road around the northern portion of the Bayou aux Carpes 404 (c) area. The barrier would run from the v-line levee situated west of the Bayou aux Carpes 404 (c) area to the Old Estelle pump station, west to east along the northern bank of the Old Estelle discharge canal, down the western bank of the GIWW within the Bayou aux Carpes 404 (c) area to a point where the alignment would cross the GIWW to the east bank to tie in with a levee being planned for construction along the northern side of the Hero Canal (see proposed action schematic below). Previously existing levee structures would be upgraded and/or replaced with floodwall to 14’ / 16’, the height specified for 100 year LOP, while a new floodwall with an earthen berm would be constructed along the western bank of the GIWW within the Bayou aux Carpes 404 (c) area. The new floodwall and earthen berm within the Bayou aux Carpes 404 (c) area would be no greater than 4,200 linear feet (LF) in length, no greater than 100 LF in width and 16’ in height. Other features of the system include a navigation gate(s) system at the GIWW that would be 150 to 350 foot wide to allow for navigation and current reduction. Storm gates would be built to an elevation of 16’. The pump station would have a capacity between 20,000 and 25,000 cubic feet per second (cfs) to accommodate existing storm water discharges from the local parishes’ drainage system. A by-pass channel would be built on the east bank of the GIWW to allow navigation on the GIWW during construction of the permanent gate structure. The existing Enterprise Gas pipeline would be relocated by directional drilling a new pipeline under the proposed bypass channel, the GIWW and the 404 (c) area. By directional drilling the pipeline under the 404 (c) area, the Corps not only avoids impacts to the area, but minimizes future impacts associated with maintaining the pipeline right-of-way across the area. These engineering specifics are the most current but are only preliminary and cannot be finalized without further investigation. Soil borings from the Bayou aux Carpes 404 (c) area are required to gather geotechnical specifics and give an indication of the actual floodwall and earthen berm footprint. The Corps submitted a letter on August 12, 2008 to EPA Region 6 and NPS requesting right-of-entry (ROE) within the Bayou aux Carpes 404 (c) area to conduct field surveys and obtain soil borings. Both the EPA and NPS responded quickly to the request granting ROE to begin the necessary data collection. The clearing to obtain boring samples occurred on October 6, 2008.
When the GIWW WCC alternative was evaluated with respect to system reliability, adverse environmental impacts, time and cost, it was determined the construction of this alternative alignment would dramatically increase system reliability. This proposed action reduces the primary line of defense by 36% and would be comparable in system reliability to GIWW A alternative, the other southern alignment, but would be much more reliable than the Algiers Gate or Parallel Protection alternatives (see alternative descriptions below). The GIWW WCC alternative would have the fewest adverse environmental impacts. Even though proposing to impact the Bayou aux Carpes 404 (c) area, this proposed alignment would minimize all direct and indirect adverse impacts to both the natural and human environments (see item 3 below). In addition, the proposed action would have a surge barrier in place, with reduced pumping capacity, by 2011, and would be more economical to construct than the AG or PP alternatives. See the alternative comparison tables below for specific details on system reliability, environment and schedule.

The GIWW A alternative is similar to the proposed action described above, but utilizes different levee and floodwall alignments. A navigable floodgate would be constructed in the GIWW approximately 1 mile south of the confluence of the Harvey and Algiers canals. The details regarding the navigable floodgate are identical to those described for the proposed action (GIWW WCC). The overall structure would include the floodgates,
pumping station, and by-pass channel as previously described. A new 3,000-foot long tidal exchange structure would be constructed west of the navigable floodgate across the EPA Bayou aux Carpes 404 (c) area to the V-Line Levee. The tidal exchange structure floodwall would be designed to utilize the smallest construction footprint possible to minimize environmental impacts. Gates in the wall would be constructed at specified locations in an effort to maintain the natural hydrology of the area. The floodwall would also be designed to facilitate the passage of wildlife. The navigable floodgate and tidal exchange structure would be constructed to the 100-year LOP 16'. The specific tie-in locations of the GIWW A alternative to other HSDRRS (IER #13 and #14) project elements would provide 100-year LOP to the study area without raising the parallel protection above that currently authorized along the Harvey and Algiers Canal Reaches.

Figure 2. Conceptual GIWW A alternative schematic.

When the GIWW A alternative was evaluated with respect to system reliability, adverse environmental impacts, time and cost, the GIWW A alternative had comparable system reliability, schedule and cost to the proposed action (GIWW WCC); however, the adverse environmental impacts for the GIWW A alternative would be much greater than the proposed action. Though both alternatives would impact the Bayou aux Carpes 404 (c) area, the tidal exchange structure floodwall in GIWW A proposes to bifurcate the Bayou aux Carpes 404 (c) area and would result in irreparable direct and indirect impacts to the unique area (i.e., potential degradation or loss of flotant marsh located in the northern region of the 404 (c) area). In addition, this GIWW A alternative could preclude the possibility of including a portion of the Bayou aux Carpes 404 (c) area in the adjacent
Jean Lafitte National and Historical Park, where as the proposed action would create a more manageable situation for the NPS. While the GIWW WCC alternative also proposes a floodwall structure within the 404 (c) area, construction would be confined to a narrow footprint within a previously disturbed spoil bank along the west bank of the GIWW. The GIWW A alternative would also have a surge barrier in place, with reduced pumping capacity, by 2011, and would be much more economic to construct than the AG or PP alternatives. See the alternative comparison tables below for specific details on system reliability, environment and schedule.

The Algiers Gate alternative would require the construction of a navigable floodgate located on the Algiers Canal and major levee and floodwall improvements along the Harvey Canal, GIWW, and V-Line Levee. The AG alternative would include a 150-foot to 300-foot navigable floodgate located on the Algiers Canal, just above the confluence with the Harvey Canal. This navigable floodgate would require a permanent pumping station (approximately 20,000 cfs) adjacent to the gate, providing 100-year LOP along the Algiers Canal. Levee extending from the gate and pump station would need to be raised to 100-year LOP (14.0 feet). These improvements would tie into additional levee and floodwall improvements within the GIWW and Harvey Canal Reaches. Levees and floodwalls would be raised to 14.0 feet along both banks of the Harvey Canal, sections of the GIWW, and sections of the V-Line Levee. Levee improvements would specifically occur in two main locations. Existing levee on the eastern side of the GIWW would be raised from the navigable floodgate on the Algiers Canal to the Hero Canal Levee. In addition, existing levee on the west bank of the Harvey Canal would be raised from Lapalco Blvd. to the Estelle Pump Station Outfall Canal, west to the Estelle Pump Station, and continuing south along the V-Line Levee. Floodwall would be built to 14.0 feet on the east bank of the Harvey Canal from Lapalco Blvd. south to the GIWW. Floodwall would be used in this area in order to minimize impacts to existing development. These floodwall improvements along the Harvey Canal are currently being constructed under previous authorization. The proposed levee and floodwall improvements would require major modifications to the Harvey Canal Floodgate at Lapalco Blvd. and the Cousins Pump Station discharge channel. Fronting protection to the 100-year LOP would also be required at the Cousins Pump Station and all pump stations south of Lapalco Boulevard on the Harvey Canal, to prevent inundation of the existing pumps. These additional improvements would provide the desired 100-year LOP in coordination with levee tie-ins to additional HSDRRS projects (IER #13 and #14).
When the AG alternative was evaluated for system reliability, adverse environmental impacts, schedule and cost, it was determined this alternative would be less reliable than the proposed action (GIWW WCC) and GIWW A alternative but more reliable than the PP alternative. The AG alternative would reduce the primary line of defense by 18 miles. Though this alternative proposes to reduce the extent of parallel protection in the system along the Algiers Canal, there would still be areas with parallel protection serving as the primary line of defense along the Harvey Canal industrial reach. In addition, the line of parallel protection along the Harvey Canal industrial reach is situated behind the businesses and would not serve as a flood barrier to those industrial areas. The proposed action (GIWW WCC) would create a primary line of defense that would also reduce risk to those industrial areas and prevent flooding of the businesses. Construction of the proposed action would place the existing floodwalls and levees along the Harvey and Algiers canals as the secondary line of defense in the event of canal flooding due to system overtopping. In addition, upgrading levee stretches west of the Harvey Canal would greatly increase the levee footprint and would impact both the human and natural environment. Adverse environmental impacts for this alternative would be greater than those of the proposed action (GIWW WCC). See the alternative comparison tables below for specific details on system reliability, environment and schedule.

The Parallel Protection alternative uses only improvements to existing levees and floodwalls along the GiWW, Harvey and Algiers Canal to achieve 100-year LOP. This alternative is similar to the AG alternative along the GiWW and Harvey Canal; however, there is no navigable floodgate built on the Algiers Canal. Instead, 100-year LOP is achieved along the
Algiers Canal by raising levees and floodwalls. Levee would be raised to 14.0 feet along the V-Line Levee to the Estelle Pump Station, continuing along the Estelle Outfall Canal, and finally running north along the western bank of the Harvey Canal to Lapalco Blvd. Major modifications to the Cousins pump station discharge walls and the Lapalco floodgate would be required. On the opposite side of the Harvey Canal (east bank), floodwall would be raised to 14.0 feet from Lapalco Blvd. to the Algiers Canal. The existing levees and floodwalls on both banks of the Algiers Canal would be modified from Hero cut to the Algiers Locks. Elevations of the levee and floodwall improvements along the Algiers Canal would range from 14.0 to 16.0 feet. Improvements to existing flood protection structures would consist of:

- Raising existing levees (which will require the acquisition of additional rights-of-way and the removal of numerous dwellings, apartment complexes, electrical transmission towers, modifying the bridge supporting piers for two vehicle bridges and one railroad bridge crossing the canal, degrading the existing levees, installing a high strength geotextile at elevation 0.0 and rebuilding the levee to the 100-year LOP);
- Constructing and modifying existing floodwalls; and
- Constructing floodwalls and floodgates on existing levees.

The construction options utilized throughout the Algiers Canal reach would be highly dependent upon localized land use and constructability. In addition to the levee and floodwall improvements, the PP alternative would require elevation modifications and flood protection tie-ins to all pump stations along the Harvey and Algiers Canals, the Algiers Locks, the Lapalco Sector Gate and the Estelle Pump Station. Some of these modifications have already occurred, or are currently under construction as part of a pre-Katrina authorized action. These modifications, and the PP alternative levee and floodwall modifications, would provide 100-year LOP in coordination with levee tie-ins with additional HSDRRS projects (IER #13 and #14).

Belle Chasse Tunnel - The existing lanes of south-bound LA 23 at Belle Chasse travel through a tunnel under the Algiers Canal; this complicates raising the LOP in that area. The tunnel structure is probably inadequate to support higher water loads that would be associated with the 100-year LOP. Two options have been identified:

- Locate the line of protection away from the canal to points beyond the tunnel entrances. This would require flood closure gates across the highway at each end of the tunnel. This plan would result in flooding of the tunnel during periods of high water, and it might even be necessary to require flooding of the tunnel to prevent structural damage from high water pressure.

- Abandon the tunnel and reroute the highway to a new high-level bridge. This plan would also require relocating the roadway and the addition of ramps to the bridge, and might require backfilling the tunnel for structural security.
When the PP alternative was evaluated with respect to system reliability, adverse environmental impacts, schedule and cost, it was determined this alternative would have the lowest system reliability, have the most adverse socioeconomic impacts, have significant environmental impacts, require the most time to construct and be least economic. This alternative that keeps the approximately 27 miles of existing risk reduction system as the primary line of defense would be the least reliable because this alignment contains numerous potential failure points. In addition to reduced reliability, upgrading the current alignment would require large scale residential and commercial relocations and would have serious environmental implications (i.e. HTRW issues). See the alternative comparison tables below for specific details on system reliability, environment and schedule.

**Alternative Comparison Tables**

The tables below demonstrate alternative comparisons for three criteria: risk and reliability, environment, and schedule. The criteria were broken out into multiple “sub-criteria” for a more thorough comparison among alternatives. Specific cost comparison information was excluded as it cannot be disclosed at this time.
## RISK & RELIABILITY COMPARISON

