U.S. Army Corps of Engineers
New Orleans District
ATTN: CEMVN-ERO

New Orleans, LA

Project Information Report
PL 84-99 Rehabilitation of Damaged Flood Control Works

NON-FEDERAL PUMP STATIONS FLOOD CONTROL

ST. BERNARD PARISH, LA

January 2006

TABLE OF CONTENTS

Appendices

EXECUTIVE SUMMARY

St. Bernard Parish is located in southeast Louisiana. The parish is entirely within the deltaic plain of the Mississippi River and the coastal zone of Louisiana. It is located on the east bank of the Mississippi River south of, and contiguous to, the city of New Orleans. The area is protected from Mississippi River and hurricane surge flooding by the Mississippi River levee and by the Chalmette area loop that is formed by the west bank river levee and the Chalmette area features of the Lake Pontchartrain Louisiana, and Vicinity Hurricane Protection Project.

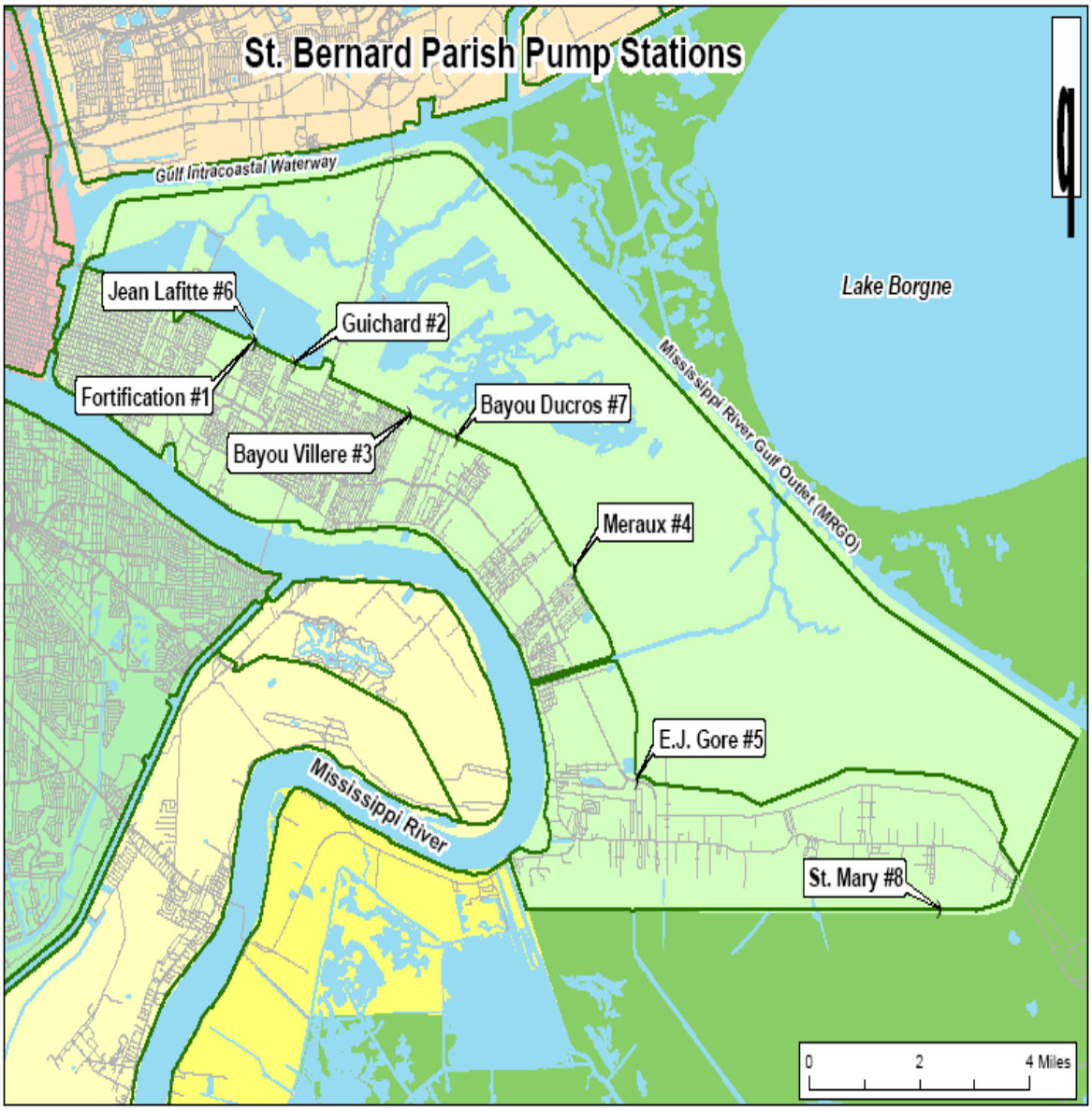
St. Bernard Parish has a subtropical marine climate, which is influenced by the water surfaces of many surrounding lakes and streams, as well as the Gulf of Mexico. Throughout the year, these water bodies modify the relative humidity and temperature conditions, decreasing the range between the extremes. When southern winds prevail, these effects are increased, imparting the characteristics of a marine climate. The total average annual rainfall for St. Bernard Parish is 59 inches, of this 33 inches falls between April and September.

Because most of the area is below sea level, it is protected from storm surge and tidal inflow by a network of continuous levees. While protecting the lands from tidal flooding, these levees leave the parish vulnerable to flooding from accumulated rainfall. To alleviate flooding from rainfall, pumps drain the area. The Lake Borgne Basin Levee District owns and operates eight pump station located along the interior back levee. Rainfall runoff is collected through a system of culverts, canals, and ditches delivering the storm water runoff to the pump stations. The pump stations discharge the runoff over the interior back levee into the marsh north and east of the levee.

The pump stations and the levees were damaged by Hurricane Katrina, a Category 3 hurricane on August 29, 2005, when it made landfall near Buras-Triumph, immediately southeast of St. Bernard Parish. The “extraordinary storm” produced storm surge levels that exceed the level of the constructed protection. Numerous breaches occurred along the Lake Pontchartrain Hurricane Protection Project and levees were overtopped completely inundating St. Bernard Parish.

Five of the eight pump stations were only partially affected by the flooding. The operating floors of these five pumps stations were elevated approximately 12 feet above the ground surface, thereby avoiding the flood waters. Three stations constructed at the elevation of the protected side toe of the interior back levee with an operating floor marginally above natural ground were completely inundated and will require major rehabilitation/replacement. These three stations, Pump Station No. 2, No.3, and No. 5, provide approximately 20 percent of the systems drainage capacity.

