APPENDIX K
SECTION 404(b)(1) EVALUATION

SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
NEW ORLEANS TO VENICE FEDERAL LEVEE
PLAQUEMINES PARISH, LOUISIANA

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INTRODUCTION

1. As required by Section 404(b)(1) of the Clean Water Act, this evaluation assesses the short- and long-term impacts associated with the discharge of dredged and fill materials into waters of the United States resulting from this project.

PROJECT DESCRIPTION

LOCATION

2. The project is located along the Mississippi River corridor in Plaquemines Parish, Louisiana. This area lies in the delta of the Mississippi River approximately 30 miles south of downtown New Orleans. Barataria Bay, an estuary of the Gulf of Mexico, lies on the west side of the Mississippi River delta and Breton Sound lies on the west side. The project area extends on the flood side of the Federal levee into the coastal marshes along Mississippi River delta on the west bank and along Breton Sound on the east bank. It also extends into the Mississippi River. LA-23 parallels the Mississippi River along the west bank and LA-39 parallels the Mississippi River along the east bank and traverses the levee-protected areas.

GENERAL DESCRIPTION OF PROJECT PLAN

3. The project plan proposes to restore, armor, and accelerate completion of the existing Federal levees on the east bank from Phoenix to Bohemia and on the west bank from St. Jude to Venice to provide the authorized design grade for storm risk reduction.

4. The Proposed Action would involve restoring the levee by elevating the levee crest with earthen fill and expanding the levee base footprint to provide the necessary design strength to meet the 50-year frequency level of risk reduction which reduces the chance of hurricane surge and wave-driven flooding in any given year to 2%. The addition of earthen fill and expansion of the levee base would be the most likely method to stabilize subsoil sections of levees requiring additional strength. Concrete T-walls would be repaired or replaced on top of some levees where design and cost factors dictate. Existing pump station walls and gates would also be raised and stabilized to meet the authorized design criteria. Where raising the levee elevation to meet authorized design grades would require fill from outside of the existing ROW, additional ROW could be required. The levee project can be divided into 14 reaches.

a. NOV 01. NOV 01 consists of the back levee on the East Bank between Phoenix and Bohemia. The approximately 15.8-mile-long earthen levee is bounded on the west by LA 39 and on the east by a borrow ditch or open marsh lands. The existing grade is between 14 and 16.5

feet (ft) mean sea level (msl). The Tentatively Selected Plan (TSP) for NOV 01 would restore the earthen levee to the authorized design grade of 19.5 to 20.5 ft msl with additional fill material outside the existing ROW.

b. NOV 02. NOV 02 consists of providing accelerated completion of frontage protection for the Bellevue and the East Pointe á La Hache Pump Stations on the East Bank back levee. Work would equal 0.08 mile for the Bellevue floodwalls and 0.05 mile for the East Pointe á La Hache floodwalls.

c. NOV 05. NOV 05 consists of 3.2 miles of back levee on the West Bank near City Price. The earthen levee is bounded on the east by LA 23 and on the west by marsh and open water ditches and lakes. The existing grade is between 7 and 11 ft. The TSP would accelerate the completion of the earthen levee construction along NOV 05 to the authorized design grade of 13 ft. Due to the added height needed to restore the levee to the authorized design grade, additional ROW would be required to allow for the expanded footprint of the levee. Since the ROW is bounded by the presence of LA 23 and a newly constructed Entergy power line on the east side, the additional levee footprint would likely expand to the west into marsh and open water areas along the entire length of the levee bordering the marshlands.

d. NOV 06. NOV 06 consists of approximately 12.2 miles of earthen back levee on the West Bank, including several short sections of T-wall and I-wall on the back levee between Happy Jack and Empire. This section of levee is near design grade and would require only a minor elevation restoration, but the stability criteria are below USACE standards. Three sections of floodwall totaling 0.07 mile would require restoration and armoring to increase the stability by removing or incorporating the floodwalls into the earthen levee. The TSP would restore the levee along NOV 06 with earthen fill to the authorized design grade of 13 ft, requiring additional ROW, and restore and armor the three sections of floodwall by incorporating them into the earthen levee within an expanded ROW. The three floodwall sections requiring expanded ROW are a combined distance of 0.07 mile.