<table>
<thead>
<tr>
<th></th>
<th>GIWW WCC</th>
<th>GIWW A</th>
<th>AG</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm load exposure</td>
<td>Approximately 3 miles of storm frontage</td>
<td>Approximately 1 mile of storm frontage</td>
<td>Approximately 9 miles of storm frontage</td>
<td>Approximately 27 miles of storm frontage</td>
</tr>
<tr>
<td>Overtopping frequency</td>
<td>Overtopping frequency more than GIWW A alternative but less than AG alternative</td>
<td>Lowest overtopping frequency because it has least lineal exposure and 2' superiority over 100-yr water elevations along entire storm front</td>
<td>Overtopping frequency more than GIWW WCC alternative but less than PP alternative</td>
<td>Highest frequency of overtopping because it has greatest lineal exposure and least superiority over 100-yr water elevations</td>
</tr>
<tr>
<td>Overtopping volume</td>
<td>Overtopping volume more than GIWW A alternative but less than AG alternative</td>
<td>Lowest overtopping volume because it has the highest superiority over 100-yr elevations and shortest frontage</td>
<td>Overtopping volume more than GIWW WCC alternative but less than PP alternative</td>
<td>Highest overtopping volume because it has no superiority over 100-yr elevations and longest frontage</td>
</tr>
<tr>
<td>Non-storm load exposure</td>
<td>More storm load exposure than GIWW A alternative but less than AG alternative</td>
<td>More storm load exposure to non-storm loads. Not susceptible to vegetation and wildlife encroachment. Protection is perpendicular to the navigation, possibly affecting frequency or severity of collisions</td>
<td>Significantly more storm load exposure than GIWW WCC alternative but less than PP alternative</td>
<td>Greatest lineal exposure to non-storm loads. Earthen levees are susceptible to vegetation and wildlife encroachment. Protection is parallel to the navigation, possibly affecting frequency or severity of collisions</td>
</tr>
<tr>
<td>Value to terrorists</td>
<td>Less value to terrorists than GIWW A alternative, but more than AG alternative</td>
<td>High because HPS features are concentrated in terms of location and value, but easier to monitor and defend</td>
<td>Less value to terrorists than GIWW WCC alternative, but more than PP alternative</td>
<td>Low because HPS features are distributed by location and value, but harder to monitor and defend</td>
</tr>
<tr>
<td>Resistance to explosive devices</td>
<td>Lower resistance to man-portable explosives and more accessible to larger devices</td>
<td>Lower resistance to man-portable explosives and more accessible to larger devices</td>
<td>Lower resistance to man-portable explosives and more accessible to larger devices</td>
<td>High resistance to man-portable devices; vulnerability to larger devices is low because access would be difficult</td>
</tr>
<tr>
<td>Transitions (levee-to-floodwall, floodwall-to-floodgate, etc)</td>
<td>Approximately 10</td>
<td>Least number of transitions approximately 6</td>
<td>Approximately 60</td>
<td>Highest number, approximately 90</td>
</tr>
<tr>
<td>Compartmentalization</td>
<td>Creates 2nd largest storm water storage subbasin</td>
<td>Creates the largest storm water storage subbasin</td>
<td>Creates smallest storm water storage subbasin</td>
<td>No new sub-compartments created</td>
</tr>
<tr>
<td>Foundations</td>
<td>Same as GIWW A alternative, except for some levee reaches, in which case see PP alternative</td>
<td>Pile foundations are engineered</td>
<td>Same as GIWW A alternative, except for some levee reaches, in which case see PP alternative</td>
<td>Levee foundations would be non-engineered unless geo-textile or soil cement design alternatives are adopted; any T-wall foundations would be engineered</td>
</tr>
<tr>
<td>Complexity</td>
<td>High; largest number of new HPS features, though many separate levee reaches are eliminated</td>
<td>High; largest number of new HPS features, though many separate levee reaches are eliminated</td>
<td>High; though lower than GIWW WCC and GIWW A alternatives</td>
<td>Low; largest number of reaches, but no new HPS features created</td>
</tr>
<tr>
<td>Interdependency of features</td>
<td>8-9 pump stations upstream dependent on the new pump station</td>
<td>9 pump stations upstream become dependent on the new pump station</td>
<td>7 pump stations upstream depend on new pump station</td>
<td>No new dependencies</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Pumping capacity is</td>
<td>Pumping capacity is</td>
<td>Pumping capacity is</td>
<td>No redundancy</td>
</tr>
<tr>
<td><strong>IER # 12 - Appendix K</strong></td>
<td><strong>supplied by 4 sets of 4 independently powered pumps; 2 generators provide redundant backup power supply to each set of pumps</strong></td>
<td><strong>supplied by 4 sets of 4 independently powered pumps; 2 generators provide redundant backup power supply to each set of pumps</strong></td>
<td><strong>supplied by 3 sets of 3 independently powered pumps; 2 generators provide redundant backup power supply to each set of pumps</strong></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>Active vs. Passive control</strong></td>
<td>Pump station and gates must be staffed before, during, and after a storm event; 1 additional pump station (Old Estelle) must be staffed</td>
<td>Pump station and gates must be staffed before, during, and after a storm event</td>
<td>Pump station and gates must be staffed before, during, and after a storm event; 30 flood gates and 4 pump stations must be operated</td>
<td></td>
</tr>
<tr>
<td><strong>Operation &amp; Maintenance</strong></td>
<td>Most expensive</td>
<td>Most expensive</td>
<td>Less expensive than GIWW WCC and GIWW A alternatives, but significantly more than PP alternative</td>
<td></td>
</tr>
<tr>
<td><strong>Inspections and maintenance</strong></td>
<td>More rigorous inspections</td>
<td>More rigorous inspections</td>
<td>More rigorous inspections</td>
<td></td>
</tr>
<tr>
<td><strong>Quality control</strong></td>
<td>Pre-fabricated components have added layers of quality control prior to placements and must satisfy industry standards; however, any specialized test procedures and resources required for these features may be a liability</td>
<td>Pre-fabricated components have added layers of quality control prior to placements and must satisfy industry standards; however, any specialized test procedures and resources required for these features may be a liability</td>
<td>Pre-fabricated components have added layers of quality control prior to placements and must satisfy industry standards; however, any specialized test procedures and resources required for these features may be a liability</td>
<td></td>
</tr>
<tr>
<td><strong>Utility dependence</strong></td>
<td>Pump stations and gates will require connection to utility grids</td>
<td>Pump stations and gates will require connection to utility grids</td>
<td>Pump stations and gates will require connection to utility grids</td>
<td></td>
</tr>
<tr>
<td><strong>Reliability Team Assessment (relative scoring)</strong></td>
<td>7(extrapolated)</td>
<td>8</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Hurricane seasons under construction</strong></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Redundancy of system</strong></td>
<td>Most redundant</td>
<td>Most redundant</td>
<td>Redundancy on Algiers Canal; no redundancy on Harvey Canal</td>
<td></td>
</tr>
<tr>
<td><strong>Risk</strong></td>
<td><strong>Uncertainty in subsurface conditions</strong></td>
<td>More uncertain than GIWW A alternative, Less uncertain than AG alternative</td>
<td>Least uncertain</td>
<td>More uncertain than GIWW WCC alternative, Less uncertain than PP alternative</td>
</tr>
<tr>
<td></td>
<td><strong>Barge impact causing catastrophic failure</strong></td>
<td>Least susceptible</td>
<td>Least susceptible</td>
<td>More susceptible than GIWW WCC and GIWW A alternatives, but less than PP alternative</td>
</tr>
<tr>
<td></td>
<td>Levees are generally considered passive flood protection, but there are 47 floodgates, 33 sluice gates, and 19 butterfly valves that must be manually operated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Least rigorous; only visual inspection of levee and floodwalls</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ENVIRONMENTAL COMPARISON

<table>
<thead>
<tr>
<th></th>
<th>GIWW WCC</th>
<th>GIWW A</th>
<th>AG</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Wetlands and Non-wetlands Uplands Resources (Unavoidable Impacts)</strong></td>
<td><strong>Direct Impacts:</strong> 9.6 acres of Nationally significant 404 c area wetlands + 223.3 acres of direct impacts to BLH + 8.9 acres of swamp (not in 404 c) = 232.2. <strong>Total acres of wetland</strong></td>
<td><strong>Indirect impacts:</strong> -Minimal -Minimal impact to flotant marsh <strong>Other Details:</strong> -Possible project feature augmentation by discharging Estelle PS storm water effluent into 404 (c) area (dependent on study and coordination with EPA and rest of Interagency team to minimize impacts to the 404 (c) area as a result of the Government’s action. Could be engineered to allow storm water flow on 404 (c) area to better maintain the fresh/salt water regime -May return 20 acres of land currently on the protected side of levee to the flood side as part of the bypass navigation channel. Habitat could be restored to bottomland hardwood forest. -Wall along GIWW would prevent industrial debris and effluent from flowing into 404 (c) area.</td>
<td><strong>Direct Impacts:</strong> 5.1 acres of Nationally significant 404 (c) area wetlands + 112 acres (not in 404 c) = 117.1 <strong>Total acres of wetlands</strong></td>
<td><strong>Indirect impacts:</strong> -Bifurcation of the 404 (c) area alters wildlife migration and ground water flow -Impoundment of northern 519 acres of flotant marsh and the potential total loss of flotant marsh and degradation within the 404 (c) <strong>Other Details:</strong> -Floodwall would be designed to allow drainage and exchange of surface water during non-storm conditions -The wall would be designed and built to control outflow of flooded marsh -This alternative may return 20 acres of wetlands to the flood side</td>
</tr>
<tr>
<td>Socioeconomic/Human Resources</td>
<td><strong>-Relocation of 1 business and 1 pipeline (Enterprise Gas pipeline)</strong> -Harvey canal businesses would included in the protection</td>
<td><strong>-Relocation of 1 business</strong> -Bisecting 404 (c) degrades recreational use of area and potentially impacts hunting, bird watching, canoeing, kayaking, photography and commercial uses (swamp tours, etc.), though gates crossing the 404 c could accommodate the recreational use -Harvey canal businesses would be included in the protection</td>
<td><strong>-Relocation of 13 residences and 3-4 businesses</strong></td>
<td><strong>-Relocation of 70 residences, 600 apartments, and 55 businesses</strong></td>
</tr>
</tbody>
</table>
Other: HTRW, borrow, air quality, noise quality, cultural, and aesthetics

- Minimal HTRW issues
- keeps HTRW out of 404 c area
- possible impacts due to borrow transport (likely barge in borrow to reduce impacts (3.5 M cy))
- Air quality medium impacts

- Minimal HTRW issues
- minimal environmental impact due to borrow transport (250K cy)
- minimal air quality issues

- Minimal HTRW issues on Harvey reaches (surge into area would pick up industrial debris, etc.)
- possible Impacts due to borrow Transport (likely barge in borrow to reduce impacts (4.5 M cy))
- Air quality medium impacts

- Potential significant HTRW issues on Harvey reaches (surge into area would pick up industrial debris, etc.); landfills on Algiers reaches
- Cultural issues: Antebellum homes
- Impacts due to borrow Transport (9.54M cy)
- Air quality high impacts

<table>
<thead>
<tr>
<th>TIME COMPARISON</th>
<th>GIWW WCC</th>
<th>GIWW A</th>
<th>AG</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Completion Date</td>
<td>MAR 2013</td>
<td>MAR 2013</td>
<td>AUG 2013</td>
<td>JUN 2013</td>
</tr>
<tr>
<td>100-year “wall of protection” completion date. Full pumping capacity would not be in place until Construction Completion date</td>
<td>JUN 2011</td>
<td>JUN 2011</td>
<td>JUN 2011</td>
<td>JUN 2013</td>
</tr>
<tr>
<td>Possible time slips due to real estate, relocations, environmental proceedings and litigation</td>
<td>Action within 404 (c) area, and relocation issues</td>
<td>Action within 404 (c) area and relocation issue Acquisition of property</td>
<td>Real estate and relocations issues</td>
<td>Real estate and relocation issues</td>
</tr>
</tbody>
</table>

Summary

The proposed action, GIWW WCC alternative proposes to alter the original system alignment and construct a streamlined surge barrier. The alternative would consist of 3 miles of levee and floodwall that would reduce the primary line of defense by 36%, a navigation gate(s) structure, a 20,000 -25,000 cfs pump station, 10 transition points, and a bypass channel. The existing protection at the approximate elevation 8.5’ would become the secondary line of protection during a storm event. Construction of this alternative would directly impact a total of 232.2 total acres of wetlands (9.6 acres of nationally significant 404 (c) wetlands), would have minimal indirect impacts to wetlands, and would have minimal socioeconomic impacts. Borrow requirement would be approximately 250,000 cubic yards (cy).

The GIWW A alternative also proposes to alter the original system alignment to construct a streamlined surge barrier. This alternative would consist of less than 1 mile (0.9 mi) of levee and floodwall that would reduce the primary line of defense by 41%, a navigation gate(s) structure, an approximately 20,000 -25,000 cfs pump station, 6 transition points, and a bypass channel. The existing protection at the approximate elevation 8.5’ would become the secondary line of protection during an event. This
alternative would directly impact 117.1 acres of wetland (5.1 acres of nationally significant 404 (c) wetlands) would bifurcate the 404 (c) area and have potentially significant, irreparable direct and indirect impacts to the northern impounded region (alter ground water flow, alter animal migration, potentially degrade flotant marsh, etc.) However, this alternative would have minimal socioeconomic impacts (i.e., residential or commercial relocations.) Borrow requirement would be approximately 3.5 M cy.

The AG alternative proposes to keep parallel protection along the Harvey Canal but build a gate at Algiers Canal to reduce the primary line of defense by 24%. This alternative would consist of 9 miles of floodwall (4 miles) and levee (5 miles), fronting protection at 4 pump stations, retrofitting the Lapalco Sector Gate, 30 floodgates on Harvey Canal, and 12 transition points. The existing protection at approximate elevation 8.5’ behind the Algiers Canal gate would serve as secondary protection during an event. This alternative would impact 311 acres of wetlands, 13 residences, and 3-4 businesses. Borrow requirement would be approximately 4.5 M cy

The PP alternative proposes to keep the original alignment, approximately 27 miles of levee and floodwall, 47 floodgates on Algiers (17) and Harvey canals (30), approximately 90 transitions, 33 sluice gate structures, 19 butterfly valves, fronting protection and backflow suppression at 9 pump stations, retrofitting the Lapalco Sector Gate, and secure the Belle Chasse tunnel. This alternative would have no secondary line of defense during an event, would impact 200 acres of wetlands, 70 residents, 600 apartments and 55 businesses. Borrow requirement would be approximately 9.4 M cy.

**Government’s Proposed Action**

The Corps has determined that the GIWW WCC alternative, which alters the current system alignment, is the government’s proposed action for this segment of the HSDRRS because this alternative would provide the most reliable, time sensitive and cost effective solution with the least adverse environmental impacts.
b) The need to modify the Bayou aux Carpes 404 (c) Final Determination and why this modification is in the public’s interest.

After rigorous investigation of all possible alternatives and close collaboration with the EPA, other Federal and state resource agencies, and local stakeholders, the Corps has brought forward the GIWW WCC alternative as the proposed action. Though possible to design, engineer and construct all four previously discussed alternatives, the proposed action would provide the most system reliability and maximum risk reduction with the least adverse environmental impacts; therefore, the GIWW WCC alternative has been identified as the proposed action.

Since the alternative that would provide the most reliable, least risk, time sensitive and cost effective solution with the least adverse environmental impacts would require constructing a floodwall along the western bank of the GIWW within the Bayou aux Carpes 404 (c) area, the Corps requests a modification to the Bayou aux Carpes 404 (c) Final Determination.

The proposed action would serve the national public interest because it would significantly reduce the risk during a 100 year storm event for nearly 286,000 people, nearly 80,000 residences, and over 3,000 businesses on the West Bank of the Mississippi River. Given the lessons learned from Hurricane Katrina, it is in the national interests for the Federal government to wisely invest in the alternative that provides the lowest risk and is the least environmentally damaging. The hurricane system in New Orleans is only as good as the sum of its parts. By ensuring that all the parts are selected and constructed to the highest standards possible, the nation would benefit due to lower risk to the system and lower potential for catastrophic losses. The system, when completed, will provide the citizens of the area the opportunity to participate in the National Flood Insurance Program. Certification of the system to meet flood insurance standards is an issue critical to the full economic recovery of the area. Pre-Hurricane Katrina assets for the area at risk were valued at nearly 22 billion dollars. The GIWW WCC alternative would provide a more streamlined barrier system that would not only reduce the length of the hurricane system but would also create a primary and secondary line of defense during a storm event. The proposed action also builds upon the Federal mandate to avoid and minimize environmental impacts by reducing overall impacts to wetlands, bottomland hardwoods and people. The GIWW WCC alternative eliminates the need to relocate businesses and residents along the Algiers and Harvey canals that would be required if the Corps were to construct either the AG or PP alternatives. The construction of this proposed action would be a tremendous step forward for the nation in providing the 1% LOP congressionally authorized and demonstrates the Corps’ drive to incorporate current, more adequate risk reductions measures into the system.

There are also overwhelming benefits to the overall economy of the nation from constructing this alternative. The proposed action serves the public interest of the nation as stated above by reducing risk for the City of New Orleans, but this alternative also provides for a more resilient Port of New Orleans.
The Port of New Orleans is the fifth largest port in the United States based on cargo handled, is the second largest in Louisiana after the Port of South Louisiana, and is the 12th largest in the United States for value of cargo. The Port of New Orleans handles approximately 84 million short tons of cargo a year, while the Port of South Louisiana handles approximately 199 million short tons a year. The two Louisiana ports combined form the largest port system in the world by bulk tonnage, and the world’s fourth largest by annual volume handled. The Port of New Orleans is a major transshipment point for steel, rubber, and coffee. It is the largest port in the United States for rubber imports. Approximately 6,000 ships from nearly 60 nations dock at the Port of New Orleans annually. The chief exports are grain and other foods from the Midwestern United States and petroleum products. The leading imports include rubber, chemicals, cocoa beans, coffee, and petroleum. The port handles more trade with Latin America than does any other United States gateway, including Miami. In addition, the rail system is a major component in cargo transport, and the Port of New Orleans is the only seaport in the US with access to six class-one railroads (Port of New Orleans 2008).