Rehabilitation assistance is necessary to a pre-storm condition and level of protection. The estimated cost for the recommended alternative is $10,688,000 with an overall benefit cost ration of 1.8 to 1.0. The table below presents a summary of the project costs and benefits.



St. Bernard Parish Pump Stations

St. Bernard Parish Non-Federal Pump Stations
Cost and Benefit Cost Ratios

Pump Station	Total First Cost ($)	Average Annual Cost ($)	Average Annual Benefits ($)	Net Benefits ($)	Benefit Cost Ratio
Area 1					
PS 1--Fortification	150,000	8,376			
PS 2—Guichard	3,886,000	316,994			
PS 6—Jean Lafitte	156,000	8,711			
Subtotal	4,192,000	334,081	583,000	248,919	1.7
Area 2					
PS 3--Bayou Villere	2,779,000	154,174			
PS 4 –Meraux	464,000	26,245			
PS 7—Bayou Ducros	184,000	10,275			
Subtotal	3,427,000	190,694	224,000	33,306	1.2
Area 3					
PS 5—E.J. Gore	2,939,000	164,114			
PS 8—St. Mary	130,000	7,259			
Subtotal	3,069,000	171,373	471,000	299,627	2.7
Total	10,688,000	696,148	1,278,000	581,852	1.8

1. Project Identification.

a. Project Name. Non-Federal Pump Stations, St. Bernard Parish, Louisiana

b. Project Funding Classification. FCCE 320 for non-Federal

c. Project CWIS Number. 030725

2. Project Authority.

a. Classification. Non-Federal

b. Authority. Non-Federal, See Section 16.

c. Estimated original cost of project: unknown

d. Construction start date of project. Circa 1950

e. Construction completion date of project. Circa 1996

Pump Station No. 1—Fortification	1972
Pump Station No. 2—Guichard	1950 (upgraded in 1980's)
Pump Station No. 3—Bayou Villere	1950 (upgraded in 1980's)
Pump Station No. 4—Meraux	1972
Pump Station No. 5—E.J. Gore	1980's
Pump Station No. 6—Jean Lafitte	1992
Pump Station No. 7 Bayou Ducros	1992
Pump Station No. 8 St. Mary	1996

f. Major modifications/improvements/betterments since beginning of project. n/a

g. Need for PL84-99 Rehabilitation. FCW Rehabilitation Assistance is necessary to return the system to an adequately functioning project and reduce the immediate threat to life and improved property. Planned rehabilitation will return the system to a pre-storm condition and level of protection. While the next Atlantic hurricane storm season will begin on June 1, 2006, significant rainfall can occur at any time.

3. Public Sponsors.

a. Sponsor Identification. The Lake Borgne Levee District owns and operates the pump stations.

b. Application for Assistance. On September 15, 2005, the New Orleans District Engineer, Colonel Richard P. Wagenaar issued a Notice to Public Sponsors notifying them that the application period to request Rehabilitation Assistance for Flood Damaged Flood Control Projects expired on October 15, 2005. A request for assistance was received from

the Lake Borgne Basin Levee District on October 13, 2005, signed by, George E. Lopez Parish, Board of Commissioners (Appendix A).

c. Sponsor Coordination Summary. An inspection was conducted the week of October 31, 2005 to determine the extent of the damages to the pump stations caused by Hurricane Katrina. The inspection and Damage Survey Report (DSR) was performed by Waldemar S. Nelson and company and coordinated with the Project Delivery Team, including:

Project Manager	Jim St. Germain
Structural Engineer	Larry Mickal
Electrical Engineer	Dan Bradley
Mechanical Engineer	Dennis Strecker
Environmental Engineer	Dean Arnold

4. Project Location.

a. Location. St. Bernard parish is located in southeast Louisiana. The parish is bordered by Lake Borgne on the north, Plaquemines Parish and the Gulf of Mexico on the south, Orleans Parish on the west and the Gulf of Mexico on the east. The non-Federal pump stations are located along the St. Bernard interior back levee (See Appendix B).

b. Description. Rainfall runoff is collected through a system of culverts, canals, and ditches delivering the storm water runoff to 8 major pump stations. These 8 stations, with a capacity of 7,290 cfs, pump the storm water runoff over the local back levee into the marsh north and east of the levee. The total drainage area is approximately 17,620 acres.

5. Project Design. St. Bernard Parish can be divided into three drainage areas. The pump stations providing drainage for each area are also identified.

a. Area 1. Area 1 is bound on the west by the Orleans and St. Bernard Parish line, to the south by the Mississippi River, to the east by Paris Road, and to the north by the interior back levee. Area 1 is approximately 3,200 acres and is drained by three pump stations having a combined capacity of 2,920 cfs. The three pump stations are: Pump Station 1--Fortification, Pump Station 2--Guichard, and Pump Station 6—Jean Lafitte.

b. Area 2. Area 2 is bound on the west by Paris Road, on the south by the Mississippi River, to the east by the Violet Canal, and to the north by the interior back levee. Area 2 is approximately 5,350 acres and is drained by three pump stations with a combined capacity of 2,710 cfs. The three pump stations are: Pump Station 3--Bayou Villere, Pump station 4 --Meraux, Pump Station 7—Bayou Ducros.

c. Area 3. Area 3 is bound on the west by the Violet Canal, to the south by the Mississippi River, and to the east and north by the interior back levee. Area 3 is approximately 9,070 acres and is drained by two pump stations with a combined capacity of

1,660 cfs. The two pump stations are: Pump Station 5—E.J. Gore and Pump Station 8—St. Mary.

Table 1
Summary of Drainage Area and Pump Capacity

Drainage Area	Pump Station	Number of Pumps	Drainage Area ac	Full Capacity (cfs)
Area 1				
	PS 1--Fortification	3		1,200
	PS 2—Guichard	4		720
	PS 6—Jean Lafitte	3		1,000
	Subtotal	10	3,200	2,920
Area 2				
	PS 3--Bayou Villere	3		500
	PS 4 –Meraux	3		1,210
	PS 7—Bayou Ducros	3		1,000
	Subtotal	9	5,350	2,710
Area 3				
	PS 5—E.J. Gore	6		660
	PS 8—St. Mary	3		1,000
	Subtotal	9	9,070	1,660
Total		28	17,620	7,290

6. Disaster Incident.

The non-Federal pump stations were damaged by Hurricane Katrina in 2005. Katrina made landfall in Louisiana on August 29, 2005, as an upper level Category 3 hurricane on the Saffir-Simpson Hurricane Scale with sustained winds of 125 mph (201 km/h) with higher gusts, at 6:10 a.m. CDT near Buras-Triumph in Plaquemines Parish, Louisiana. The flood event produced storm surge levels that exceeded the level of the constructed Lake Pontchartrain and Vicinity Hurricane Protection Project, Chalmette Area Plan, and the local interior back levee. The height of the existing hurricane protection ranges from 16 to 17.5 feet N.G.V.D. This meets the criteria of an "extraordinary storm" as noted in paragraph 5-20.e. in Engineering Regulation (ER) 500-1-1, Emergency Employment of Army and Other Resources - Civil Emergency Management Program based on its being a category 3 Hurricane or stronger and its having caused significant amounts of damage.