e. NOV 07. NOV 07 consists of approximately 12.6 miles of the West Bank back levee from Port Sulphur to Fort Jackson. The existing grade ranges from 11 to 15 ft. The TSP would restore the earthen levee along NOV 07 to the authorized design grade of 13.5 ft with earthen fill. Numerous sections of the NOV 07 levee would require additional ROW acquisition in order to restore the levee to authorized design grade. LA 23 is directly adjacent to the east side of the levee. These restrictions would affect the amount and location of additional ROW that could be acquired east of the levee and would require probable expansion into the marshlands west of the levee. Expansion of ROW to the west would occur in several areas over a cumulative distance of approximately 4.7 miles.

f. NOV 08. NOV 08 consists of approximately 8.9 miles of the West Bank back levee from Fort Jackson to Venice. The levee is at or near authorized design grade for most of its length. The TSP would use earthen fill to restore stability berms, if needed, along NOV 08 to stabilize the entire levee reach that is within the existing ROW. LA 23 is very near the east side of the levee and would affect operations on that side of the levee. An expanded ROW into marshland west of the levee would be probable for the entire length of NOV 08.

g. NOV 09. NOV 09 consists of 2.5 miles of the West Bank MRL from St. Jude Church to City Price Church. The existing grade is between 14.5 and 17.5 ft. The TSP would accelerate the completion of restoring the elevation of the levee along NOV 09 with earthen fill to the authorized design grade of 18.5 ft. This work would require additional ROW.

h. NOV 10. NOV 10 consists of approximately 13 miles of the West Bank MRL from Happy Jack to Port Sulphur. The existing grade is between 14.5 and 17.5 ft. The TSP would accelerate the completion of restoring the elevation of the levee along NOV 10 to the authorized design grade of 18 ft with earthen fill. Additional ROW would be required.

i. NOV 11. NOV 11 consists of 11.6 miles of the West Bank MRL from Buras to Fort Jackson. The existing grade is 15.5 ft. The TSP would accelerate the completion of restoring the levee elevation along NOV 11 to the authorized design grade of 17.5 ft with earthen fill. Additional ROW would be required.

j. NOV 12. NOV 12 consists of 8.8 miles of the West Bank MRL from Fort Jackson to Venice. This section of levee is at authorized design grade of 17 ft. The TSP would restore the levee along NOV 12 with earthen fill to increase the stability and widen and/or raise the stability berm if necessary. Additional ROW would be required.

k. NOV 13. NOV 13 consists of restorations to the Empire floodgate and floodwalls on the West Bank back levee, which are tied into the existing levee. The elevations of the floodwalls and lock are at design grade. The TSP would construct a new sector gate and new floodwalls along NOV 13 to tie into the restored levee constructed for NOV 07. Work would be done within the existing ROW, except for two sections where additional ROW would be required.

l. NOV 14. NOV 14 consists of restoration and armoring of the Empire Lock floodwalls on the West Bank MRL. The floodwalls are at or near design grade. The TSP would construct a new sector gate in front of the existing lock and construct new floodwalls to tie into the existing levee.

m. NOV 15. NOV 15 consists of restoration and armoring of the Duvic and Grand DeLiard Pump Station floodwalls on the West Bank back levee, and restoration and armoring of existing floodwalls on the West Bank MRL at the Pt. Michel, Childress and Venice floodwalls by replacing with levees to increase stability criteria to meet USACE standards. The floodwalls are at design grade. The TSP would replace the floodwalls with earthen levee, which may include incorporating portions of the existing floodwalls into the new earthen levee. Additional ROW would be required in four sections.

n. NOV 16. NOV 16 consists of 6.6 miles of the West Bank MRL from Port Sulphur to Buras. The existing grade is 17 ft. The TSP would restore the elevation of the levee along NOV 16 to the authorized design grade of 18 ft with earthen fill. Additional ROW would be required.