New Orleans is also a busy port for barges. The Mississippi River and the Gulf Intracoastal Waterway (GIWW) in the New Orleans area are used to transport approximately 50,000 barges a year. Within the port, cargo (commodity) is transferred from barges to rail and overland transport for distribution across the country. In addition to shipping commerce, the Port of New Orleans is considered one of the nation’s premier cruise ports. It handles nearly 700,000 cruise passengers a year (Port of New Orleans 2008).

Besides serving local interests and reducing risk to local residences and business for the purpose of public safety and securing the local economy, the construction of this proposed alignment (GIWW WCC alternative) would also serve the national interest and reduce risk for the Port of New Orleans, a cornerstone of the national economy.

c) Planning and design efforts that have been incorporated into the proposed action to minimize impacts to the 404 (c) area.

The Corps proposes to employ several measures to reduce the impacts to the Bayou aux Carpes 404 (c) area.

1. The GIWW WCC alternative: The first measure employed was the derivation of the GIWW WCC alternative. Based on a system reliability study of the West bank and vicinity HSDRRS, the Corps had initially proposed the GIWW A alternative; however, after collaborating with EPA, National Park Service staff and other Federal and state resource agencies, the GIWW WCC alternative was derived to minimize adverse direct and indirect impacts to the Bayou aux Carpes 404 (c) area. The GIWW WCC alternative, which would maintain system reliability while minimizing adverse environmental impacts, was accepted by the Corps and brought forward as the proposed action. As described in the alternative comparison above, the GIWW WCC alternative limits adverse impacts to the 404
(c) by building a structure with a narrow footprint (floodwall and earthen berm) on a previously disturbed area along the west bank of the GIWW.

2. **Innovative techniques to build a floodwall along a navigable water way:** The segment of the WBV HSDRRS 100 year LOP proposed within the Bayou aux Carpes 404 (c) area would be constructed as a floodwall in lieu of an earthen levee in order to ensure that the most reliable, least damaging alternative is in place. A floodwall can be built on a much smaller footprint than an earthen levee. The Corps recognizes that there are certain risks associated with placing a floodwall along a navigable waterway, but to minimize the footprint of this surge barrier component within the Bayou aux Carpes 404 (c) area, the Corps will investigate and utilize innovative techniques to design and build a structure with the narrowest footprint possible.

3. **Construction via water based equipment:** The floodwall would be constructed within the 100’ right-of-way. No additional construction easements would be required for wall construction.

4. **GIWW Gate location:** The Corps proposes to move the gate on the GIWW as far north as practical to further reduce impacts. However, it is understood that the GIWW is a Federal navigation channel that is of national significance which requires that design of this structure be such that safety of users of the system be a paramount design consideration.

5. **Project features:** The Corps also believes that it is feasible to complete alterations to existing project features to minimize adverse impacts that could potentially occur as a result of the construction of the GIWW WCC alternative along 4,200 LF of the eastern shoreline of the Bayou aux Carpes 404 (c) area. Another feature would be the redirection of the Old Estelle pump station storm water effluent into the 404 (c) area to introduce additional nutrients and fresh water into the system. Additionally, under the proposed action, the Corps would create gaps in several existing canals in the southern end of the 404 (c) area to promote improved hydrology within the 404 (c) area. Specifically, the shell plug at Bayou des Familles as well as plugs along other canals would be removed if study results demonstrate a positive benefit in minimizing the environmental impacts to the area can be achieved. All actions would be fully coordinated with EPA and the interagency team. Studies are underway at the Corps Engineering Research and Development Center (ERDC) in Vicksburg, Mississippi to determine the best possible design to allow for maximized benefit of this work in the Bayou aux Carpes 404 (c) area. Hydrology studies are ongoing and are expected to be completed by 17 October 2008. Environmental surveys are underway to determine the appropriate areas for the proposed spoil bank gapping within the Old Estelle discharge canal and for the removal of plugs in Bayou des Familles and other canals. In addition, the surveys will determine the appropriate water flow velocities within the 404 (c) when creating the gaps and removing canal plugs, and the appropriate nutrient loading levels. These studies will be integrated
into the efforts of the Interagency resource team that was formed early in the analysis phase to ensure that the national interest placed on the Bayou aux Carpes site meets the wisest and best use of the area.

d) Planning and design considerations that have been taken to avoid additional impacts from any reasonably foreseeable future flood protection measures (i.e. the Louisiana Area Coastal Protection and Restoration (LACPR) Study) when designing hurricane protection to prevent further impacts to the 404 (c) area.

In 2007, Congress authorized the Corps to conduct a study to be known as the Louisiana Coastal Protection and Restoration (LACPR) to determine viable projects to be considered for providing a higher level of risk reduction (Category 5) and coastal restoration for southern Louisiana. The Corps is not authorized by Congress to incorporate adaptations for LACPR when planning and designing the 1 percent risk reduction projects; however, the Corps is carefully considering the impacts that could occur if Congress authorized a larger project.

Of the alternatives investigated to reduce risk during a 100 year storm event, the GIWW WCC alternative (the proposed action) has the greatest adaptability to accommodate an enlargement. The Corps proposes that the upgrade to the floodwall and earthen berm be constructed via water access as currently proposed. In addition, all upgrades to levee and floodwall stretches that border the eastern and northern side of the 404 (c) area would be shifted to the protected side of the risk reduction system and would not impact the 404 (c) area. It is also not likely that a Category 5 upgrade to the risk reduction system would require movement of the navigation gate(s) structure.

The GIWW A alternative which would bisect the 404 (c) area would require additional construction impacts to cross the 404 (c) area, potentially compounding the ecological and hydrologic impacts to the area.

If the Algiers Gate alternative were constructed it would require further upgrades to the Harvey Canal and levees west of Harvey Canal, which would result in more business relocations, leaves Harvey Canal business on the flood side of the protection system, and has more direct environmental impacts. This would pose serious design considerations and costs given the length of the system (45,720 LF or 9 miles), the instability of the western side of the Harvey Canal, and the amount of upgrades to floodgates and pump stations required to reach the prescribed elevations.

The Parallel Protection alternative poses even more serious design and cost issues. Upgrading approximately 27 miles of the risk reduction system would include the upgrades and impacts listed above for the Harvey Canal and upgrades for all of the levees, floodwalls, and floodgates along the Algiers Canal, and the Belle Chasse tunnel. If upgrading the current alignment along the Algiers and Harvey canals for the 1 percent storm risk reduction system requires the relocation of approximately 700 people and 55
businesses, upgrading the system for a Category 5 system would potentially directly impact 1,000s of people and hundreds of businesses.

e) Detailed plan for adequate site specific mitigation of unavoidable adverse impacts to the 404 (c) area, at a level commensurate with the significance of an action impacting wetlands with in a 404 (c) area.

The Corps agrees that mitigation for unavoidable impacts to the unique and nationally significant Bayou aux Carpes 404 (c) wetlands would be determined in partnership with the EPA and NPS and that mitigation would occur within the 404 (c) area and/or the adjacent Jean Lafitte National Historic Park and Preserve. Mitigation projects proposed by EPA, NPS and other members of the Interagency team consist of spoil bank gapping of drill hole areas within the 404 (c) area, and tallow tree control projects within the Bayou aux Carpes 404 (c) area and the National Park. The Interagency team is committed to continue to investigate reasonable alternatives as the Corps moves forward with finalizing a construction alternative for the GIWW West Closure Complex. Once field surveys are conducted, and refined habitat units of impact are defined, mitigation projects can be explored and designs can be developed and submitted to the Interagency team for review. Once a decision is made by the Corps on the governments action for reducing risk in the Harvey and Algiers Canal area, mitigation projects would be fully developed. The Corps proposes to implement any required mitigation projects within the 404 (c) area concurrently with the design and construction of the floodwall and earthen berm / access road.

Currently a feasibility level analysis of the mitigation options is underway. A draft Wetlands Value Assessment (WVA) coordinated by US Fish and Wildlife Service has been provided to the Interagency team for comments. The Corps agrees that all impacts calculated by this WVA process will be fully mitigated. Even any unavoidable impacts to the Bayou aux Carpes area as a result of the investigative surveys and borings would be included in the final mitigation plan for the project. The Corps acknowledges the significance of the 404 (c) wetlands and agrees full mitigation for adverse impacts within this unique area may require mitigation in addition to the direct impacts calculated by the WVA to fully compensate for the impacts associated with constructing the Government’s proposed action. Monitoring of the mitigation implemented would be conducted in collaboration with the EPA, the NPS, and other Federal and state resource agency partners. If monitoring reveals any issues, changes would be investigated and implemented to ensure full mitigation.

The Corps in partnership with the non Federal sponsor, the state of Louisiana, the EPA and NPS would closely monitor mitigation efforts within the 404 (c) area throughout the life of the project (50 years) to ensure the benefits of the mitigation projects.

The HSDRRS project is fully authorized and funded at 16.3 billion. This funding includes sufficient amounts to complete the design and construction of any identified mitigation measures.
f) A review of projected wetland impacts as per the Corps 404 (b)(1) guidelines, and EPA 404 (b)(1) and 404 (c) procedures found in 40 CFR Parts 230 & 231.

The Corps is preparing a Clean Water Act, Section 404 evaluation using standard methods and analysis practices. This evaluation will be coordinated with Federal and state resource agencies before being published for a 30-day public review period. The evaluation will follow the guidelines and procedures of 404 (b)(1) and 404 (c) as found in 40 CFR Parts 230 & 231.

A draft of the Corps 404 (b)(1) evaluation that would be available during the 30-day public comment period is provided below.
SECTION 404 (b)(1) EVALUATION

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

PROJECT TITLE: IER #12: WBV, GIWW, Algiers and Harvey Canals Hurricane Protection Alternatives

PROJECT DESCRIPTION.

The proposed action, GIWW West Closure Complex (WCC), includes construction of a navigation/current reduction flow structure and gate in the Gulf Intracoastal Waterway (GIWW) south of the confluence of the Algiers and Harvey Canals and upstream of the Hero Canal, along with an adjacent pumping station and a by-pass canal. Upgrading of existing levees and/or construction of new levee structures will be required for 3 miles; approximately 4200 linear feet (LF) of floodwall construction along the west side of the GIWW, 3700 LF of floodwall improvements from the Harvey Canal to Old Estelle pump station, and 5700 LF of improvements along the V-line levee. This will result in approximately 3 miles of levee improvements or construction for this alternative.

Features of the system along the east side of the GIWW include a 150-to-300 foot gate and a 100-to-200 foot gate built to a protection elevation of 16 feet or greater, tied to the nearest flood protection levee. A pumping station of at least 20,000 cubic feet per second (cfs) will provide 100-year discharge and positive backwater prevention. The bypass channel will be used in the event of the closure of the primary closure structure. The adjacent 404 (c) area will be affected by the levee construction on the western side of the GIWW.

The current levee and floodwall system providing parallel protection for the GIWW, Algiers, and Harvey Canals is 27 miles long and will provide secondary protection to 8.5 feet NAVD.

The new levee design will require approximately 986,000 cubic yards of earthen material and 120,000 cubic yards of stone to construct.

The WCC alternative provides 100-year protection based upon improvements, enhancements, and construction confined to the GIWW reach in concert with tie-ins to improvement to the Hero Canal Levee (IER #13) and the Pipeline Canal Levee (IER #14).

Typical equipment utilized to accomplish the work outlined above will include water trucks, dump trucks, hole cleaners/trenchers, bore/drill rigs, cement and mortar mixers, cranes, graders, tractors/loaders/backhoes, bull dozers, front end loaders, aerial lifts, pile drivers, fork lift, generators and, marine vessels and barges.
FIGURE 1: IER 12
1. **Review of Compliance (230.10 (a)-(d)).**

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);

   | Preliminary | Final |
   | 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);

   | 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).**

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.

   | Substrate impacts | X |
   | Suspended particulates/turbidity impacts | X |
   | Water column impacts | X |
   | Alteration of current patterns and water circulation | X |
   | Alteration of normal water fluctuations/hydroperiod | X |
   | Alteration of salinity gradients | X |

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

   (1) Effect on threatened/endangered species
   (2) Effect on the aquatic food web.

   | Effect on threatened/endangered species | X |
   | Effect on the aquatic food web | X |
2. Technical Evaluation Factors (Subparts C-F).

<table>
<thead>
<tr>
<th>N/A</th>
<th>Not Significant</th>
<th>Significant*</th>
</tr>
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<tbody>
<tr>
<td></td>
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<td>X</td>
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</table>

(3) Effect on other wildlife (mammals, birds, reptiles, and amphibians).

(c. Special Aquatic Sites (Subpart E).

<table>
<thead>
<tr>
<th></th>
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<tbody>
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</tbody>
</table>

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

(d. Human Use Characteristics (Subpart F).

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<thead>
<tr>
<th></th>
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</tbody>
</table>

(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.

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

Implementation of the proposed action will directly impact approximately 232.2 acres of wetland habitat. All wetland impacts will occur adjacent to sections of pre-existing ROW within the GIWW reach. The proposed action will primarily impact bottomland hardwood forest, cypress-tupelo swamp and marsh wetland habitats. The majority of the wetland impacts will occur on the eastern side of the GIWW due to the construction of the gate and bypass channel. Wetland impacts are minimized along the remaining sections of the alternative by utilizing floodwall and protected side shifts where necessary, particularly to avoid additional impacts to the EPA 404 (c) area. Among the wetlands potentially impacted by the proposed action, a total of 71 acres of forested wetland habitat will be impacted, specifically requiring in-kind mitigation. Approximately 9.6 acres of wetland impacts within the GIWW reach would potentially occur within the EPA Bayou Aux Carpes 404 (c) site.

3. Evaluation of Dredged or Fill Material (Subpart G).³

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

<table>
<thead>
<tr>
<th></th>
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<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Physical characteristics</td>
<td></td>
</tr>
<tr>
<td>(2)</td>
<td>Hydrography in relation to known or anticipated sources of contaminants</td>
<td>No*</td>
</tr>
<tr>
<td>(3)</td>
<td>Results from previous testing of the material or similar material in the vicinity of the project</td>
<td>Yes</td>
</tr>
<tr>
<td>(4)</td>
<td>Known, significant sources of persistent pesticides from land runoff or percolation</td>
<td>No*</td>
</tr>
<tr>
<td>(5)</td>
<td>Spill records for petroleum products or designated (Section 311 of CWA) hazardous substances</td>
<td>No*</td>
</tr>
<tr>
<td>(6)</td>
<td>Other public records of significant introduction of contaminants from industries, municipalities, or other sources</td>
<td>No*</td>
</tr>
</tbody>
</table>
3. Evaluation of Dredged or Fill Material (Subpart G)\(^3\)

(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

(8) Other sources (specify) \(\text{No}\)*

* All fill material will be free from contaminants before use in levee construction projects. The fill will come from multiple sources but will all meet minimal physical and chemical criteria being evaluated separate IERs.

Appropriate references:
3. Sector Gate South, Final Assessment Report, GIWW, Algiers and Harvey Canal and Highpoint Shooting Range, AEROSTAR Environmental Services, July 2008

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.