7. Project Damages.

a. General.

A separate DSR is based on damages at these facilities from Hurricane Katrina, August 29, 2005. The DSR was prepared by Waldemar S. Nelson and Company under contract with the

New Orleans District. Excerpts from the DSR are included in Appendix D with the complete DSR retained at the New Orleans District.

b. Summary.

For the non-Federal pump stations, the damage summaries are noted below.

(1) Pump Station 1—Fortification.

Pump Station 1 sustained relatively minor damage because its operating floor elevation is 16 feet N.G.V.D. Flooding from the storm flooded the lower level of the station but the flood waters were approximately three feet below the concrete operating floor level. Pump station equipment that was damaged includes an electric pump motor, generator, trash rack bearing and gear box, and lighting. The building sustained damage to the metal siding and roof. Additionally, the diesel engine cooling system developed a leak. Auxiliary equipment damage included flooding of a bobcat used to remove debris from the trash racks.

(2) Pump Station 2—Guichard.

Pump Station 2 sustained substantial damage. With its operating floor at or near the natural ground elevation, the pump station was flooded to a depth of 6 to 7 feet. The four diesel engines were flooded along with control panels, compressors, motors, and vacuum pumps. The diesel fuel storage tank was moved off its concrete saddle foundation. All exterior and interior lighting was damaged. While the existing building was in poor condition prior to the storm, the wind and water caused additional damage to all four sides of the building and the building roof.

(3) Pump Station 3—Bayou Villere.

Pump Station 3 sustained substantial damage. With its operating floor at or near the natural ground elevation, the pump station was flooded to a depth of 8 feet. The three diesel engines and hydraulic drives were flooded along with the vacuum pump system and ancillary equipment. The diesel fuel storage tank was moved off its foundation. All exterior and interior lighting was damaged. While the existing building was is poor condition prior to the storm, the wind and water caused additional damage to all four sides of the building.

(4) Pump Station 4—Meraux.

Pump Station 4 sustained relatively minor damage because its operating floor elevation is 16 feet N.G.V.D. Flooding from the storm flooded the lower level of the station but the flood waters were approximately three feet below the concrete operating floor level. Pump station equipment that was damaged includes an air compressor, electomode heater, controller for compressed air dryer motor, and generator. The building sustained damage to metal siding and roof. Finally, one discharge flap gate was damaged and is not operational.

(5) Pump Station 5—E.J. Gore.

Pump Station 5 sustained substantial damage. With the operating floor at approximately 2 feet N.G.V.D, flood waters within the building reached a height of

approximately 6 feet. The hydraulic driven pumps were damaged along with the six diesel engines. The generator and the electric pump motor and its controller were flooded. The hydraulic oil tank is not on its foundation and is contaminated with salt water along with the fuel system. The trash rack bar screens are damaged along with the slope pavement adjacent to the discharge pipes. Building damage includes damage to the rollup door, roof, and building office and restroom facility.

(6) Pump Station 6—Jean Lafitte.

Pump Station 6 sustained relatively minor damage because its operating floor elevation is 16 feet N.G.V.D. Flooding from the storm flooded the lower level of the station but the flood waters were approximately three feet below the concrete operating floor level. The building damage consists of damaged roof panels. Mechanical damage includes damage to the trash rack gear boxes, trash removal equipment, engine exhaust flappers, and sanitation plant. Electrical damage consists of damage to lighting and the remote engine alarm panel.

(7) Pump Station 7—Bayou Ducros.

Pump Station 7 sustained relatively minor damage because its operating floor elevation is 16 feet N.G.V.D. Flooding from the storm flooded the lower level of the station but the flood waters were approximately three feet below the concrete operating floor level. Bearing and gears for the trash racks were damaged. Auxiliary equipment damage included flooding of a bobcat used to remove debris from the trash racks, fuel tank, and sanitation plant. Pump damage consists of a broken drain line. Engine damage consists of damage to an engine cooling motor, radiator leak and remote engine alarm panel. Two areas had some erosion including scour behind the station and near the west end stairs.

(8) Pump Station 8—St. Mary.

Pump Station 8 sustained relatively minor damage because its operating floor elevation is 16 feet N.G.V.D. Flooding from the storm flooded the lower level of the station but the flood waters were approximately eight feet below the concrete operating floor level. Building damage consists of loose roof panels, scour section near the discharge pipes, light fixtures, and the sewage aerator motor. Bearing and gears for the trash racks were damaged. Auxiliary equipment damage includes a front end loader used to remove debris from the trash racks.

8. Project Performance Data.

a. Inspection Results.

(1) Date of Last Inspection. Because the pump stations are not active in the RIP, inspections of the stations were not performed prior to the disaster. Therefore, a project condition code was not assigned by the Corps. The current rehabilitation assistance is a one-time policy deviation as identified in Appendix Q.

(2) Type of Last Inspection. Not active in the RIP, see Appendix Q.

(3) Project Condition Code of Last Inspection. Not active in the RIP, See Appendix Q.

b. Sponsor's Annual O&M Cost. unknown

c. Estimated cost to repair maintenance deficiencies. Not evaluated.

d. Previous PL84-99 Assistance. There has not been any previous PL84-99 assistance provided to this project.

9. Project Repair Alternatives Considered.

a. Description.

(1) No Action. This alternative consists of providing no emergency repairs to the flood control system under PL 84-99 authority or funding sources. The area would be vulnerable to flooding caused by rainfall events and would not be suitable for residential, industrial and other urban usage.

(2) Non-Structural Flood Recovery / Floodplain Management. This alternative consists of non-structural strategies generally involving changes in land use offered by other federal and state programs. Such strategies would include: (1) acquisition, relocation, elevation, and flood proofing existing structures; (2) acquisition of fee interest and/or conservation or other types of land easements and acquisitions; and (3) restoration of wetland. The sponsors have not requested any consideration of a non-structural alternative.