PURPOSE AND AUTHORITY

5. The purpose of the project is to provide the authorized design grade level of storm risk reduction for Plaquemines Parish. The elevations of existing floodwalls and levees within some sections of the setback levee and portions of the Mississippi River Levee are below the authorized design elevation. Some portions of the same sections also lack subsurface stability to support design grade level flood risk reduction capability.

6. Congress and the Administration granted a series of supplemental appropriations acts following Hurricanes Katrina and Rita to repair and upgrade existing hurricane storm damage risk reduction systems in southeastern Louisiana damaged by the storms. Authorities for the proposed action are described below.

a. The NOV Federal levee project was funded at $769 million in the Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act, 2006 (3rd Supplemental), Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (4th Supplemental), Supplemental Appropriations Act, 2008 (6th Supplemental), and Supplemental Appropriations Act, 2009 (7th Supplemental) passed by Congress. The funding in these acts provided for repair work, restoration of the project to the authorized grade, acceleration of completion of unconstructed portions of the project, and armoring of critical project elements.

GENERAL DESCRIPTION OF DREDGED OR FILL MATERIAL

General Characteristics of Material

7. Fill material used in the levee construction would predominantly consist of clays from borrow areas interbedded with layers of silts and sands.

Quantity of Material

8. Approximately 22,946,000 cubic yards (cy) of non-compacted clay would be required to construct the entire NOV system to the 2% level of risk reduction (TSP). The fill material requirements by section are described in Table J-1.

Table J-1. Total Fill Material Required for each NOV Levee Section

Levee Section	Quantity (cy)
NOV 01	6,378,000
NOV 02	28,000
NOV 05	1,388,000
NOV 06	172,000
NOV 07	3,156,000
NOV 08	1,488,000
NOV 09	6,584,000
NOV 10	732,000

NOV 11	1,304,000
NOV 12	16,000
NOV 13	8,000
NOV 14	16,000
NOV 15	1,076,000
NOV 16	600,000
Total	**22,946,000**

Source of Material

9. The delivery of borrow for the project will be accomplished through a combination of Government Furnished and Contractor Furnished borrow. A contract-by-contract borrow analysis will be completed for each project increment. All borrow would be from Government approved borrow areas.

DESCRIPTION OF THE PROPOSED DISCHARGE SITES

Location

10. The discharge of fill material would be at levee construction sites.

Size

11. The project encompasses 90 miles of NOV levee footprint. Wetland acreages impacted by the proposed construction would total approximately 410 acres, including bottomland hardwoods.

Types of Sites

12. Sites are located on both cleared and uncleared acreages. Discharge sites would include the footprints of levees as well as borrow areas.

Types of Habitat

13. Habitat types include forested, marsh, openland/pasture, and scrub-shrub lands. Table J-2 displays wetland impacted acreage by habitat type.

Table J-2. Wetland Acreage Impacted by Type

Habitat Type	**Acreage**
Bottomland Hardwood Wet	110.5
Bottomland Hardwood Dry	1.9
Scrub Shrub	2.9
Intermediate Marsh	75.3
Freshwater Marsh	82.9
Brackish Marsh	30.0
Saline Marsh	105.9

Timing and Duration of Discharge

14. Discharge timing would depend on preconstruction planning and construction activities. Presently, construction is scheduled to begin in August 2012, and the capability exists to complete construction in 2015.

DESCRIPTION OF DISPOSAL METHOD

15. The major portion of borrow material would be utilized in the restoring, armoring, and accelerated completion of levees as noted in paragraphs 4 and 5 of this appendix. To the extent practicable, efforts would be made to avoid and minimize adverse impacts to wetland areas. Contractors would be responsible for providing clean fill material for deposition.