4. Disposal Site Delineation (230.11(f)).

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

<table>
<thead>
<tr>
<th>Factor</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Depth of water at disposal site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Current velocity, direction, and variability at disposal site</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Degree of turbulence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Water column stratification</td>
<td></td>
<td></td>
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<tr>
<td>5. Discharge vessel speed and direction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Rate of discharge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Dredged material characteristics (constituents, amount, and type of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>material, settling velocities)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Number of discharges per unit of time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Other factors affecting rates and patterns of mixing (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

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.

Actions taken: A number of actions will minimize the adverse effects of the proposed actions.
5. **Actions to Minimize Adverse Effects (Subpart H).**

The material must meet certain criteria to be used in levee construction, and will be similar to material used in the original levee work.

According to the Corps, all material will be free from contaminants before use in levee rebuilding projects. The fill may come from many different areas being evaluated in separate IERs. Qualified contractors using the appropriate equipment to minimize impacts to wetland areas will place all material.

The new footprint of the levee was designed to minimize wetland impacts by utilizing existing ROW and non-wetland areas whenever feasible. Best Management Practices will be utilized during the placement of the fill to minimize runoff and turbidity.

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 (adverse) environmental effects of the proposed discharge as related to:

- a. Physical substrate at the disposal site (review sections 2a, 3, 4, and 5 above).

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
</tr>
</thead>
</table>

- b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
</tr>
</thead>
</table>

- c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5)

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
</tr>
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</table>

- d. Contaminant availability (review sections 2a, 3, and 4).

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
</tr>
</thead>
</table>

- e. Aquatic ecosystem structure and function (review sections 2b and c, 3, and 5).

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
</tr>
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</table>

- f. Disposal site (review sections 2, 4, and 5).

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
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</table>

- g. Cumulative impact on the aquatic ecosystem.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
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</thead>
</table>

- h. Secondary impacts on the aquatic ecosystem.

<table>
<thead>
<tr>
<th>YES</th>
<th>NO*</th>
</tr>
</thead>
</table>

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

1 A negative response to three or more of the compliance criteria at this stage indicates that the proposed project 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.

2 A negative response 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.

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

7. **Evaluation Responsibility.**

Evaluation prepared by:

Position: Robert H. Boudet, Senior Project Manager, AEROSTAR Environmental Services

Date: October 10, 2008

Evaluation reviewed by:
8. Findings.

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

YES

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       Elizabeth Wiggins
Chief, Environmental Planning and Compliance Branch
In addition, below is a path ahead for this project, the GIWW West Closure Complex – Individual Environmental Report 12. Since the project being proposed is a Federal action, it is in the public’s best interest to present all of the information concurrently. Thus it is in the government’s best interest to simultaneously publish for 30 day public review the draft Individual Environmental Report, the Corps Clean Water Act 404 (b)(1) public notice, and the EPA notice of consideration of a modification to the Bayou aux Carpes 404 (c) Final Determination. Additionally, given the Administration’s commitment to expedite the construction of the HSDRRS and the Corps’ stated goal of having the system in place by 2011, the simultaneous publishing of the government’s proposal is in the public’s best interest and is critical for moving this project towards completion.
### Draft Path Forward with GIWW WCC

<table>
<thead>
<tr>
<th>Task</th>
<th>Duration</th>
<th>Start Date</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colonel Lee Approved Proposed Action</td>
<td></td>
<td>7/10/2008</td>
<td></td>
</tr>
<tr>
<td>Briefed Corps TFH Director</td>
<td></td>
<td>7/24/2008</td>
<td></td>
</tr>
<tr>
<td>Briefed Corps MVD Commander</td>
<td></td>
<td>7/30/2008</td>
<td></td>
</tr>
<tr>
<td>Briefed Corps HQ</td>
<td></td>
<td>8/13/2008</td>
<td></td>
</tr>
<tr>
<td>Corps Submitted CZM, WQ, T&amp;E, etc.</td>
<td></td>
<td>8/18/2008</td>
<td></td>
</tr>
<tr>
<td>Public Meeting (IER 12,13,14)</td>
<td></td>
<td>8/21/2008</td>
<td></td>
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<tr>
<td>Briefed Corps ASA</td>
<td></td>
<td>9/16/2008</td>
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<tr>
<td>EPA Briefed HQ Level</td>
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<td>9/30/2008</td>
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<tr>
<td>NGO Quarterly Meeting</td>
<td></td>
<td>10/7/2008</td>
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</tr>
<tr>
<td>Submit Formal Request to EPA for Modification of 404 (c) Final Determination</td>
<td></td>
<td>11/4/08</td>
<td>Review of Corps' Request for Modification Document</td>
</tr>
<tr>
<td>EPA Completeness Review</td>
<td></td>
<td>11/4/08</td>
<td>EPA will get draft IER 12 to review before it goes out for public comments</td>
</tr>
<tr>
<td>Complete Draft IER 12 and 404 (b)(1) Public Notice</td>
<td></td>
<td>TBD</td>
<td>Concurrent Tasks</td>
</tr>
<tr>
<td>IER 12 Public Review - Start</td>
<td>30</td>
<td>12/4/08</td>
<td>Possibility for an addendum and second 30-day public review period if substantive comments received.</td>
</tr>
<tr>
<td>IER 12 Clean Water Act Section 404 (b)(1) Public Notice public review</td>
<td>30</td>
<td>12/4/08</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
</tr>
<tr>
<td>EPA notice in Federal Register: Proposed modification; Request for comments to the proposed action; Notice for a public hearing regarding the proposed action</td>
<td>30</td>
<td>12/4/08</td>
<td>Effective 30 days after publication (2/18/09) Approved by Chief PM-R</td>
</tr>
<tr>
<td>Corps Review Public Comments</td>
<td>7</td>
<td>1/3/09</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
</tr>
<tr>
<td>Joint Corps/EPA public hearing on proposed action</td>
<td></td>
<td>1/5/09</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
</tr>
<tr>
<td>EPA review of public comments on proposed action (with Corps support)</td>
<td>7</td>
<td>1/5/09</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
</tr>
<tr>
<td>Final IER and Clean Water Act Section 404 (b)(1) staffed for approval</td>
<td>7</td>
<td>1/10/09</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
</tr>
<tr>
<td>EPA R6 sends all supporting documentation to EPA HQ</td>
<td>7</td>
<td>1/12/09</td>
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<tr>
<td>EPA lists modification in Fed Reg.</td>
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<td>1/19/09</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
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<tr>
<td>Final Modification Determination</td>
<td>30</td>
<td>1/19/09</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
</tr>
<tr>
<td>Signing of Clean Water Act 404 (b)(1)</td>
<td>0</td>
<td>2/19/09</td>
<td>IER 12 Decision Record routed for Commanders approval 1 (assumes no substantive comment) COL Lee signs Final IER 12 anytime after 1/11/09</td>
</tr>
</tbody>
</table>

1 Approval of IER 12 Decision Record allows Corps to proceed with approval of Project Description Document (Internal Corps Document) and a Project Partnering Agreement with the non-Federal Sponsor (State of Louisiana – (CPRA). 404 (b)(1) not signed by Corps until EPA modification is approved and published.
Literature Cited


Appendix L: IER # 12 Algiers Canal Dredging and Disposal Plan

BACKGROUND
Based on the results of the HEC-RAS hydraulic models for the GIWW West Closure Complex, a still water level of 5.8 with a top of protection of 8.5 would require a 20,000 cfs pump station and minimize the work along Algiers and Harvey Canals. Dredging of the Algiers Canal would be required from the Belle Chasse Tunnel South to the Hero Cutoff. Geotechnical analysis conducted with the proposed dredged channel has shown that the existing levees will remain stable with the revised channel geometry. Based on preliminary design results it was determined that a retention basin still water level between 5 and 6 would minimize the required fortifications along the Algiers and Harvey Canals. With a levee built to design elevation 8.5, only one lift will be needed to maintain El. 8.5 over 50 years.

METHODS
Currently the project team is exploring the possibility of dredging Algiers Canal to lower the water elevation in the retention basin behind the proposed gated structure.

Dredging is proposed to be performed between the Harvey/Belle Chasse tunnel, and the confluence of the Harvey Canal and Algiers Canal, a distance of approximately 4.9 miles. Dredging shall be performed to the grades, widths and slopes shown below.
QUANTITIES

Approximately 700,000 cubic yards would be excavated from the Algiers Canal.

FREQUENCY

The frequency of maintenance dredging would exceed 20 years.

SEDIMENT TESTING

The CEMVN will notify your agency as to which course of action will be pursued once the results of the sediment tests are available and the National Park Service is consulted and accepts the Geocrib plan.

DISPOSAL

The proposed action is for the dredge material to be utilized in a marsh restoration project in the JLNHPP. Material would be barged to the site from the Algiers canal (see figures 1-4). The plan is still being coordinated with resource agencies and will be decided once the full costs and benefits of the plans can be determined. Disposal options are being investigated as described below in case costs, logistics of the disposal plan, or contaminants are found to be an issue. The CEMVN would notify the appropriate resource
agencies as to which course of action would be pursued once cost estimates the results of the sediment tests are available and the National Park Service has agreed to the plan.

Disposal options are consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program. This requires that dredged material be used beneficially when practicable. Two alternatives have been discussed with the Interagency team. The first alternative is the disposal of the material into the JLNHPP Lake Salvador “Geocrib”, and the second one is the use of the material in the Walker Road borrow pits. The Geocrib option is preferred because the wetlands created with this material would be counted as mitigation for the HSDRRS projects.

Provided the material is determined to not be contaminated, the material could be excavated via either

a) hydraulic cutter head dredge and transported as a slurry to a disposal site(s) via pipeline, or
b) via mechanical dredge (i.e. barge mounted dragline or backhoe) and placed in barges and transported to site, and either removed from the barges via a hydraulic pump and transported to the site via pipeline, or offloaded from barges, placed within trucks, and hauled to disposal site where it would then be mechanically offloaded into the disposal site.

The following alternative plan would be preferred for accomplishment of this task:

a) Material from the Algiers Canal to be excavated by barge-mounted dragline/backhoe and transported via barge from Algiers Canal down the GIWW, Bayou Barataria and Lake Salvador, and placed within the Geocrib site in Jean Lafitte National Historical Park and Preserve. Retention dikes would be constructed as necessary in order to retain the dredged material and prevent effluent sedimentation from occurring outside of the site. Prior to disposal, a before disposal survey of the disposal site, as well as the water bodies adjacent to the disposal site, would be performed. This 16 mile transport option is shown in the figures below.

The following plans would be considered as alternatives to the preferred plan for accomplishment of this task:

b) Hydraulic cutter head dredging, with material excavated from the canal transported via barge from Algiers Canal down the GIWW, Bayou Barataria and Lake Salvador, and placed within the Geocrib site in Jean Lafitte National Historical Park and Preserve. Retention dikes would have to be constructed as necessary in order to retain the dredged slurry and prevent effluent sedimentation from occurring outside of the site. A silt screen/turbidity curtain may be installed to trap and prevent any sediment that might exit the site and fall out into the adjacent water bodies. Prior to disposal, a before disposal survey of the disposal site, as well as the water bodies adjacent to the disposal site, would be performed.

c) Material from the Algiers Canal to be excavated by hydraulic cutter head dredge and transported via pipeline within Algiers and Hero Canals and placed within the Walker Roads borrow pits adjacent to Hero Canal. Retention dikes would be constructed around the pit(s) as necessary in order to retain the dredged slurry to the pit(s) and prevent effluent sedimentation from occurring outside of the pit(s). A marsh buggy dragline/backhoe would be used for construction of the retention dikes with borrow for retention dikes to come from within the pit(s) themselves. Waste water would be drained from the pit(s) via spill box weirs that would be constructed within the retention dikes paralleling Bayou Barrier canal. The spill box weirs would be controlled and monitored to assure that retention of the material is maximized and to prevent effluent sedimentation from occurring within Bayou Barrier. A silt screen/turbidity curtain would be installed in Bayou Barriere just north of the spill box to trap and prevent any sediment that might exit the weir and fall out into the canal/bayou. Prior to disposal, a before disposal survey of the
d) Material from the Algiers Canal to be excavated by barge-mounted dragline/backhoe and transported via barge and placed within the Walker Roads borrow pits adjacent to Hero Canal. The material could either be offloaded onto trucks and hauled to the Walker Road borrow pits, or removed from barge via hydraulic pump and transported via pipeline pumped to the Walker Road borrow pits. Retention dikes would be constructed around the pit(s) as necessary in order to retain the dredged material to the pit(s) and prevent effluent sedimentation from occurring outside of the pit(s). A marsh buggy dragline/backhoe would be used for construction of the retention dikes with borrow for retention dikes to come from within the pit(s) themselves. Waste water would be drained from the pit(s) via spill box weirs that would be constructed within the retention dikes paralleling Bayou Barrier canal. The spill box weirs would be controlled and monitored to assure that retention of the material is maximized and to prevent effluent sedimentation from occurring within Bayou Barrier. A silt screen/turbidity curtain would be installed in Bayou Barriere just north of the spill box to trap and prevent any sediment that might exit the weir and fall out into the canal/bayou. Prior to disposal, a before disposal survey of the canal would be performed and the bayou restored to pre-disposal conditions if needed. The Corps considers this a beneficial use of the material because Plaquemines Parish would like for the borrow sites to be filled in. This is a 7.5 mile transport option.

e) If the material is found to be classified as contaminated then the material would be mechanically dredged (i.e. barge-mounted dragline or backhoe) and the excavated material would be placed in sealed barges and transported to a disposal site for contaminated material. Initial test conducted by the Corps do not indicate that the material is contaminate, but additional testing is underway. This is a 77 mile transport option to the Type I landfill in Venice, LA.
Figure 1. Extent of Dredging in Algiers Canal
Figure 2. Pipeline Path from Algiers Canal to Walker Road Borrow Pits
Figure 3. Geocrib Site Map

Lake Salvador Shoreline Protection Project
Marsh Restoration Phase

Approximate Park Boundary
Figure 4. Barge Path from Algiers Canal to Geocrib Site
Section 84 was not covered from at least 1945 to at least 1949, appeared to be undeveloped from at least 1951 to 2004, and appears to have been used as Sector Gate construction staging since 2005.

Section 85 was not covered from at least 1945 to at least 1949, appeared to be undeveloped from at least 1951 to at least 1967, was not covered in 1969, appeared to be developed with the Cousins Pump Station in 1972, was not covered in 1975, and appears to have been developed with the Cousins Pump Station and commercial properties since at least 1980.

1.6 Findings and Conclusions

AEROSTAR has performed a Phase 1 ESA in conformance with the scope and limitations of ASTM Standard E 1527-05 of IER 12, located along the Algiers Canal-Intracoastal Waterway and Harvey Canal, Jefferson, Orleans, and Plaquemines Parishes, Louisiana, hereafter referred to as the site. Any exceptions to, or deletions from, this practice are described in Section 2 of this report. The Executive Summary serves as a summary of this report and presents the significant findings, conclusions and recommendations. The Executive Summary should not be considered a stand-alone document and must be evaluated in conjunction with the discussions, supporting documentation, and limitations within this ESA report.

This assessment has revealed no evidence of recognized environmental conditions in connection with the site, except for those listed in Table 1 in Section 1.7 of this report.