(3) Repair and rehabilitate the pump stations to pre-storm conditions. For seven of the eight pump stations, the equipment damaged by the storm would be repaired or replaced in kind. For Pump Station 2—Guichard, the extent of the damage to the metal building housing was so extensive, repair or placement of the building is not feasible. In lieu of constructing a new building structure which would necessitate the construction a new foundation and intake and discharge pipes, the structure will be demolished and the flooded equipment will be replaced with weather-proofed equipment. In order to provide for operation and monitoring, a separate small control room will be constructed to accommodate an operator.

(4) Repair and rehabilitate pump station to pre-storm condition and elevate the engines that require replacement because of damage caused by the storm above the flood levels caused by Katrina.

(a) Pump Station 1—Fortification. Repair or replace to pre-storm condition. The bobcat was flooded with floodwaters containing salt. Further investigation will determine if it is repairable. If repairable, repairs will be made. If not repairable, new equipment will be purchased and the damaged equipment salvaged by the Government.

(b) Pump Station 2—Guichard. A pile supported platform will be used to support the engines and the control room. The elevation of the platform will be approximately 16 feet N.G.V.D., which is approximately 10 feet above the slab elevation of the existing building. Three of the four pumps are hydraulic drive systems and will not require any modifications. The remaining mechanically driven pump will be replaced with hydraulic powered pump. This will negate the need for the proper alignment of the engine and pump shafts.

(c) Pump Station 3—Bayou Ville. A pile supported platform will be used to support the engines and the control room. The elevation of the platform will be approximately 16 feet N.G.V.D., which is approximately 10 feet above the slab elevation of the existing building. Two of the three pumps are hydraulic drive systems and will not require any modifications. The remaining mechanically driven pump will be replaced with hydraulic powered pump. This will negate the need for the proper alignment of the engine and pump shafts.

(d) Pump Station 4—Meraux. Repair or replace to pre-storm condition.

(e) Pump Station 5—E.J. Gore. The six diesel engines will be raised in place approximately 8 feet within the existing building which is above the flood elevation caused by Katrina. The existing pumps are hydraulically driven; therefore, no other modifications are required.

(f) Pump Station 6—Jean Lafitte. Repair or replace to pre-storm condition.

(g) Pump Station 7—Bayou Ducros. Repair or replace to pre-storm condition. The bobcat was flooded with floodwaters containing salt. Further investigation will determine if it is repairable. If repairable, repairs will be made. If not repairable, new equipment will be purchased and the damaged equipment salvaged by the Government.

(h) Pump Station 8—St. Mary. Repair or replace to pre-storm condition. The front end loader was flooded with floodwaters containing salt. Further investigation will determine if it is repairable. If repairable, repairs will be made. If not repairable, new equipment will be purchased and the damaged equipment salvaged by the Government.

b. Discussion.

(1) The no action alternative is not acceptable to the Sponsor because the area would be subject to flooding from rainfall events. This situation would prevent reliable residential and industrial use of the land.

(2) The non-structural flood recovery / floodplain management alternative is not acceptable due to the numerous industrial uses for the lands within the protected area. In addition there will be residents who will want to and will be allowed to rebuild their homes. The sponsors have not requested a non-structural alternative.

(3) The structural repair alternative restores the flood control system to the pre-storm condition and capacity. Without the repairs the area would be subject to flooding from rainfall events. Repairs would consist of replacement of flooded, damaged, and non-operational diesel engines, replacement of air compressors, starters and generators, and miscellaneous repairs to pump station buildings and the surrounding site.

(4) The structural repair and elevating alternative includes the items identified in the structural repair alternative and elevates pump station engines that were flooded and associated equipment for those stations that require engine replacement because the engine was flooded. This alternative would prevent critical equipment from being damaged in the event of significant storm surges in the future. This alternative affects three pump stations: Pump Stations 2, 3, and 5. The remaining pump stations would be repaired as identified in the structural repair alternative.

At Pump Station No. 2, it is not feasible to use the existing building. The new building will be constructed with an operating floor at the same elevation as the pump stations not flooded by Katrina (elevation 16.0 N.G.V.D). At Pump Station No. 3, it is not possible to elevate the equipment in the existing building to prevent damage to the equipment caused by a Katrina event; therefore, the new building will also be elevated to elevation 16.0 N.G.V.D. The engines in Pump Station 5 can be elevated within the existing building to prevent flooding from a Katrina event, approximately 8 feet above the existing building's slab elevation. This would be considerably less expensive that constructing a new building. Elevations will be verified during the design phase.

ER 500-1-1 paragraph 5-2 b (1) allows for the improvements to design and equipment that are a result of state of the art technology, and are commonly incorporated into current designs in accordance with sound engineering principles. Elevating the equipment is practical and sound engineering. Five of the eight pump stations survived the storm with relatively minor damage because the operating floor was elevated to the height of the interior back levee. Elevating stations to a height near the elevation of the hurricane protection levee is common practice for new construction in St. Bernard Parish and is the current design standard for the parish.

10. Comparison of Alternatives.

Table 2 is a comparison of the cost to repair all of the stations to the cost to repair the damaged stations and elevate the engines above the Katrina flood elevation. The percent increase in cost to the overall project is 14.7 percent. The additional $1,371,000 to elevate the engines is a small increase to ensure that damages during future flood events will be minimized. Not only will the pump station damages be reduced, but damages to residential and commercial properties should also be reduced.

Table 2
Alternative Cost Comparison

Station	Alternative Repair Cost ($)	Alternative Repair and Raise Cost ($)	Difference Cost ($)	Percent Increase %
PS 1	150,000	150,000		
PS 2	3,508,000	3,886,000	378,000	10.8%
PS 3	2,335,000	2,779,000	444,000	19.0%
PS 4	464,000	464,000		
PS 5	2,390,000	2,939,000	549,000	23.0%
PS 6	156,000	156,000		
PS 7	184,000	184,000		
PS 8	130,000	130,000		
Total	9,317,000	10,688,000	1,371,000	14.7%

11. Recommended Alternative. For an itemized list of repairs see Appendix H.

a. Summary. The raise the equipment alternative is recommended for Pump Stations 2, 3, and 5 and the repair or replace the damage to Pump Stations 1, 4, 6, 7, and 8.

b. Standard Limits for Cost. ER-500-1-1, Section 5-2, paragraph v(1) limits the construction contingency to 10%; however, because of the emergency conditions under which the design and contract documents will be prepared, the short amount of time allowed for construction completion, and the high level of competition for construction contractor resources in the area, a 25% construction contingency is used. Additionally, because of the nature of rehabilitating mechanical and electrical work, including the uncertainty of rebuilding equipment and hidden damage, E&D of 10 percent and S&A of 12 percent of the construction cost is used.