FACTUAL DETERMINATIONS

PHYSICAL SUBSTRATE DETERMINATIONS

Substrate Elevation and Slope

16. The mainline flood control levees in the lower Mississippi Valley are founded on the quaternary alluvium of the Mississippi River system. The flood plain has a typical downstream slope of 0.6 per mile.

Sediment Type

17. Soils would primarily be comprised of clay, silt, and sand materials.

Dredged/Fill Material Movement

18. Any movement of fill material would be insignificant. Disturbed areas would be revegetated as soon as possible following construction. No open water discharges which would be subject to current or wave action are expected.

Physical Effects on Benthos

19. Deposition of fill material into wetland areas would occur during excavation and placement of fill material for levee construction. Benthic organisms adjacent to these sites would be affected by construction operations. However, these organisms would be expected to recolonize after borrow operations have been completed. In addition, benthic organisms would establish in any newly constructed borrow area created by the project.

Actions Taken to Minimize Impacts

20. Disturbed areas would be revegetated as soon as practical. Materials to be discharged are similar to the substrate at discharge sites. Wetlands and other waters have been avoided to the

extent practicable in the design of the project. Additionally, best management practices (BMP; silt fences and hay bales) would be used to reduce suspended solids from runoff. Turbidity screens or silt curtains placed in water around construction sites would reduce the spread of waters with elevated concentrations of suspended solids. Actions to reduce long-term erosion and runoff include the revegetation of slopes with nonwoody stemmed and drought-resistant vegetation along the levee crowns and upper slopes to reduce erosion.

WATER CIRCULATION, FLUCTUATION, CHEMICAL, AND PHYSICAL DETERMINATIONS

Water

21. Water quality impacts resulting from project construction would primarily be short-term and localized. Excavation operations conducted in borrow areas would result in localized increases in turbidity and suspended solids adjacent to excavation operations. Increased turbidity and suspended solids levels would be expected to return to preconstruction levels soon after excavation operations are complete. The impacts to water quality at discharge sites are expected to be insignificant since most work would occur in the dry.

22. Water quality within newly constructed borrow areas would be affected by the soil concentrations of the surrounding area and from the flushing effects from seasonal high-water fluctuations on the Mississippi River. Landside borrow areas would be affected by residual soil nutrient and pesticide loadings. Landside borrow areas would not experience flushing effects from seasonal high-water fluctuations on the Mississippi River.

a. Salinity. No impacts to existing salinity conditions are anticipated.

b. Water Chemistry. Excavation and fill operations associated with this project are not anticipated to alter water chemistry of existing borrow areas or the Mississippi River significantly. Newly constructed borrow areas would be affected by surrounding soil conditions. After new borrow areas become established and an equilibrium condition is reached, the water quality of the newly constructed borrow areas is anticipated to be similar to existing borrow areas.

c. Clarity. Increased turbidity and suspended solids would reduce the clarity of any surface water in the immediate vicinity of fill material placement. This would be a temporary and localized condition. Clarity would return to preexisting conditions shortly after construction activities cease.

d. Color. Any changes in color would be temporary and minor.

e. Odor. Construction activities would result in the release of odors otherwise contained. However, this condition is not expected to be hazardous and would be localized and short-lived.

f. Taste. No potable water intakes are known to exist in the immediate vicinity of proposed discharge/fill sites.

g. Dissolved gas levels. Excavation from existing borrow areas would result in decreases in dissolved oxygen as a direct response to increases in suspended solids and turbidities. Dissolved oxygen levels would return to preconstruction levels following completion of excavation activities.

h. Nutrients. The surface waters and sediments within existing borrow areas are rich in nutrients, especially nitrogen and phosphorous. Sediment disturbance during construction would cause temporary increases in nutrient levels. However, such increases would be of short duration and nutrient levels would return to preconstruction levels following completion of proposed construction activities.