1.7 Recommendations

Based on the information reviewed during this investigation, additional assessment is recommended at this time. On-site inspections of properties identified as recognized environmental conditions are recommended once access agreements are executed with the owners. Additionally, interviews with owners and occupants are recommended as access agreements are provided. Soil and groundwater assessment may be prudent at sites with identified recognized environmental conditions should acquisition of these sites be requested for construction activities. AEROSTAR recommends that these conclusions and recommendations be reviewed again as soon as 60% construction plans are available.

<table>
<thead>
<tr>
<th>Section Number</th>
<th>Section Summary</th>
<th>Center Location</th>
<th>Facility Name/Use</th>
<th>Recognized Environmental Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjoining properties to the north of Section 1</td>
<td>The northern adjoining properties appear to have been commercially developed since at least 1967.</td>
<td>N29.873523, W-90.068499</td>
<td>Boat Stuf</td>
<td>Offsite concerns were noted from listings as Power Dynamics Hydraulic Equipment from at least 1975 to at least 2000.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Northern portion of Moser Fabrication</td>
<td>Offsite concerns were noted from a listing as Evans Corp. in 1961.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.872149, W-90.069156</td>
<td>Majors Tool Company, Inc.</td>
<td>Offsite concerns were noted from lack of soil and groundwater quality information for this UST facility.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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<tr>
<td>1</td>
<td>Section 1 appeared to be commercially developed from at least 1961 to 2005, and appears to have been commercially developed and vacant commercial property since 2006.</td>
<td>N29.874387, W-90.068986</td>
<td>Southern portion of Moser Fabrication</td>
<td>Onsite concerns were noted from a listing as Evans Corp. in 1961 and drums and ASTs of unknown content and condition present onsite.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.872149, W-90.069156</td>
<td>Majors Tool Company, Inc.</td>
<td>Offsite concerns were noted from lack of soil and groundwater quality information for this UST facility.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.871057, W-90.067078</td>
<td>Western portion of Par 3</td>
<td>Onsite concerns were noted from a listing as Taylor Oil Field Rental in 1965 and the likely use of herbicides and pesticides.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.870347, W-90.068285</td>
<td>Evans Corp.</td>
<td>Onsite concerns were noted from drums and ASTs of unknown contents and condition present onsite.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.872654, W-90.068307</td>
<td>Vacant commercial property</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1961.</td>
</tr>
<tr>
<td>Adjoining properties to the east of Section 1</td>
<td>The eastern adjoining properties appeared to be commercially developed from at least 1967 to at least 2005, and appear to have been vacant commercial property since 2006.</td>
<td>N29.873024, W-90.067200</td>
<td>A-1 Electrical Contractors</td>
<td>Offsite concerns were noted from the drilling of Well 68731.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.871526, W-90.066104</td>
<td>Eastern portion of Par 3</td>
<td>Offsite concerns were noted from a listing as Taylor Oil Field Rental in 1965 and the likely use of herbicides and pesticides.</td>
</tr>
<tr>
<td>2</td>
<td>Section 2 appeared to be residentially developed in 1951, and appears to have been commercially developed since at least 1967.</td>
<td>N29.868159, W-90.065564</td>
<td>Hydradyne Hydraulics, Inc.</td>
<td>Onsite concerns were noted from listings as a maintenance facility (1975-1980) and as Hydradyne Hydraulics since at least 2005.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>From N29.869274, W-90.067771 to N29.864629, W-90.066148</td>
<td>Dynamic Industries, Inc.</td>
<td>Onsite concerns were noted from a listing in 2005 of Dynamic Industries, present operations, the presence of drums and ASTs of unknown contents and condition, and a sandblast grit discharge into the Harvey Canal.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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<tr>
<td>Adjoining properties to the east of Section 2</td>
<td>The eastern adjoining properties appeared to be commercially developed from at least 1967 to at least 1991, vacant commercial property from at least 1994 to at least 1996, commercially developed from at least 1998 to at least 2000, and appear to have been commercially developed and vacant commercial property since at least 2004.</td>
<td>N29.867842, W-90.063780</td>
<td>Vacant property</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1967.</td>
</tr>
<tr>
<td>3</td>
<td>Section 3 appears to have been commercially developed since at least 1967.</td>
<td>N29.862645, W-90.065297</td>
<td>Chet Morison Contractors, Inc.</td>
<td>Onsite concerns were noted from sandblasting activities and the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>From N29.863956, W-90.065967 to N29.863067, W-90.063670</td>
<td>Vacant commercial properties</td>
<td></td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1967.</td>
</tr>
<tr>
<td></td>
<td>N29.863028, W-90.063624</td>
<td>National Environmental Controls</td>
<td></td>
<td>Onsite concerns were noted from lack of regulatory information on this NFRAP facility.</td>
</tr>
<tr>
<td>Adjoining properties to the east of Section 3</td>
<td>The eastern adjoining properties appeared to be commercially developed from at least 1967 to at least 1991, vacant commercial property in 1994, commercially developed from 1995 to at least 2004, and appear to have been vacant commercial property since 2005.</td>
<td>N29.864165, W-90.062740</td>
<td>Vacant commercial properties</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1967.</td>
</tr>
<tr>
<td>4</td>
<td>Section 4 appears to have been commercially developed since at least 1967.</td>
<td>From N29.861966, W-90.065200 to N29.856299, W-90.063213</td>
<td>Premier Industries, Inc.</td>
<td>Onsite concerns were noted from listings as New Orleans Shipyard (1991) and Premier Industries (2005), present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>From N29.862371, W-90.063542 to N29.856747, W-90.061538</td>
<td>Vacant commercial properties</td>
<td></td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1967.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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<tr>
<td>Adjoining</td>
<td>The eastern appeared to be commercially developed from at least 1972 to at least</td>
<td>From N29.856266, W-90.063247 to N29.853316, W-90.062160</td>
<td>Vacant commercial property</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1972 and the drilling of Well 167984.</td>
</tr>
<tr>
<td>properties</td>
<td>1991 and appear to have been vacant commercial property since at least 1994.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to the east of</td>
<td>Section 5 appears to have been commercially developed since at least 1980.</td>
<td>From N29.856132, W-90.060598</td>
<td>Cell tower</td>
<td>Onsite concerns were noted from listings of oil and gas well drilling companies (1980-2005), present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Section 4</td>
<td>The eastern adjoining properties appear to have been commercially developed since at least 1972.</td>
<td>N29.856914, W-90.059824; N29.855647, W-90.059408</td>
<td>Eastern portion of Nabors storage yard; electrical substation</td>
<td>Offsite concerns were noted from listings of oil and gas well drilling companies (1980-2005), present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining</td>
<td>Section 6 appears to have been commercially and residentially developed since at least 1972.</td>
<td>N29.8521811, W-90.061881</td>
<td>Belle Chasse Marine Transport, Inc.</td>
<td>Onsite concerns were noted from the onsite tank farm and the listing as Mayronne Drilling Mud, Co. from 1980 to 1996.</td>
</tr>
<tr>
<td>properties</td>
<td></td>
<td>N29.852620, W-90.060242</td>
<td>Hassel's Trailer Park</td>
<td>Onsite concerns were noted from the drilling of Well 184790 and a listing as American Termite and Pest and the possible storage of associated chemicals.</td>
</tr>
<tr>
<td>to the east of</td>
<td></td>
<td>N29.852981, W-90.058564</td>
<td>AA Vacuum Truck Service, Inc.</td>
<td>Onsite concerns were noted from the listing as AA Vacuum Truck Service in 2000, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Section 5</td>
<td></td>
<td>N29.852871, W-90.061743</td>
<td>Vacant warehouse</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1972.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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<tr>
<td>7</td>
<td>Section 7 appeared to be commercially developed from at least 1967 to at least 2005, and appears to have been commercially developed and vacant commercial property since 2006.</td>
<td>N29.851101, W-90.061800</td>
<td>US Minerals Stan Blast</td>
<td>Onsite concerns were noted from a listing as Avondale Boat Division in 1991, present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.851837, W-90.059705</td>
<td>Center Staging, Inc.</td>
<td>Onsite concerns were noted from a listing as Degulf Supply, a pipeline supplier, from at least 1975 to at least 1991.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.852285, W-90.059019</td>
<td>Crescent City Choppers, RT Manufacturing</td>
<td>Onsite concerns were noted from listings as a mobile laboratory company and as commercial-industrial businesses from at least 1975 to at least 2000 and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.851790, W-90.058853</td>
<td>Swanson's Perfect Ponds</td>
<td>Onsite concerns were noted from a 2005 listing as a lawn and maintenance business and possible stored associated chemicals and substances.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.850769, W-90.059068</td>
<td>Vacant Northrup-Grumman facility</td>
<td>Onsite concerns were noted from listings as commercial-industrial businesses since at least 1969 and the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the east of Section 7</td>
<td>The eastern adjoining properties appeared to be residentially developed from at least 1983 to at least 1991, vacant residential properties from at least 1994 to at least 2004, and appear to have been wooded property since 2005.</td>
<td>N29.852273, W-90.056413</td>
<td>Wooded property</td>
<td>Offsite concerns were noted from the drilling of Well 131717.</td>
</tr>
<tr>
<td>8</td>
<td>Section 8 appeared to be commercially and residentially developed from at least 1967 to at least 1995 and appears to have been commercially developed since 1996.</td>
<td>From N29.845751, W-90.057229 to N29.844176, W-90.056696</td>
<td>Boomtown Casino</td>
<td>Onsite concerns were noted from a 1975 listing as Tom Hicks Transfer Co., the presence of a storage area of drums and ASTs of diesel and unknown contents and condition.</td>
</tr>
</tbody>
</table>
## Table 1
**Properties with Recognized Environmental Conditions**