ASSESSMENT OF SELECTED ALTERNATIVE

12. Economic Analysis.

a. General. The economic feasibility analysis for St. Bernard Parish was conducted in accordance with the requirements EP 500-1-1 in support of the repair and reconstruction of Federally authorized flood control works as provided for under Public Law 84-99.

b. Benefit Analysis. The total average annual benefits associated with the three areas for St. Bernard Parish were based on 100 percent inventory collections done for Area 1, which was performed during the ongoing St. Bernard Feasibility Study. This study represents approximately 38 percent of the total housing units in St. Bernard Parish. Therefore, assuming that the housing is similar throughout the parish, this 38 percent was applied back to the total number of housing units. There are 26,790 housing units within St.

Bernard Parish with a total population of 67,229. Inundation damage reduction benefits include those associated with avoided losses to residential, commercial, and industrial structures, their contents, and vehicles associated with these structures. This figure is estimated using October 2005 price levels.

Two sets of hydraulics were given for each of the three areas. The without project condition was defined as without pumps. The two alternatives included stage-frequency data at the current damaged pumping capacity (post-Katrina) and stage-frequency data at 100 percent pumping capacity (pre-Katrina). The benefits below reflect the difference between 100 percent pumping capacity and the current (damaged) pumping capacity. There were two plans considered. Plan 1 is reparation of all eight pumps in all three areas. Plan 2 is reparation to all eight pumps in all three areas plus elevation of Pump Station 2 (Area 1), Pump Station 3 (Area 2), and Pump Station 5 (Area 3).

These benefits are based upon an expectation that all damaged or destroyed facilities will be fully restored and is consistent with current planning guidance that requires adjustments if there is specific information that indicates such restoration will not occur. No adjustments thus far were made to account for the partial replacement of structures that have been damaged or destroyed by Hurricane Katrina.

c. Cost Analysis. The total first costs and total average annual cost associated with repair of the damaged portions of the St. Bernard Parish is given in the table below. The total first costs for all work to be performed includes construction costs, contingencies, engineering and design costs, and salaries and administration costs. The total first costs reflect October 2005 price levels and were amortized at the FY 2006 Federal discount rate of 5.125 percent over a 50-year period of analysis. Since the repairs to the pumping stations are expected to be completed within one year, no interest during construction accrues. No incremental operations and maintenance costs are expected since the scope of the original project design has not changed.

d. Summary. The degree to which average annual project benefits exceeds average annual project costs is the measure of positive average annual net project benefits and is consistent with a benefit-to-cost ratio of 1.0 or greater. Net benefits for the rehabilitation project and the associated benefit-to-cost ratio are given below.

Table 4
Cost and Benefit Cost Ratios

Pump Station	Total First Cost ($)	Average Annual Cost ($)	Average Annual Benefits ($)	Net Benefits ($)	Benefit Cost Ratio
Area 1					
PS 1--Fortification	150,000	8,376			
PS 2—Guichard	3,886,000	316,994			
PS 6—Jean Lafitte	156,000	8,711			
Subtotal	4,192,000	334,081	583,000	248,919	1.7
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Subtotal	3,069,000	171,373	471,000	299,627	2.7
Total	10,688,000	696,148	1,278,000	581,852	1.8

e. Construction Cost Estimate. The estimated construction cost is $10,688,000. Appendix H contains a detailed construction cost estimate for each pump station.

13. Environmental

The New Orleans District Commander has considered the probable environmental consequences of the proposed work under this PIR and does not anticipate that this work will result in significant environmental impacts. No adverse impacts to endangered species, important fish and wildlife resources, waters of the United States subject to Section 404 permitting including wetlands, water quality, floodplains, or other natural and cultural resources are expected. The pump stations to be repaired are not part of any Federal project. The environmental effects of the pump station work will be included in an after-the-fact environmental assessment that is under preparation for all of the flood protection repair work being undertaken by the Corps in the Metropolitan New Orleans area. The authority for this approach is per ER 500-1-1, Paragraph 2-3.k(1), and ER 200-2-2, Paragraph 8, and a determination made by the New Orleans District Commander on January 5, 2006, that this work prevents or reduces an imminent risk of life, health, property, or severe economic losses. (See Appendix G).

In order to comply with other applicable laws and regulations, the New Orleans District has coordinated the proposed action with appropriate Federal and state agencies. The District is recommending to the Louisiana State Historic Preservation Officer that the pump stations are not eligible for inclusion in the National Register of Historic Places and therefore are not significant historic properties. The U.S. Fish and Wildlife does not object to the proposed action, and they have agreed with the New Orleans District's determination that the proposed action would not adversely affect threatened or endangered species, by email dated January 5, 2006. No threatened or endangered species or critical habitats under the purview of the National Marine Fisheries Service occur in the proposed work areas. The National Marine Fisheries Service has determined that proposed work will not adversely affect essential fish habitat or associated marine fishery resources by email dated January 4, 2006. The Corps will not need to apply for a storm water pollution prevention permit from the Louisiana Department of Environmental Quality (LDEQ) pursuant to Section 402 of the Clean Water Act since LDEQ has granted the Corps blanket authority to discharge storm water runoff from construction activities related to hurricane response activities in the declared disaster areas. A State Water Quality Certification pursuant to Section 401 of the Clean Water Act will not have to be obtained from the LDEQ since that office sent a letter to the New Orleans District dated September 7, 2005, which waives and dispenses with the requirement of State Water Quality Certification prior to performing such work as needed to repair, replace, or restore public infrastructure damaged or destroyed by 2005 hurricanes. The Louisiana Department of Natural Resources, Coastal Management Program office has been advised of the proposed action, but has not responded.

14. Interagency Levee Task Force.
Not applicable.

15. Project Management.

a. Funding Authority.

(1) Program and Appropriation. FCCE, 96x3125
(2) Class. 320
(3) CWIS Number. 030725

b. Project Funds. Cost of Field Investigations /PIR Preparation: $100,000

c. Project Repair Schedule.