i. Eutrophication. Some short-term localized increases in turbidity, sedimentation, and nutrient levels would occur during the discharge of fill material. However, net increases nor decreases in nutrient loadings are anticipated due to project construction. No significant changes in the eutrophic state are anticipated.

j. Current pattern and circulation. No effect.

k. Velocity. No effect.

l. Stratification. Existing borrow areas that have their size increased may be impacted with regards to stratification. Short-term increases in turbidity are likely to occur during excavation and filling operations. This may affect water temperatures near construction areas. Since stratification is primarily dependent on temperature, short-term impacts in stratification are likely to occur during excavation and filling operations. Any impacts resulting in a change in stratification processes would be minor and temporary.

m. Hydrologic regime. The hydrologic regime would not be significantly impacted as a result of project construction. The addition of new borrow areas and/or increasing existing borrow areas would provide additional water storage. The levee construction would result in the filling of some wetland areas which would result in a reduction of water storage. No changes in existing drainage patterns which would result in a change in the hydrologic regime of the project area anticipated.

n. Normal water level fluctuation. Normal water level fluctuations are influenced primarily by states on the Mississippi River. Since project construction would not affect river stages, no impacts to normal water level fluctuations are anticipated.

o. Salinity gradients. No effect.

Actions Taken to Minimize Impacts

23. The adverse impacts to water quality associated with removal of vegetation would be minimized by seeding disturbed areas after construction. Storm-water runoff measures will be implemented in accordance with State of Louisiana laws and regulations.

SUSPENDED PARTICULATE/ TURBIDITY DETERMINATIONS

24. The temporary effects of clearing, filling, and excavation associated with the proposed project construction would be increases in soil erosion and/or turbidity. Eroded material from areas excavated for borrow may be transported into nearby drainage ways resulting in short-term and localized increases in suspended particulates and turbidity levels.

a. Light penetration. Short-term reductions in light penetration are likely to occur during excavation of existing borrow areas and construction within wetland areas. These reductions in light penetration are anticipated to be short term and localized to the area adjacent to construction operations.

b. Dissolved oxygen (DO). Borrow excavation in existing borrow areas and/or wetlands would cause increases in suspended solids and turbidity resulting in localized decreases in DO. However, decreases in DO are not expected to fall below state minimum standards.

c. Toxic metals and organisms. There is the possibility of some mobilization of metal and/or organic contaminants into the water column during borrow excavation. However, the expected potential impact of such mobilization would be minor.

d. Pathogens. While coliform and enterococci bacteria may be present in project waters, project construction would not affect this condition.

e. Aesthetics. Area aesthetics would be temporarily degraded during the construction phase of the proposed project. However, the restored levees and other appropriate areas would be reseeded and would resemble the existing landscape in time.

f. Pesticides. The nonpoint source of runoff from surrounding areas is the primary source of pesticides in the drainage area. Project construction would not significantly affect this.

g. Effects on biota. Periodic reductions in light transmissions as a result of erosion association with construction would reduce photosynthesis and primary production to a minor degree in portions of aquatic areas.

h. Suspension/filter feeders. Larval and juvenile forms of suspension and filter feeding organisms would be adversely affected on a localized basis.

i. Sight feeders. No significant effects. These organisms are generally highly mobile and would avoid or escape areas of high turbidity during excavation in existing borrow areas.

j. Actions taken to minimize impacts. Disturbed areas would be revegetated as soon as possible following construction.

CONTAMINATION DETERMINATIONS

25. The risk of contamination of waters resulting from the placement of borrow/fill material into waters located within the project area is low. Excavation and filling operations associated with this project are not expected to significantly affect the water chemistry of waters within the project area.

AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS

Effects on Plankton

26. Any existing plankton in the immediate area of excavation and fill operation would be adversely impacted due to elevated turbidity levels. The impacts would be localized and short-term. Waters and/or wetlands filled by levee construction would, unavoidably, no longer be available for use by plankton.