<table>
<thead>
<tr>
<th>Section Number</th>
<th>Section Summary</th>
<th>Center Location</th>
<th>Facility Name/Use</th>
<th>Recognized Environmental Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Section 9 appeared to be residentially developed in 1951, commercially and residentially developed from at least 1967 to at least 1991, commercially developed and vacant residential property from at least 1994 to 1995, and appears to have been commercially developed since 1996.</td>
<td>From N29.850110, W-90.058638 to N29.845751, W-90.057229</td>
<td>M-I Swaco, Inc.</td>
<td>Onsite concerns were noted from listings as M-I Swaco, an oil well drilling mud additives company and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>10</td>
<td>Section 10 appeared to be commercially and residentially developed in 1951, and appears to have been commercially developed since at least 1967.</td>
<td>N29.843634, W-90.057080</td>
<td>Mississippi River Recycling</td>
<td>Onsite concerns were noted from salvage company listings (2000-2005), present operations, road construction, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the east of Section 10</td>
<td>N29.842559, W-90.056883</td>
<td>Goldin Metals</td>
<td>Onsite concerns were noted from a trucking company listing (1969), salvage company listings (1996, 2005), present operations, road construction, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>11</td>
<td>The eastern adjoining properties appeared to be commercially and residentially developed from at least 1972 to at least 1991 and appear to have been vacant properties since at least 1994.</td>
<td>From N29.845947, W-90.053560</td>
<td></td>
<td>Offsite concerns were noted from lack of commercial occupant information from at least 1972 to at least 1991.</td>
</tr>
<tr>
<td></td>
<td>Section 11 appeared to be residentially developed in 1951 and appears to have been commercially and residentially developed since at least 1967.</td>
<td>N29.841457, W-90.055781 to N29.838547, W-90.054649</td>
<td>Bollinger Gretna Shipyards</td>
<td>Onsite concerns were noted from shipyard listing since at least 1996, present operations, road construction, regulatory status, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the east of Section 11</td>
<td>N29.841391, W-90.052090</td>
<td>Captain Lee Jr. Marine, Inc.</td>
<td>Offsite concerns were noted from a 2005 listing as a contract designer and present operations.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>12</td>
<td>Section 12 appears to have been developed with the Hero Pump Station since at least 1951.</td>
<td>From N29.838547, W-90.054649 to N29.837520, W-90.054343</td>
<td>Hero Pump Station</td>
<td>Onsite concerns were noted from present operations and ASTs of unknown condition.</td>
</tr>
<tr>
<td>13</td>
<td>Section 13 appeared to be residentially developed from at least 1951 to at least 1983 and appears to have been commercially developed since at least 1986.</td>
<td>N29.836689, W-90.055009; N29.837239, W-90.053546</td>
<td>Beire Radio; Boat Stuf</td>
<td>Onsite concerns were noted from listings of various construction and oil field service businesses.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the east of Section 13</td>
<td>N29.835537, W-90.054977</td>
<td>Cell tower</td>
<td>Onsite concerns were noted from the presence of associated equipment of unknown condition.</td>
</tr>
<tr>
<td></td>
<td>The eastern adjoining properties appeared to be residentially developed in 1951 and appear to have been commercially developed since at least 1967.</td>
<td>N29.837054, W-90.052335</td>
<td>Commercial warehouse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the south of Section 13</td>
<td>N29.833926, W-90.055845</td>
<td>Industrial Welding Supply Company</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1976.</td>
</tr>
<tr>
<td></td>
<td>The southern adjoining properties appear to have been commercially developed since at least 1986.</td>
<td>N29.835898, W-90.056437</td>
<td>Royal Chemical Corporation</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Section 14 appeared to be residentially developed in 1951, commercially and residentially developed from at least 1967 to 2004, and appears to have been commercially developed since 2005.</td>
<td>N29.0836002, W-90.057824</td>
<td>Barnett Marine Contractors, Inc.</td>
<td>Onsite concerns were noted from listings as Royal Corp (1986-1991), present operations, and the presence of buckets and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.835784, W-90.056717</td>
<td>Vacant warehouse</td>
<td>Onsite concerns were noted from listings as Barnett Marine since at least 1986 and the presence of an AST of unknown contents.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the south of Section 14</td>
<td>N29.833926, W-90.055845</td>
<td>Industrial Welding Supply Company</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1967.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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<tr>
<td>15</td>
<td>Section 15 appeared to be residentially developed in 1951 and appears to have been commercially developed since at least 1967.</td>
<td>N29.833944, W-90.059120</td>
<td>Elmwood Dry Dock and Repair</td>
<td>Onsite concerns were noted from dry dock listings since at least 1986, dilapidated barges, present operations, the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the southeast of Section 15</td>
<td>N29.833394, W-90.057230</td>
<td>Technical Fabrication, Inc.</td>
<td>Offsite concerns were noted from listings as Technical Fabrication since at least 2000.</td>
</tr>
<tr>
<td>16</td>
<td>Section 16 appeared to be residentially developed in 1951 and appears to have been commercially developed since at least 1967.</td>
<td>From N29.833526, W-90.060896 to N29.826836, W-90.068432</td>
<td>McDonough Marine Services, Inc.</td>
<td>Onsite concerns were noted from the drilling of Well 91772, listings as McDonough Marine Services since at least 1986, present operations, and presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the southeast of Section 16</td>
<td>N29.830828, W-90.060664</td>
<td>B Wreckers, Co.</td>
<td>Offsite concerns were noted from present operations as a salvage and wrecker company.</td>
</tr>
<tr>
<td></td>
<td>The southeastern adjoining properties appeared to be residentially developed from at least 1967 to at least 2004 and appear to have been commercially and residentially developed since 2005.</td>
<td>N29.830828, W-90.060664</td>
<td>CLC Liquidators, Inc.</td>
<td>Offsite concerns were noted from a 2005 listing as a wrecker company and present operations.</td>
</tr>
<tr>
<td>17</td>
<td>Section 17 appears to have been commercially developed since at least 1983.</td>
<td>N29.827134, W-90.062273</td>
<td>Alsem Industries, Inc.</td>
<td>Onsite concerns were noted from commercial-industrial listings since at least 1991, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.825435, W-90.064512</td>
<td>Marine Coatings and Linings, Inc.</td>
<td>Onsite concerns were noted from a 2000 listing as a construction company, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>18</td>
<td>Section 18 appears to have been commercially developed since at least 1983.</td>
<td>N29.831126, W-90.056852</td>
<td>Midstream Barge Co.</td>
<td>Onsite concerns were noted from a 2005 listing as Midstream Barge, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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<tr>
<td></td>
<td>N29.829216, W-90.059086; N29.830674, W-90.056607</td>
<td>Universal Services and Associates; Bay Offshore, Limited</td>
<td>Onsite concerns were noted from the commercial-industrial listings since at least 1986, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N29.827131, W-90.061617</td>
<td>Dixie Offshore Transportation Inc.</td>
<td>Onsite concerns were noted from the commercial-industrial listings since at least 1991 and present operations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N29.830314, W-90.056427</td>
<td>Targa, Inc.</td>
<td>Onsite concerns were noted from present operations and the presence of drums and ASTs of unknown contents and condition.</td>
<td></td>
</tr>
<tr>
<td>Unable to be located</td>
<td>Tom Hicks Oilfield and Hauling Company</td>
<td></td>
<td>Onsite concerns were noted from lack of regulatory information on this NFRAP facility.</td>
<td></td>
</tr>
<tr>
<td>Adjoining properties to the northeast of Section 18</td>
<td>The northwestern adjoining properties appeared to be residentially developed from at least 1967 to at least 2004 and appear to have been commercially and residually developed since 2005.</td>
<td>N29.830828, W-90.060664</td>
<td>B Wreckers, Co.</td>
<td>Offsite concerns were noted from present operations as a salvage and wrecker company.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.830828, W-90.060664</td>
<td>CLC Liquidators, Inc.</td>
<td>Offsite concerns were noted from a 2005 listing as a wrecker company and present operations.</td>
</tr>
<tr>
<td>19</td>
<td>Section 19 appears to have been commercially developed since at least 1980.</td>
<td>N29.931821, W-90.055671</td>
<td>Continental Construction, Co.</td>
<td>Onsite concerns were noted from the commercial-industrial listings since at least 2000, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.832107, W-90.054565</td>
<td>Efila Fiberglass Tanks</td>
<td>Onsite concerns were noted from listings as B&amp;I Industries from at least 1991 to at least 2000, the drilling of Well 143396, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.832430, W-90.053278</td>
<td>River Construction, Co.</td>
<td>Onsite concerns were noted from a 2005 listing as River Construction, the presence of creosote-soaked poles, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
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<tr>
<td></td>
<td>Adjoining properties to the northwest of Section 19</td>
<td>N29.830703, W-90.055858</td>
<td>Eymard Towing</td>
<td>Onsite concerns were noted from the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.832430, W-90.053278</td>
<td>Fabricating Yard for Offshore Pylons</td>
<td>Onsite concerns were noted from lack of regulatory information on this ERNS site.</td>
</tr>
<tr>
<td>20</td>
<td>Section 20 appears to have been commercially developed since at least 1972</td>
<td>From N29.832620, W-90.052270 to N29.834070, W-90.049738</td>
<td>Vacant commercial building; Superior Offshore, Inc.; Power Marine; and Wilson</td>
<td>Onsite concerns were noted from the numerous listings of several commercial businesses since at least 1986, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the north of Section 20</td>
<td>N29.835082, W-90.051995; N29.835355, W-90.051057</td>
<td>SeaTrax Marine Cranes, Inc.; Simco Coatings, Inc.</td>
<td>Offsite concerns were noted from the numerous listings of several commercial businesses since at least 1986, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>21</td>
<td>Section 21 appears to have been commercially developed since at least 1983.</td>
<td>N29.835228, W-90.048990</td>
<td>Pelican Marine Supply, Inc., Pelican Grocery, Inc.</td>
<td>Onsite concerns were noted from listings as grocery and marine supply companies since at least 1986 and regulatory status.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.834942, W-90.049798</td>
<td>Belle Chasse Boat and RV Storage</td>
<td>Onsite concerns were noted from present operations.</td>
</tr>
<tr>
<td>22</td>
<td>Section 22 appears to have been commercially developed since at least 1972.</td>
<td>N29.836787, W-90.048266</td>
<td>Scott Armature, Inc.; Climate Controlled Industrial Storage, Inc.</td>
<td>Onsite concerns were noted from listings as electric motor manufacturers and storage companies since at least 1986 and present operations.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>23</td>
<td>Section 23 appeared to be residentially developed in 1951 and appears to have been commercially and residentially developed since at least 1967.</td>
<td>N29.836538, W-90.045522</td>
<td>J. W. Stone Fuel Dock</td>
<td>Onsite concerns were noted from a tank farm, a 2005 listing as Belle Chasse Docks, and present operations.</td>
</tr>
<tr>
<td>24</td>
<td>Section 24 appears to have been commercially developed since at least 1967.</td>
<td>From N29.837506, W-90.045367 to N29.837506, W-90.045367</td>
<td>Sunland Construction, Co.</td>
<td>Onsite concerns were noted from listings as oil field service and construction companies since at least 1980, regulatory status, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the north of Section 22</td>
<td>The northern adjoining properties appeared to be residentially developed in 1972 and appear to have been commercially developed since at least 1983.</td>
<td>Fluid Systems, Inc</td>
<td></td>
<td>Offsite concerns were noted from listings of oil field service companies in 1986 and 2000 to 2005 and present operations.</td>
</tr>
<tr>
<td>Adjoining properties to the northeast of Section 22</td>
<td>The northeastern adjoining properties appeared to be residentially developed from at least 1972 to at least 1991 and appear to have been commercially developed since at least 1994.</td>
<td>N29.837700, W-90.047256</td>
<td>Commercial property</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1993 and present operations.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 23</td>
<td>The northwestern adjoining properties appeared to be residentially developed from at least 1967 to at least 1991 and appear to have been commercially developed since at least 1994.</td>
<td>N29.837700, W-90.047256</td>
<td>Commercial property</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1994.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
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<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>Adjoining properties to the northwest of Section 24</td>
<td>The northwestern adjoining properties appear to have been commercially developed since at least 1972.</td>
<td>N29.840330, W-90.044201</td>
<td>H&amp;E Equipment Rental</td>
<td>Offsite concerns were noted from listings of industrial equipment companies since at least 1980 and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.840260, W-90.044823</td>
<td>General Mill, Inc.</td>
<td>Offsite concerns were noted from listings as engine companies since at least 1980 and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.839931, W-90.045130</td>
<td>Jo-De Equipment Rental, New Orleans Party Rentals</td>
<td>Offsite concerns were noted from listings as an equipment rental business since at least 1980 and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.839560, W-90.046122</td>
<td>Commercial property</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1972.</td>
</tr>
<tr>
<td>25</td>
<td>Section 25 appears to have been commercially developed since at least 1967.</td>
<td>N29.839645, W-90.042132</td>
<td>C&amp;C Boat Works</td>
<td>Onsite concerns were noted from listings as Power Structure from at least 1986 to at least 1991, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.839645, W-90.042132</td>
<td>Omega Service Industries, Inc.</td>
<td>Onsite concerns were noted from lack of regulatory information on this UST facility.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 25</td>
<td>The northwestern adjoining properties appear to have been commercially developed since at least 1972.</td>
<td>N29.841087, W-90.043292</td>
<td>Harbor Construction, Inc.</td>
<td>Offsite concerns were noted from present operations and the drilling of Well 105807.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.841569, W-90.042636</td>
<td>Vacant commercial property</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1972.</td>
</tr>
<tr>
<td>26</td>
<td>Section 26 appeared to be commercially developed from at least 1972 to 2004 and appears to have been vacant commercial property since 2005.</td>
<td>N29.841579, W-90.039670</td>
<td>Southern Imports</td>
<td>Onsite concerns were noted from listings as transportation companies since at least 1980 and the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.841579, W-90.039670</td>
<td>J.A. Brandt and Associates, Inc.</td>
<td>Onsite concerns were noted from lack of regulatory information on this UST facility.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>Adjoining properties to the northwest of Section 26</td>
<td>The northwestern adjoining properties appeared to be commercially developed from at least 1972 to at least 2004 and appear to have been vacant commercial property since 2005.</td>
<td>N29.842713, W-90.041028</td>
<td>Junkyard, vacant commercial property</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1972 and present operations.</td>
</tr>
<tr>
<td>27</td>
<td>Section 27 appears to have been commercially developed since at least 1972.</td>
<td>N29.842480, W-90.039050; N29.844294, W-90.037898</td>
<td>The Design Build Group, Inc., General Marine Leasing</td>
<td>Onsite concerns were noted from listings as Comet Construction (1986-1996) and General Marine Leasing (2005), present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 27</td>
<td>The northwestern adjoining properties appear to have been commercially developed since at least 1972.</td>
<td>N29.843891, W-90.039452</td>
<td>Hobson Galvanizing, Inc.</td>
<td>Offsite concerns were noted from listings as galvanizing and manufacturing businesses since at least 1986, regulatory status, and present operations.</td>
</tr>
<tr>
<td>28</td>
<td>Section 28 appears to have been commercially developed since at least 1980.</td>
<td>N29.843974, W-90.035936</td>
<td>Westbank Business Center</td>
<td>Onsite concerns were noted from numerous commercial listings since at least 1980, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.843201, W-90.036823</td>
<td>H&amp;E Equipment Services Crane Department-Reman Center</td>
<td>Onsite concerns were noted from listings as Production Management (1991) and B&amp;B Trucking and Equipment (2000), present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.843201, W-90.036823</td>
<td>Coastal Equipment Company, Inc.</td>
<td>Onsite concerns were noted from lack of regulatory information on this CE - SQG facility.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 28</td>
<td>The northwestern adjoining properties appear to have been commercially developed since at least 1972.</td>
<td>N29.845234, W-90.036772; N29.844845, W-90.037485</td>
<td>Rasmussen Equipment, Company; Office Park and Laredo Offshore Services, Inc.</td>
<td>Offsite concerns were noted from numerous listings as commercial-industrial businesses since at least 1986 and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.844363, W-90.037806</td>
<td>Gulf Engine and Equipment, Inc.</td>
<td>Offsite concerns were noted from numerous listings as commercial-industrial businesses since at least 1986.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>29</td>
<td>Section 29 appears to have been commercially developed since at least 1980.</td>
<td>N29.845074, W-90.034045</td>
<td>Baker Oil</td>
<td>Onsite concerns were noted from listings as commercial-industrial businesses since at least 1980, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.844288, W-90.034840</td>
<td>B&amp;S Equipment site construction</td>
<td>Onsite concerns were noted from present operations and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 29</td>
<td>The northwestern adjoining properties appeared to be commercially developed in 1972 and appear to have been commercially and residentially developed since 1983.</td>
<td>N29.846586, W-90.033984</td>
<td>Plant Performance Services Seco, Inc.</td>
<td>Offsite concerns were noted from listings as Seco Industries since at least 1986 and regulatory status.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.845738, W-90.035550</td>
<td>Tiger Equipment and Supply</td>
<td>Offsite concerns were noted from listings as oil field service and industrial equipment companies since at least 1986.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.845786, W-90.035290; N29.845503, W-90.035912</td>
<td>Keith’s Diesel and Compressor; Universal Compression</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1986.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.845738, W-90.035550</td>
<td>Baker Oil Tools</td>
<td>Offsite concerns were noted from lack of soil and groundwater quality information for this CE – SQG/UST facility.</td>
</tr>
<tr>
<td>30</td>
<td>Section 30 appears to have been commercially developed since at least 1980.</td>
<td>N29.846267, W-90.031868</td>
<td>Unitech Diesel</td>
<td>Onsite concerns were noted from listings as Louisiana Machine Power from at least 2000 to at least 2005, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.846567, W-90.032524</td>
<td>Panther Helicopters</td>
<td>Onsite concerns were noted from listings as Offshore Service Ships (1980-1991) and Panther Helicopters (1996-2005), present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.846445, W-90.031461</td>
<td>Marine Systems, Inc.</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1980.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
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</tr>
<tr>
<td>Adjoining properties to the northwest of Section 30</td>
<td>The northwestern adjoining properties appear to have been commercially developed since at least 1972.</td>
<td>N29.846586, W-90.033984</td>
<td>Plant Performance Services Seco, Inc.</td>
<td>Offsite concerns were noted from listings as Seco Industries since at least 1986 and regulatory status.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.847567, W-90.031687</td>
<td>Marsh Buggies, Inc.</td>
<td>Offsite concerns were noted from listings as equipment rental companies since at least 1986.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.847958, W-90.032082</td>
<td>Junkyard</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1972 and present operations.</td>
</tr>
<tr>
<td>31</td>
<td>Section 31 appeared to be commercially developed from at least 1983 to at least 1986, vacant commercial property from at least 1989 to at least 1991, and appears to have been commercially developed since at least 1998.</td>
<td>N29.847097, W-90.030614</td>
<td>RV park; Delta Ice, Air, and Heat, Inc.</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1983 and present operations.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 31</td>
<td>The northwestern adjoining properties appeared to be residentially developed in 1972 and appear to have been commercially developed since 1983.</td>
<td>N29.848595, W-90.031164</td>
<td>Torq/Lite, Inc.</td>
<td>Offsite concerns were noted from listings as industrial equipment businesses in 1986 and 2005.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.847958, W-90.032082</td>
<td>Junkyard</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1972 and present operations.</td>
</tr>
<tr>
<td>32</td>
<td>Section 32 appears to have been commercially developed since at least 1980.</td>
<td>N29.848527, W-90.029504</td>
<td>Plains All American Pipeline, LLP</td>
<td>Onsite concerns were noted from listings as BP companies since at least 1991.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.848427, W-90.029711</td>
<td>OFS, Inc.</td>
<td>Onsite concerns were noted from listings as commercial-industrial businesses since at least 1980.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.847836, W-90.029742</td>
<td>F&amp;K Fabrication, Inc.</td>
<td>Onsite concerns were noted from listings as commercial-industrial businesses since at least 1980, present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.848018, W-90.030163</td>
<td>Delta Coatings, Inc.</td>
<td>Onsite concerns were noted from listings as Delta Coatings from at least 1991 to at least 2005, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
</tbody>
</table>
### Table 1
**Properties with Recognized Environmental Conditions**