DSR Complete	11/17/05
PIR Complete	01/09/06
Begin Construction	02/06/06
Complete Construction	06/01/06

16. One-Time Deviation from the Policy Requirements of Cooperation for the Rehabilitation Effort.

Pursuant to CECW-HS, Memorandum for Assistant Secretary of the Army for Civil Works (ASA(CW)), SUBJECT: Recommendations for One-Time Deviations to Certain Policies Regarding Use of P. L. 84-99 (33 U.S.C. 701n) in New Orleans and Vicinity following Hurricane Katrina-FOR APPROVAL, dated October 7, 2005 (a copy of which is attached hereto as Appendix Q), approved by the ASA(CW) on October, 12, 2005 (Appendix R), and affirmed by the Office of Management and Budget on October 17, 2005, the Government shall utilize Flood Control and Coastal Emergencies (FCCE) funds, at full Federal expense pursuant to the provisions of P. L. 84-99, to fund the performance of the following activities as a one-time exception of policy specific to flood control works in St. Bernard, Orleans, Jefferson, and Plaquemines Parishes, Louisiana, following Hurricane Katrina, as follows:

a. For federally authorized and constructed projects that have been turned over to the non-federal sponsor, use FCCE funds at full federal expense to fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation.

b. For non-federal flood damage reduction projects, including pumps and pump stations, not active in the RIP, at full federal expense use FCCE funds, to 1) undertake permanent rehabilitation to pre-storm conditions and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation.

c. For those segments of federally authorized projects not be officially "turned over" but for which the sponsors are performing operation and maintenance, use FCCE funds at full federal expense to 1) undertake permanent rehabilitation to pre-storm conditions and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation.

d. For those segments of federally authorized projects under active construction, use FCCE funds at full federal expense to 1) undertake permanent rehabilitation to pre-storm conditions and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are need for the rehabilitation.

Only the exception to policy relating to non-Federal flood damage reduction projects applies to the rehabilitation effort described in this Project Information Report.

17. Requirements of Federal and Public Sponsor Cooperation for the Rehabilitation Effort

The Public Sponsor, at no cost to the Government, shall use its best efforts to provide right of entry, as requested by the Government, to lands, easements, rights-of-way, and

disposal or borrow areas (LERD) that were owned, controlled or claimed by other non-Federal Government entities on the date of the Government's request for right of entry (hereinafter "Other Non-Federal Governmental LERD"). If the Public Sponsor, despite diligent efforts, is unable to acquire right of entry to Other Non-Federal Governmental LERD, the Government shall obtain right of entry to the Other Non-Federal Governmental LERD from the non-Federal governmental entity who owns, controls or claims said LERD.

a. Owned by Private Interests

For the rehabilitation efforts described herein, the Government does not anticipate any requirement to acquire LERD owned by private interest. If such acquisition is later determined to be necessary, the Government shall fund the acquisition of LERD that are not owned, claimed or under the control of the Public Sponsor or any other non-Federal governmental entities on the date of the Government's request for right of entry (hereinafter "Private LERD"). The Government's responsibility to fund the acquisition of Private LERD shall be in accordance with the following procedures and requirements.

(1) Exercise of Commandeering Powers: Immediately upon the Government's request that the Public Sponsor provide Private LERD, the President of St. Bernard Parish Government, without cost to the Government, shall sign an executive order commandeering the Private LERD (hereinafter "Commandeering Order"), pursuant to his/her powers under La. R.S. 29:721, et seq., for the construction of the permanent rehabilitation efforts herein described. The exercise of such commandeering powers and authorities is subject, under the cited state law, to the requirement that the owners of any commandeered interest that is compensable under the law, be identified and justly compensated under the law. The President of the St. Bernard Parish Government shall thereafter provide right of entry to the Lake Borgne Basin Levee District, as public sponsor, for the construction, operation and maintenance of the rehabilitation effort. The Lake Borgne Basin Levee District shall then provide right of entry to the Government.

(2) Provision of Right of Entry: At no cost to the Government, the Public Sponsor shall promptly provide right of entry to the Government to the Private LERD for the construction, operation and maintenance of the rehabilitation efforts described herein.

(3) Responsibility for Acquisition of Private LERD: After receipt of the executed Commandeering Order and right of entry from the Public Sponsor, the Government will perform, or cause to be performed, the acquisition of the Private LERD determined by the Government to be necessary for the construction, operation and maintenance of the LERD described herein. The acquisition of LERD by the Government will be subject to the availability and receipt of P. L. 84-99 appropriations and the provision by the Public Sponsor, at no cost to the Government, of the Commandeering Order and right of entry referenced in Paragraph 17a (1) and 17b (2), respectively.

(4) Acquisition in the Name of the Public Sponsor: The Government shall acquire, as appropriate, any Private LERD and Other Non-Federal Governmental LERD and relocations, as well as any subordinations or releases of interest required to be obtained from third parties in the name of the Public Sponsor. Provided however, that if the Government is required to acquire said interests through the exercise of its Federal powers of eminent domain authority, the Government shall file such proceedings in a Federal district court, such that possession and ownership of the condemned LERD and interests shall be in the name of the United States of America. The Government shall thereafter quitclaim such interest to the Public Sponsor and the Public Sponsor shall agree in the Cooperation Agreement to accept the quitclaim of any LERD and interests so acquired by the Government for the purposes of the Rehabilitation Effort herein described.

b. Construction

The Government will expeditiously construct the Rehabilitation Effort described herein, subject to the provision of P. L. 84-99 funds by the Congress, and subject to the commandeering of Private LERD by the chief executive officer of the parish or city where the Private LERD are located and to the provision by the Public Sponsor of a right of entry to the LERD determined by the Government to be necessary for the construction, operation and maintenance of the Rehabilitation Effort.

c. Relocations

The Government will determine and accomplish or assure accomplishment of all the relocations necessary for the construction, operation and maintenance of the Rehabilitation Effort described herein, including those necessary to enable the removal of borrow materials and the proper disposal of dredged or excavated material; provided however, that the Public Sponsor, without cost to the Government, shall commandeer the privately-owned relocated facilities or utilities in accordance with its powers under La. R.S. 29:721, et seq.; shall diligently exercise its rights and authority to secure a subordination or release of third party interests on Public Sponsor LERD; and shall use its best efforts to secure a subordination or release of third party interests on Other Non-Federal Governmental LERD. If the Public Sponsor, despite diligent efforts, is unable to secure the release or subordination of third party interests in Other Non-Federal Governmental LERD, the Government shall obtain such subordination or release from the owners of such interests.