Effects on Benthos

27. Some benthic organisms would be adversely impacted by deposition of fill material. Waters and wetlands filled during construction would, unavoidably, no longer be available for use by benthic organisms.

Effects on Nekton

28. Waters and wetlands filled during construction would, unavoidably, no longer be available for use by nekton.

Effects on Aquatic Food Web

29. The aquatic food web would, unavoidably, be adversely impacted due to the loss of approximately 410 acres of various wetland types.

Effects on Special Aquatic Sites

30. The Mississippi River along with associated wetlands and marsh habitat comprise the major aquatic resource in the project area. Any project-induced impacts (e.g., erosion during construction) would be minor and temporary.

a. Wetlands. The project would have direct impact to wetlands (See draft SEIS Tables 6-2 and 6-3).

b. Mudflats. Not applicable.

c. Vegetated shallows. Not applicable.

d. Coral reefs. Not applicable.

e. Riffle and pool complexes. Not applicable.

f. Threatened and endangered species. No effect.

g. Other wildlife. Wildlife wetland habitat and associated wildlife would experience unavoidable adverse impacts due to the loss of this habitat.

h. Actions to minimize impacts. Environmental design measures (e.g., following the protected levee side) to the extent practicable and planned mitigation. Unavoidable adverse effects to wetlands would be offset through mitigation concurrent with project construction.

PROPOSED DISPOSAL SITE DETERMINATIONS

Mixing Zone Determinations

31. No water quality criteria should be exceeded by the discharges.

Determinations of Compliance with Applicable Water Quality Standards

32. Only temporary short-term impacts to water quality are anticipated as a direct result of project construction. These impacts include temporary increases in suspended solids and increases in turbidity levels which would occur during construction.

Potential Effects on Human Use Characteristics

33. Municipal and private water supply. No effects.

34. Recreational and commercial fisheries. Excavation of borrow areas would provide limited additional opportunities for fishing.

35. Water-related recreation. Any recreational activities would be temporarily curtailed within the construction area.

Determination of Cumulative Effects on the Aquatic Ecosystem

36. The requirement for the deposition of fill material during construction would add a relatively minimal amount of pollutants to the proposed project area's ecosystem. Pollutants would be primarily in the form of temporarily increased sediment loads that would result in minor increases in suspended solids and turbidity.

Determination of Secondary Effects on the Aquatic Ecosystem

37. Secondary impacts on the ecosystem would be minimal.

FINDING OF COMPLIANCE FOR FLOOD CONTROL

38. No significant adaptations of the Section 404(b)(1) guidelines were made relative to this evaluation.

39. Deposition of fill material associated with construction requirements for the NOV Federal risk reduction levee project would adversely impact 1.9 acres of bottomland hardwoods (dry), 110.5 acres of bottomland hardwoods (wet), 2.9 acres of scrub shrub, 75.3 acres of intermediate marsh, 82.9 acres of freshwater marsh, 30.0 acres of brackish marsh, and 105.9 acres of saline marsh. The proposed project features were designed to avoid, to the extent practicable, wetlands and waters of the United States. Unavoidable project-induced adverse impacts to wetlands would be fully compensated.

40. The planned deposition of fill material would not violate applicable State Water Quality Standards. Further, the planned fill action would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

41. No endangered species or their critical habitat will be adversely impacted by the planned action.

42. The proposed deposition of fill material would not result in unacceptable adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Further, the proposed discharges would not result in unacceptable adverse effects on the life stages of aquatic or semiaquatic organisms, the aquatic ecosystem, diversity, productivity, stability, recreation and esthetic resources, and economic values.

43. Appropriate steps to minimize potential adverse impacts of the fill action on aquatic systems include cessation of fill activities during extreme flood events and avoidance of discharges into open water where possible.

44. On the basis of the Section 404(b)(1) guidelines, the proposed sites for the deposition of fill material are specified as complying with the requirements of these guidelines.