<table>
<thead>
<tr>
<th>Section Number</th>
<th>Section Summary</th>
<th>Center Location</th>
<th>Facility Name/Use</th>
<th>Recognized Environmental Conditions</th>
</tr>
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<tbody>
<tr>
<td>Adjoining properties to the northwest of Section 32</td>
<td>The northwestern adjoining properties appear to have been commercially developed since at least 1980.</td>
<td>N29.849179, W-90.029851</td>
<td>Door 2 Door</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1980.</td>
</tr>
<tr>
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<td>N29.848936, W-90.030443</td>
<td>Tri-Star Supply, Co.</td>
<td>Offsite concerns were noted from listings as Sullair Gulf States in 1980 and Tri-star Supply since at least 1991.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.848858, W-90.030608</td>
<td>Hydra Force, Inc.</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1980.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.848595, W-90.031164</td>
<td>Torq/Lite, Inc.</td>
<td>Offsite concerns were noted from listings as industrial equipment businesses in 1986 and 2005.</td>
</tr>
<tr>
<td>33</td>
<td>Section 33 appears to have been commercially developed since at least 1972.</td>
<td>N29.848465, W-90.027647</td>
<td>Canal Barge, Co.</td>
<td>Onsite concerns were noted from listings as Canal Barge since at least 1980, present operations, and the presence of drums of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.849265, W-90.028373</td>
<td>Hose Specialty and Supply, Co.</td>
<td>Onsite concerns were noted from listings at an industrial machinery business since at least 1991, present operations, and the presence of drums of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 33</td>
<td>The northwestern adjoining properties appeared to be residentially developed in 1972 and appear to have been commercially developed since at least 1980.</td>
<td>N29.850092, W-90.028984</td>
<td>Aerial Access Equipment</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1986 and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.849661, W-90.029180</td>
<td>Swaglok Capital Valve and Fittings, Inc.</td>
<td>Offsite concerns were noted from listings as Capital Valve and Fittings since at least 1980.</td>
</tr>
<tr>
<td></td>
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<td>N29.849448, W-90.029485</td>
<td>Morgan Equipment Rental</td>
<td>Offsite concerns were noted from a 2005 listing as Morgan Equipment Rental and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.850409, W-90.028513</td>
<td>Bluewater Rubber Gasket</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1980 and present operations.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>34</td>
<td>Section 34 appears to have been commercially developed since at least 1972.</td>
<td>N29.850090, W-90.025912</td>
<td>NREC</td>
<td>Onsite concerns were noted from listings as Marine Engine (1980-1991) and Universal Machine (1996-2000), present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.849460, W-90.027075</td>
<td>Sugarland Garden Soils and Materials</td>
<td>Onsite concerns were noted from the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the northwest of Section 34</td>
<td>N29.851517, W-90.027099</td>
<td>Acme Truck Line, Inc.</td>
<td>Offsite concerns were noted from listings as a trucking company since at least 1980 and present operations.</td>
</tr>
<tr>
<td></td>
<td>The northwestern adjoining properties appeared to be residentially developed in 1972 and appear to have been commercially developed since at least 1980.</td>
<td>N29.850548, W-90.028067</td>
<td>Commercial property</td>
<td>Offsite concerns were noted from listings as commercial businesses.</td>
</tr>
<tr>
<td>35</td>
<td>Section 35 appeared to be residentially developed from at least 1972 to at least 1975, commercially developed from at least 1980 to at least 1986, commercially and residentially developed from at least 1989 to 1995, and appears to have been commercially developed since 1996.</td>
<td>N29.850699, W-90.025250</td>
<td>Ace Transportation Inc.</td>
<td>Onsite concerns were noted from a 2005 listing as B&amp;V Trucking and Equipment, present operations, and the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.851159, W-90.024548</td>
<td>T. O.'s Lawn and Landscaping: Atlas Boats</td>
<td>Onsite concerns were noted from listings as commercial-industrial companies (1980-1996) and a lawn and landscaping business (2005), present operations and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.851233, W-90.025320</td>
<td>Marcel's Limousines</td>
<td>Onsite concerns were noted from present operations and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the northwest of Section 35</td>
<td>N29.581598, W-90.023981</td>
<td>Conmaco</td>
<td>Offsite concerns were noted from regulatory status, listings as Conmaco since at least 1986, and present operations.</td>
</tr>
<tr>
<td></td>
<td>The northwestern adjoining properties appeared to be residentially developed in 1972, commercially developed from at least 1983 to at least 1986, commercially and residentially developed from at least 1989 to at least 1995, and appear to have been commercially developed since 1996.</td>
<td>N29.851877, W-90.026036</td>
<td>CMP Coatings, Inc.</td>
<td>Offsite concerns were noted from as marine coatings businesses since at least 1986 and present operations.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>36</td>
<td>Section 36 appears to have been commercially developed since at least 1972.</td>
<td>N29.852176, W-90.023470</td>
<td>Vacant commercial property</td>
<td>Onsite concerns were noted from a 2000 listing as Wire Line and Testing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.581598, W-90.023981</td>
<td>Conmaco</td>
<td>Onsite concerns were noted from present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 36</td>
<td>The northwestern adjoining properties appeared to be residentially developed in 1972 and appear to have been commercially developed since at least 1980.</td>
<td>N29.853259, W-90.024727</td>
<td>Point Eight Power, Inc.</td>
<td>Offsite concerns were noted from listings as Point Eight Power since at least 1986 and present operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.853055, W-90.024908</td>
<td>Sulzer Enpro, Inc.</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1986 and present operations.</td>
</tr>
<tr>
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<td>N29.581598, W-90.023981</td>
<td>Conmaco</td>
<td>Offsite concerns were noted from regulatory status, listings as Conmaco since at least 1986, and present operations.</td>
</tr>
<tr>
<td>37</td>
<td>Section 37 appears to have been commercially developed since at least 1967.</td>
<td>N29.853263, W-90.023083</td>
<td>Point Eight Power Structural Division</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1967 and present operations.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 37</td>
<td>The northwestern adjoining properties appear to have been commercially developed since at least 1967.</td>
<td>N29.854176, W-90.024030</td>
<td>Pacific-Gulf Wire Rope, Inc.</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1986 and present operations.</td>
</tr>
<tr>
<td>38</td>
<td>Section 38 appears to have been commercially developed since at least 1983.</td>
<td>N29.854531, W-90.021664</td>
<td>Williams Group; Intracoastal Truck and Trailer Services, LLC; Southeastern Logistics, LLC; SAT Services, LLC; DWT Service, LLC</td>
<td>Onsite concerns were noted from listings as an oil field service company from at least 1986 to at least 2000 and the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.853958, W-90.022075</td>
<td>JYD Auto Recyclers</td>
<td>Onsite concerns were noted from present operations.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
<td>Recognized Environmental Conditions</td>
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</tr>
<tr>
<td>39</td>
<td>Section 39 appeared to be commercially developed from at least 1983 to at least 1986, residually developed from at least 1989 to at least 1991, and appears to have been developed with the Whitney-Barataria Pump Station since 1995.</td>
<td>N29.855800, W-90.021207</td>
<td>Whitney-Barataria Pump Station</td>
<td>Onsite concerns were noted from lack of commercial occupant information and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the west of Section 39</td>
<td>The western adjoining properties appear to have been commercially developed since at least 1983.</td>
<td>N29.855901, W-90.022826</td>
<td>Tetra Applied Technologies, Inc.</td>
<td>Offsite concerns were noted from listings as commercial-industrial companies since at least 1986 and present operations.</td>
</tr>
<tr>
<td></td>
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<td>N29.856974, W-90.021978</td>
<td>D&amp;M Steel, Inc.</td>
<td>Offsite concerns were noted from a 2005 listing as D&amp;M Steel and present operations.</td>
</tr>
<tr>
<td>40</td>
<td>Section 40 appears to have been commercially developed since at least 1967.</td>
<td>N29.857621, W-90.019933</td>
<td>Circle, Inc.</td>
<td>Onsite concerns were noted from lack of commercial occupant information and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the west of Section 40</td>
<td>The western adjoining properties appeared to be residually developed in 1967, commercially and residually developed in 1972, and appear to have been commercially developed since at least 1983.</td>
<td>N29.858452, W-90.021276</td>
<td>Circle, Inc.</td>
<td>Offsite concerns were noted from listings as Circle since at least 1986 and present operations.</td>
</tr>
<tr>
<td>41</td>
<td>Section 41 appears to have been commercially developed since at least 1967.</td>
<td>N29.859260, W-90.018664</td>
<td>Southern portion of Versabar, Inc.</td>
<td>Onsite concerns were noted from listings as commercial-industrial businesses since at least 1986, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the west of Section 41</td>
<td>The western adjoining properties appeared to be commercially developed from at least 1967 to at least 1996 and appear to have been vacant commercial property since at least 1998.</td>
<td>N29.859469, W-90.020378</td>
<td>Commercial property</td>
<td>Offsite concerns were noted from listings of commercial-industrial companies since at least 1986.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
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</tr>
<tr>
<td>42</td>
<td>Section 42 appears to have been commercially developed since at least 1967.</td>
<td>N29.861993, W-90.017103</td>
<td>Northern portion of Versabar, Inc.</td>
<td>Onsite concerns were noted from listings as commercial-industrial businesses since at least 1986, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the west of Section 42</td>
<td>N29.862989, W-90.018897</td>
<td>Wooded and vacant commercial properties</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1983.</td>
</tr>
<tr>
<td>43</td>
<td>Section 43 appears to have been commercially developed since at least 1972.</td>
<td>N29.864633, W-90.015381</td>
<td>C&amp;C Marine and Repair</td>
<td>Onsite concerns were noted from listings as commercial-industrial businesses from at least 1986 to at least 1996, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the west of Section 43</td>
<td>N-29.865586, W-90.016852</td>
<td>Mickey O’Conner General Contractor</td>
<td>Offsite concerns were noted from lack of soil and groundwater quality information for this UST facility.</td>
</tr>
<tr>
<td>44</td>
<td>Section 44 appears to have been commercially developed since at least 1972.</td>
<td>N29.868236, W-90.013831</td>
<td>Concrete company</td>
<td>Onsite concerns were noted from listings as concrete companies since at least 2000, present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the west of Section 44</td>
<td>N29.866907, W-90.013687</td>
<td>C.F. Bean</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1972, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>The western adjoining properties appear to have been commercially developed since at least 1967.</td>
<td>N29.869407, W-90.014753</td>
<td>Pre-heat, Inc.</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1980 and present operations.</td>
</tr>
</tbody>
</table>
## Table 1

<table>
<thead>
<tr>
<th>Section Number</th>
<th>Section Summary</th>
<th>Center Location</th>
<th>Facility Name/Use</th>
<th>Recognized Environmental Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>N29.868125, W-90.015257</td>
<td>Western Wireline Services, Inc.</td>
<td>Offsite concerns were noted from listings as Western Wireline since at least 1980 and present operations.</td>
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<tr>
<td>N29.867563, W-90.016066</td>
<td>Tuboscope, Packard Truck Lines, Inc., Packard Pipe Terminals, Inc.</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1991 and present operations.</td>
<td></td>
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<tr>
<td>N29.868535, W-90.015081</td>
<td>Vacant commercial property</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1967 and the presence of ASTs of unknown contents and condition.</td>
<td></td>
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</tr>
<tr>
<td>N29.869651, W-90.012419</td>
<td>Quick Recovery Auto Salvage</td>
<td>Onsite concerns were noted from a 2005 listing as Quick Recovery Auto Salvage, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
<td></td>
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<tr>
<td>N29.870333, W-90.013906</td>
<td>Pre-heat, Inc.</td>
<td>Offsite concerns were noted from listings as commercial-industrial businesses since at least 1980, present operations, and the presence of ASTs of unknown contents and condition.</td>
<td></td>
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<tr>
<td>N29.870987, W-90.013654</td>
<td>Commercial building</td>
<td>Offsite concerns were noted from lack of commercial occupant information since at least 1972.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section 45 appears to have been commercially developed since at least 1972.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjoining properties to the west of Section 45</td>
<td>The western adjoining properties appear to have been commercially developed since at least 1972.</td>
<td></td>
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<tr>
<td>N29.871502, W-90.011289</td>
<td>Double Aught Construction</td>
<td>Onsite concerns were noted from listings as fabrication and construction companies and present operations.</td>
<td></td>
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<tr>
<td>N29.872068, W-90.011598</td>
<td>Cell Tower</td>
<td>Onsite concerns were noted from the presence of associated equipment of unknown condition.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
<td>Center Location</td>
<td>Facility Name/Use</td>
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</tr>
<tr>
<td>Adjoining properties to the west of Section 46</td>
<td>The western adjoining properties appeared to be residentially developed from at least 1967 to at least 1972 and appear to have been commercially developed since at least 1980.</td>
<td>N29.872289, W-90.011815</td>
<td>Southern Snow, Inc.</td>
<td>Offsite concerns were noted from listings as Lesser Radiator Service (1980-1996) and Southern Snow Manufacturing (1980-2005) and present operations.</td>
</tr>
<tr>
<td></td>
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<td>N29.871906, W-90.012257</td>
<td>Fauchex Welding Fab, Inc.</td>
<td>Offsite concerns were noted from listings as Fauchex Welding Fab since at least 1986 and present operations.</td>
</tr>
<tr>
<td>47</td>
<td>Section 47 appeared to be residentially developed from at least 1945 to at least 1951 and appears to have been developed with the Plaquemines Parish Welcome Park and Belle Chasse Tunnel since at least 1967.</td>
<td>N29.872622, W-90.010526</td>
<td>Plaquemines Parish Welcome Park (West Bank), Belle Chasse Tunnel</td>
<td>Onsite concerns were noted from the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td>48</td>
<td>Section 48 appeared to be residentially and agriculturally developed from at least 1945 to at least 1949 and appears to have been residentially developed since at least 1951.</td>
<td>From N29.872990, W-90.009753 to N29.879690, W-90.005744</td>
<td>Residential subdivision</td>
<td>Onsite concerns were noted from the drilling of Well 11675 and past uses for agriculture.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.879290, W-90.006815</td>
<td>N.C. Hero, Jr.</td>
<td>Offsite concerns were noted from lack of soil and groundwater quality information for this UST facility.</td>
</tr>
<tr>
<td>Adjoining properties to the west of Section 48</td>
<td>The western adjoining properties appeared to be residentially and agriculturally developed from at least 1949 to at least 1949 and appear to have been residentially developed since at least 1951.</td>
<td>N29.874552, W-90.011851</td>
<td>Residential subdivision</td>
<td>Offsite concerns were noted from past uses for agriculture.</td>
</tr>
<tr>
<td>49</td>
<td>The western adjoining properties appeared to be agriculturally developed and pastureland from at least 1949 to at least 1949 and appear to have been undeveloped since at least 1951.</td>
<td>From N29.879690, W-90.005744 to N29.882969, W-90.004072</td>
<td>Wooded property</td>
<td>Onsite concerns were noted from the drilling of Well 6699 and past uses for agriculture.</td>
</tr>
<tr>
<td>Adjoining properties to the west of Section 49</td>
<td>The western adjoining properties appeared to be agriculturally developed and pastureland from at least 1949 to at least 1949 and appear to have been undeveloped since at least 1951.</td>
<td>From N29.880266, W-90.008353 to N29.883821, W-90.006678</td>
<td>Wooded property</td>
<td>Offsite concerns were noted from past uses for agriculture.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
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</tr>
<tr>
<td>50</td>
<td>Section 50 appeared to be pastureland from at least 1945 to at least 1949, appeared to be residentially developed in 1972, and appears to have been developed with the Planters Pump Station and a residence since at least 1983.</td>
<td>N29.883933, W-90.004044</td>
<td>Planters Pump Station</td>
<td>Onsite concerns were noted from pump station improvements and the presence of drums and ASTS of unknown contents and condition.</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>51</td>
<td>Section 51 appears to have been wooded land and pastureland since at least 1983.</td>
<td>N29.885586, W-90.002094</td>
<td>Wooded property, pastureland</td>
<td>Onsite concerns were noted from the dead vegetation observed onsite.</td>
</tr>
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</tr>
<tr>
<td>52</td>
<td>Section 52 appeared to be pump station construction in 1972 and appears to have been developed with the S&amp;WB #13 Pump Station since at least 1983.</td>
<td>N29.895838, W-89.997622</td>
<td>S&amp;WB #13 Pump Station</td>
<td>Onsite concerns were noted from the presence of ASTS of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 53</td>
<td>The northwestern adjoining properties appeared to be residentially developed from at least 1972 to at least 1991 and appear to have been residentially and commercially developed since at least 1994.</td>
<td>N29.905369, W-89.991404</td>
<td>Gas station, dry cleaners</td>
<td>Offsite concerns were noted from lack of regulatory information.</td>
</tr>
<tr>
<td>54</td>
<td>Section 54 was agriculturally developed from at least 1945 to at least 1949, appeared to be residentially developed from at least 1967 to at least 1996, and appears to have been residentially and agriculturally developed since at least 1998.</td>
<td>From N29.906395, W-89.986879 to N29.914834, W-89.975372</td>
<td>Residences, wooded property</td>
<td>Onsite concerns were noted from past and present uses for agriculture, the presence of buckets of unknown contents and condition, and the presence of dumping.</td>
</tr>
<tr>
<td>Adjoining properties to the northwest of Section 54</td>
<td>The northwestern adjoining properties appeared to be agriculturally developed from at least 1945 to at least 1949, residentially developed from at least 1967 to at least 1996, and appear to have been residentially and agriculturally developed since at least 1998.</td>
<td>From N29.897424, W-90.000437 to N29.908490, W-89.988983</td>
<td>Residential subdivisions</td>
<td>Offsite concerns were noted from past and present uses for agriculture.</td>
</tr>
<tr>
<td>55</td>
<td>Section 55 was undeveloped and agriculturally developed from at least 1945 to at least 1949 and appears to have been developed with the Algiers Lock since at least 1967.</td>
<td>From N29.915688, W-89.971368 to N29.913898, W-89.974582</td>
<td>Algiers Lock</td>
<td>Onsite concerns were noted from past uses for agriculture and the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td>Section Number</td>
<td>Section Summary</td>
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<td>Facility Name/Use</td>
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</tr>
<tr>
<td>Adjoining properties to the north of Section 55</td>
<td>The northern adjoining properties appeared to be agriculturally developed from at least 1945 to at least 1949 and appear to have been residentially developed since at least 1967.</td>
<td>N29.916419, W-89.973835</td>
<td>Wooded property</td>
<td>Offsite concerns were noted from past uses for agriculture.</td>
</tr>
<tr>
<td>Adjoining properties to the northeast of Section 55</td>
<td>The northeastern adjoining properties appeared to be agriculturally developed from at least 1945 to at least 1949 and appear to have been developed with a portion of the Algiers Lock since at least 1967.</td>
<td>N29.916768, W-89.970142</td>
<td>Northernmost portion of Algiers Lock</td>
<td>Offsite concerns were noted from past uses for agriculture.</td>
</tr>
<tr>
<td>57</td>
<td>Section 57 appears to have been developed with the S&amp;WB #11 Pump Station since at least 1967.</td>
<td>N29.909753, W-89.977735</td>
<td>S&amp;WB #11 Pump Station</td>
<td>Onsite concerns were noted from the presence of buckets, drums, and ASTs of unknown contents and condition and an area of staining.</td>
</tr>
<tr>
<td>59</td>
<td>Section 59 appears to have been commercially developed since at least 1983.</td>
<td>N29.902911, W-89.985298</td>
<td>Industrial park</td>
<td>Onsite concerns were noted from listings of commercial-industrial businesses since at least 1980 and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the southeast of Section 59</td>
<td>The southeastern adjoining properties appear to have been commercially developed since at least 1980.</td>
<td>N29.901836, W-89.984612</td>
<td>Industrial park</td>
<td>Offsite concerns were noted from listings of commercial-industrial businesses since at least 1980 and the presence of buckets and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>0.13 miles south of Section 59</td>
<td>The property appears to have been commercially developed since at least 1980.</td>
<td>N29.899784, W-89.985192</td>
<td>Daigle Quick Shop</td>
<td>Offsite concerns were noted from lack of soil and groundwater quality information for this LUST facility.</td>
</tr>
<tr>
<td>60</td>
<td>Section 60 appears to have been under construction for levee improvements since 2006.</td>
<td>From N29.902559, W-89.987937 to N29.898470, W-89.991766</td>
<td>Grassy property, levee construction</td>
<td>Onsite concerns were noted from the presence of drums of unknown contents.</td>
</tr>
</tbody>
</table>
## Table 1