d. Hazardous Substances

The Government shall perform, or cause to be performed, such investigations for hazardous substances as are determined to be necessary by the Government to identify the existence and extent of hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) 42 U.S.C. 9601-9675, on all lands that are determined by the Government to be necessary to the construction, operation, and maintenance of the subject Rehabilitation Effort. In the event that hazardous substances are determined to exist on lands acquired for the Rehabilitation Effort and the Government and

the Public Sponsor determine to proceed or continue with the construction after considering liability that may arise under CERCLA, the Public Sponsor shall be responsible, as between the Government and the Public Sponsor, for any and all necessary clean up and response costs, to include the costs of any studies and investigations necessary to determine an appropriate response to the contamination. Such costs shall not be considered a part of the total Rehabilitation Effort the subject project.

e. Indemnification

The Public Sponsor shall hold and save the Government free from all damages arising from the construction, operation, and maintenance of the subject Rehabilitation Effort and any related betterments, except for damages due to the fault or negligence of the Government or the Government's contractors.

f. Betterments

The Public Sponsor may request the Government to accomplish betterments and shall be solely responsible for any increase in costs resulting from the betterments. All such increased costs will be paid in advance by the non-Federal sponsors.

g. Operation and Maintenance

The Public Sponsor shall operate and maintain those portions of the Rehabilitation Effort herein described at no cost to the Government, in accordance with specific directions prescribed by the Government in Engineer Regulation 500-1-1 and any subsequent amendments thereto and other applicable authorities

18. Real Estate Requirements.

All applicable Rights of Entry will be provided by the appropriate Public Sponsor prior to each construction contract in accordance with the procedures set forth in Section 17 above.

PROJECT SUMMARY

19. Recommendations/Project Authentication

a. It is recommended that this project should be repaired under PL84-99. The recommended alternative is to repair or replace damage caused by Katrina at Pump Stations 1, 4, 6, 7, and 8 and to construct a new elevated building for Pump Stations 2 and 3 and elevating the diesel engines in place at Pump Station 5. Without repairs to the flood control Project, the threat of flooding from rainfall events would continue to leave the area unusable for residential and commercial use.

b. It is recommended that this project be approved. The project first cost is $10,688,000 with a benefit-to-cost ratio of 1.8 to 1. The final design will be completed with contract award scheduled to ensure repairs are completed as soon as practical.

DISTRICT PROJECT AUTHENTICATION
Project Information Report, NON-FEDERAL PUMP STATIONS, St. Bernard Parish, Louisiana

Report Prepared By: James J. St. Germain 1/7/06
James J. St. Germain
Project Manager
Date

Emergency Management
Approval By: Thomas M. Hall 01/06/06
FOR: Herbert J. Wagner
Acting Chief, Emergency Operations
Date

CERTIFICATION OF LEGAL REVIEW

The Project Information Report (PIR) for repair of the non-Federal Pump Stations in St. Bernard Parish, Louisiana has been reviewed by the Office of Counsel, New Orleans District and is approved as a legally sufficient document for commencement of construction.

Reviewed by: Daryl N. Gloria 8 January 2006
Assistant District Counsel
Date

Certified by: Denise D. Frederick 9 January 2006
District Counsel
Date

District-Level Approval By: 9 JAN 06
Richard P. Wagenaar
Colonel, U.S. Army
District Engineer
Date

Revisions to the Project Information Report (PIR), for the rehabilitation effort for the non-Federal pump stations in St. Bernard Parish, Louisiana have been reviewed by the Office of Counsel, New Orleans District and are approved as legally sufficient.

Reviewed by: _____ 15 January 2006
Assistant District Counsel — Date

Certified by: _____ 15 January 2006
District Counsel — Date

DIVISION PROJECT APPROVAL
Project Information Report, NON-FEDERAL PUMP STATIONS, St. Bernard Parish, Louisiana

Emergency Management
Approval By: _____ 1/18/06
for Chief, MVD Emergency Operations Date

CERTIFICATION OF LEGAL REVIEW

The Project Information Report (PIR) for repair of the non-Federal Pump Stations in St. Bernard Parish, Louisiana has been reviewed by the Office of Counsel, Mississippi River Division and is approved as a legally sufficient document for commencement of construction.

Certified by: _____ 1/20/06
Division Counsel Date

Division-Level Approval By: _____ 27JAN2006
Albert M. Bleakley Date
Colonel, Engineer
Deputy Division Commander

TECHNICAL POINTS OF CONTACT

Project Management			
Project Manager	Jim St. Germain	CEMVN-PM-E	504-862-2499
Emergency Management			
Emergency Mgmt Approval	Herbert Wagner	CEMVN-OD-R	504-862-7434
Engineering			
Electrical Engineer	Dan Bradley	CEMVN-ED-GE	504-862-2696
Mechanical Engineer	Dennis Strecker	CEMVN-ED-GE	504-862-2694
Structural Engineer	Larry Mickal	CEMVN-ED-T	504-862-2711
Hydraulic Engineer	Clyde Barre	CEMVN-ED-HD	504-862-2429
Environmental			
Biologist	Richard Boe	CEMNVN-PM-RP	540-862-1505
HTRW	Dean Arnold	CEMVN-ED-GE	504-862-2674
Real Estate			
Real Estate Analysis	Michelle Marceaux	CEMVN-RE-E	504-862-1190
Construction			
Construction Mgmt	Glen Grimillion	CEMVN-CD-NO-Q	504-861-2439
Office of Counsel			
Attorney	Steve Bland	CEMVN-OC	504-862-2026
Attorney	Mary V. Kinsey	CEMVN-OC	504-862-2828
Executive			
DDPM Chief	Greg Breerwood	CEMVN-EX	504-862-2204
District Engineer	Col R. Wagenaar	CEMVN-DE	

Sponsor Points of Contact

Lake Borgne Basin Levee District

Robert Turner, Executive Director	(504) 512-6330

APPENDICES

APPENDIX A

October ___, 2005

Corps of Engineers, New Orleans District
Attn: Operations Division, Readiness Branch (Herbert J. Wagner)
7400 Leake Avenue
New Orleans, Louisiana 70118-3651

This letter is a written request for rehabilitation assistance for the following flood control project constructed by the non-Federal sponsor in ST. BERNARD Parish(es), Louisiana: LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA HURRICANE PROTECTION PROJECT AND THE MISSISSIPPI RIVER LEVEES project(s).