### Properties with Recognized Environmental Conditions

<table>
<thead>
<tr>
<th>Section Number</th>
<th>Section Summary</th>
<th>Center Location</th>
<th>Facility Name/Use</th>
<th>Recognized Environmental Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>Section 61 appears to have been commercially developed since at least 1983.</td>
<td>N29.894578, W-89.993070</td>
<td>The Mud Masters Group</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1983, present operations, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>62</td>
<td>Section 62 appears to have been commercially developed since at least 1983.</td>
<td>N299.893506, W-89.994045</td>
<td>Vacant commercial property</td>
<td>Onsite concerns were noted from lack of commercial occupant information since at least 1983 and the presence of an AST containment area.</td>
</tr>
<tr>
<td>63</td>
<td>Section 63 appears to have been commercially developed since at least 1967.</td>
<td>N29.891135, W-89.995497</td>
<td>French's Welding and Maintenance and Pelican Commercial Waste Services</td>
<td>Onsite concerns were noted from listings as Fleming Equipment and Construction (2000) and Pelican Commercial Waste Services (2005), present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>64</td>
<td>Section 64 appears to have been commercially developed since 1995.</td>
<td>N29.888907, W-89.996123</td>
<td>Tri-State Oil</td>
<td>Onsite concerns were noted from listings as Tri-State Oil since at least 2000, present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>65</td>
<td>Section 65 appeared to be residentially developed from at least 1998 to at least 2000.</td>
<td>N29.886900, W-89.997929</td>
<td>Wooded property</td>
<td>Onsite concerns were noted from the drilling of Well 101223.</td>
</tr>
<tr>
<td>66</td>
<td>Section 66 appeared to be pump station construction in 1994 and appears to have been developed with the Belle Chasse Pump Station 2 since 1995.</td>
<td>N29.884360, W-89.999630</td>
<td>Belle Chasse Pump Station 2</td>
<td>Onsite concerns were noted from present operations, pump station improvements, and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>67</td>
<td>Section 67 appeared to be residentially developed from at least 1945 to 1951 and appears to have been commercially developed since at least 1967.</td>
<td>From N29.873146, W-90.005451 to N29.870269, W-90.008407</td>
<td>Western portion of Bayou Barriere Golf Club</td>
<td>Onsite concerns were noted from the use of herbicides and pesticides, the drilling of Well 18029, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td>Adjoining properties to the southeast of Section 66</td>
<td>From N29.883913, W-89.997892 to N29.869461, W-90.005191</td>
<td>Eastern portion of Bayou Barriere Golf Club</td>
<td>Offsite concerns were noted from use of herbicides and pesticides.</td>
</tr>
<tr>
<td>Section Number</td>
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</tr>
<tr>
<td>68</td>
<td>Section 68 appeared to be residentially developed from at least 1945 to 1951; developed with the Plaquemines Parish Welcome Park, the Belle Chasse Tunnel, and residences from at least 1967 to at least 1972; and appears to have been developed with the Plaquemines Parish Welcome Park and Belle Chasse Tunnel since at least 1983.</td>
<td>N29.870945, W-90.007921</td>
<td>Plaquemines Parish Welcome Park (East Bank), Belle Chasse Highway and Tunnel</td>
<td>Onsite concerns were noted from the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>70</td>
<td>Section 70 appears to have been developed as a park since at least 1994.</td>
<td>N29.858845, W-90.015182</td>
<td>Louisiana's Medal of Honor Park and Museum</td>
<td>Onsite concerns were noted from the presence of an AST of unknown contents and condition.</td>
</tr>
<tr>
<td>71</td>
<td>Section 71 appears to have been commercially developed since at least 1972.</td>
<td>N29.855197, W-90.016040</td>
<td>Barriere Construction, Co.</td>
<td>Onsite concerns were noted from listings as Barriere Construction from at least 1980 to at least 1996, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>72</td>
<td>Section 72 appears to have been commercially developed since at least 1980.</td>
<td>N29.853413, W-90.017394</td>
<td>Kostmayer Construction, Co.</td>
<td>Onsite concerns were noted from listings of construction companies (1980, 1996, and 2005), present operations, levee construction, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>73</td>
<td>Section 73 appears to have been developed with the Belle Chasse Pump Station 1 since at least 1967.</td>
<td>N29.852514, W-90.019228</td>
<td>Belle Chasse Pump Station 1</td>
<td>Onsite concerns were noted from listings as the Belle Chasse Drainage Department since at least 2000, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>75</td>
<td>Section 75 appeared to be residentially developed in 1951 and appears to have been developed with the jet fuel pipeline and loading dock since at least 1998.</td>
<td>N29.836753, W-90.067661</td>
<td>NAS-JRB</td>
<td>Onsite concerns were noted from the presence of the jet fuel pipeline and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>76</td>
<td>Section 76 appears to have been undeveloped since at least 1951.</td>
<td>N29.815582, W-90.067661</td>
<td>Wooded property</td>
<td>Onsite concerns were noted from the presence of a buried petroleum pipeline.</td>
</tr>
<tr>
<td>Section Number</td>
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<tr>
<td>Adjoining properties to the east of Section 76</td>
<td>The eastern adjoining properties appear to have been commercially and residually developed since at least 1983.</td>
<td>N29.810925, W-90.068358</td>
<td>High Point Shooting Grounds</td>
<td>Offsite concerns were noted from listings as High Point Shooting Grounds (1996; 2005) and present operations.</td>
</tr>
<tr>
<td>77</td>
<td>Section 77 appears to have been undeveloped since at least 1951.</td>
<td>N29.816133, W-90.083072</td>
<td>Wooded and grassy property, Pipeline Canal</td>
<td>Onsite concerns were noted from presence of a buried petroleum pipeline and the drilling of Well 174164 and Well 183151.</td>
</tr>
<tr>
<td>78</td>
<td>Section 78 appears to have been developed with the Old Estelle Pump Station since at least 1967.</td>
<td>N29.826906, W-90.083008</td>
<td>Old Estelle Pump Station</td>
<td>Onsite concerns were noted from presence of a buried petroleum pipeline, present operations, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the east of Section 78</td>
<td>The western adjoining properties were developed with a drill hole from at least 1966 to at least 1989 and appear to have been undeveloped since at least 1991.</td>
<td>N29.827973, W-90.086022</td>
<td>Wooded property and pastureland</td>
<td>Offsite concerns were noted from presence of a buried petroleum pipeline and the drilling of Well 79407.</td>
</tr>
<tr>
<td>79</td>
<td>Section 79 appears to have been undeveloped since at least 1951.</td>
<td>N29.827973, W-90.086022</td>
<td>Wooded and grassy property, unnamed canal</td>
<td>Onsite concerns were noted from presence of a buried petroleum pipeline.</td>
</tr>
<tr>
<td>81</td>
<td>Section 81 appears to have been developed with the New Estelle Pump Station since at least 1998.</td>
<td>N29.833768, W-90.068714</td>
<td>New Estelle Pump Station</td>
<td>Onsite concerns were noted from present operations and the presence of drums and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>82</td>
<td>Section 82 appears to have been undeveloped since at least 1951.</td>
<td>N29.845680, W-90.062258</td>
<td>Wooded property</td>
<td>Onsite concerns were noted from levee construction.</td>
</tr>
<tr>
<td>83</td>
<td>Section 83 appeared to be developed with ponds from at least 1983 to at least 2005, and appears to have been undeveloped since 2006.</td>
<td>N29.857365, W-90.067139</td>
<td>Wooded property</td>
<td>Onsite concerns were noted from the ponds located on the section from at least 1983 to at least 2005.</td>
</tr>
<tr>
<td>Adjoining properties to the west of Section 83</td>
<td>The western adjoining properties appeared to be developed with ponds from at least 1983 to at least 2005, and appear to have been undeveloped since 2006.</td>
<td>N29.856451, W-90.068875</td>
<td>Wooded property</td>
<td>Onsite concerns were noted from the ponds located on the section since at least 1983 and the drilling of Well 122343.</td>
</tr>
<tr>
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</tr>
<tr>
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<td>-----------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>84</td>
<td>Section 84 appears to have been used as Sector Gate construction staging since 2005.</td>
<td>From N29.867601, W-90.069960 to N29.870213, W-90.069786</td>
<td>Sector Gate construction</td>
<td>Onsite concerns were noted from the use of the property as Sector Gate construction staging and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>85</td>
<td>Section 85 appeared to be developed with the Cousins Pump Station in 1972 and appears to have been developed with the Cousins Pump Station and commercial properties since at least 1980.</td>
<td>N29.872214, W-90.073076</td>
<td>A&amp;B Valve and Piping Systems storage yard</td>
<td>Onsite concerns were noted from listings as oil field service and pipeline companies since at least 1980.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.872536, W-90.071597</td>
<td>Southern portion of Petrex</td>
<td>Onsite concerns were noted from listings as Petrex since at least 1996, present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.871311, W-90.073290</td>
<td>Cousins Pump Station</td>
<td>Onsite concerns were noted from present operations, pump station improvement, and the presence of buckets, drums, and ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td>Adjoining properties to the north of Section 85</td>
<td>The northern adjoining properties appear to have been commercially developed since at least 1980.</td>
<td>N29.872729, W-90.073175</td>
<td>A&amp;B Valve and Piping Systems</td>
<td>Offsite concerns were noted from listings as oil field service and pipeline companies since at least 1980 and the presence of ASTs of unknown contents and condition.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N29.873216, W-90.071962</td>
<td>Northern portion of Petrex</td>
<td>Offsite concerns were noted from listings as Petrex since at least 1996, present operations, and the presence of ASTs of unknown contents and condition.</td>
</tr>
</tbody>
</table>

The remainder of this report is organized as follows: Section 2 describes the scope of work and limitations for this report; Section 3 presents a site description; Section 4 presents user provided information; Section 5 presents a records review; Section 6 presents a summary of the site reconnaissance; Section 7 presents a summary of interviews; Section 8 presents a summary of AEROSTAR's findings and opinions; Section 9 presents a summary of AEROSTAR's conclusions; Section 10 presents any deviations from the ASTM standard; Section 11 provides additional services conducted as part of this Phase I ESA; Section 12 presents the references; Section 13 presents the signatures of environmental professionals preparing and reviewing the report; and Section 14 presents the qualifications of the environmental professionals participating in this Phase I ESA. Figures are included in Appendix A. The property record information is included in Appendix B. Site photographs are included in Appendix C. A computerized regulatory agency database search is included in Appendix D. Historical research documentation is included in Appendix E. Interview documentation is included in