1) Name of Requesting Agency: LAKE BORGNE BASIN LEVEE DISTRICT

Points of Contact:	Phone Number:
ROBERT TURNER EXECUTIVE DIRECTOR	504-512-6330
PEGGY SEMMERA ADMIN ASSISTANT	318-876-2230

2) Corps assistance with Levee damage assessment: ✓ Yes ____ No
Corps assistance with Pump Station damage assessment: ✓ Yes ____ No

3) Flood Control Project Location (Section, Township, Range, City and Parish):
ST. BERNARD PARISH

4) Locations of damage: ALL PROJECT FEATURES

5) Waterway causing the damage: ALL ADJACENT WATERWAYS AND MAJOR WATER BODIES ADJACENT TO AND IN ST. BERNARD PARISH

6) Financial Capability of the Non-Federal Sponsor: Hurricane Katrina, August 29, 2005, was a devastating hurricane of catastrophic proportions. The undersigned non-Federal Sponsor requests that the Federal Government assume responsibility and/or cost of the following items of non-Federal responsibility under the requirements of Public Law 84-99: [SIGNIFY REQUEST BY PLACING AN "X" IN THE SPACE PROVIDED.]

a. After required new real property interests identified by the Federal Government are commandeered by or on behalf of the non-Federal sponsor, assume responsibility for acquisition and funding of land payments and incidental cost thereof, of newly acquired lands, easements, rights-of-way, relocations, and disposal areas (LERRDs), including

credit/reimbursement for fair market value, settlement or final judgment for LERRDs commandeered by or on behalf of the non-Federal sponsor, subject to the requirement that the Federal Government must provide prior approval of fair market value and settlement determinations prior to the non-Federal tender of an offer to land owner: X

b. All reasonable, allocable and allowable cost of the project Rehabilitation Effort: X

c. Costs of Hazardous, Toxic, Radioactive Waste (HTRW) Investigation: X

7) The need for Federal Government assumption of cost-sharing responsibility for the above items of local obligation is requested due to the extraordinary demands upon the fiscal resources of the undersigned non-Federal sponsor, as follows: LOSS OF TAX-BASE, STRAIN ON RESOURCES, LOSS OF BUSINESS AND INDUSTRY, LOSS OF RESIDENCES, LOSS OF INFRASTRUCTURE, AND LOSS OF PERSONNEL.

8) Despite current and anticipated future non-Federal fiscal constraints, the non-Federal sponsor can provide the following services and/or items of local obligation, without credit or reimbursement: ASSIST IN TITLE AND OWNERSHIP SEARCH, ASSIST IN NEGOTIATIONS AND SETTLEMENT WITH LAND OWNERS, ASSIST IN PROPERTY ACQUISITIONS, AND ASSIST IN IDENTIFICATION OF BORROW AREAS.

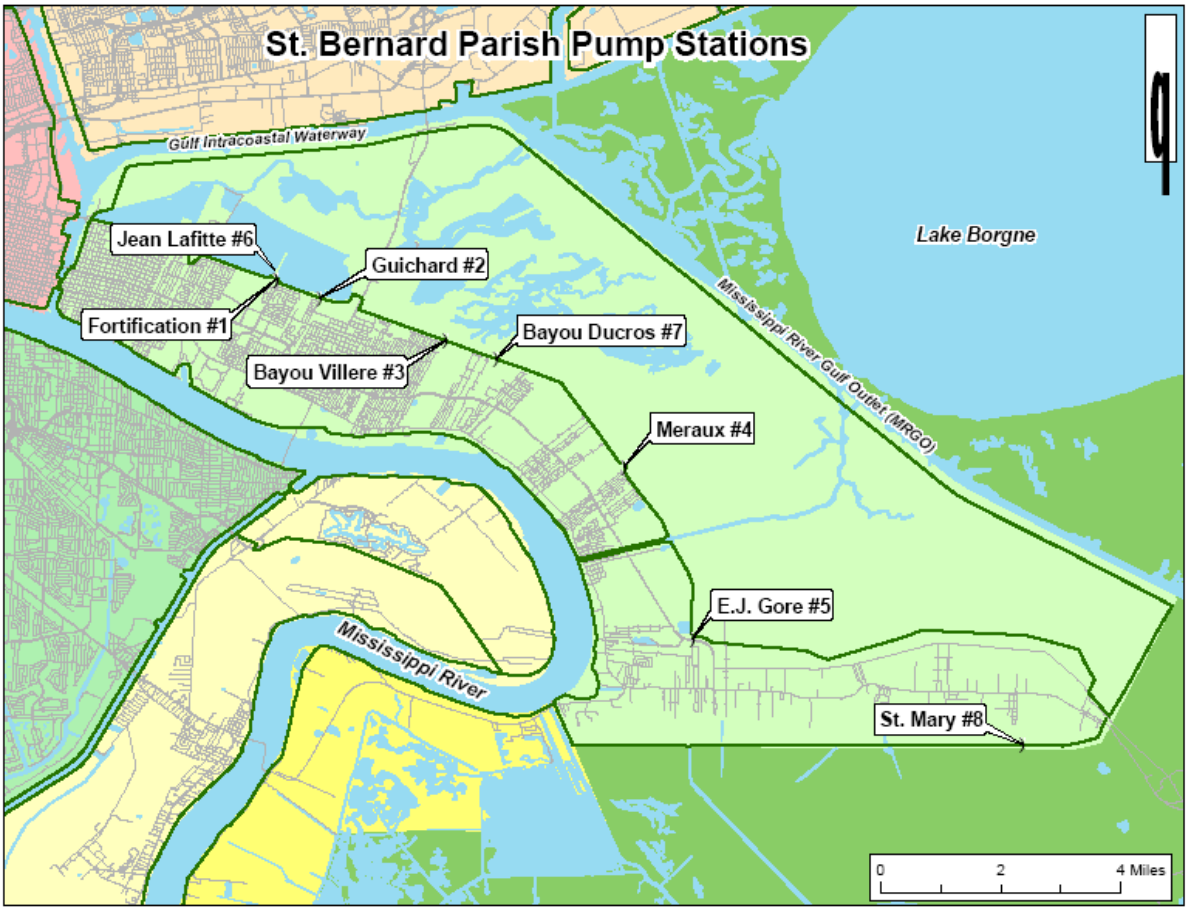
9) It is in the national interest to provide permanent rehabilitation of the above described projects for the following reasons: HOME TO APPROX. 70,000 PEOPLE, COMMERCIAL MARINE AND FISH LANDINGS SUCH AS: OYSTERS, SHRIMP, CRAB, FISH, ETC., PORT OF ST. BERNARD PARISH, OIL AND GAS INFRASTRUCTURE INCLUDING TWO MAJOR REFINERIES AND A NATURAL GAS PLANT, RECREATIONAL FISHING, AND CRITICAL NESTING HABITAT FOR A LARGE PORTION OF THE US WATERFOWL THAT MIGRATE THROUGH ANNUALLY.

10) It is understood and agreed that the Government's decision regarding the request in Paragraph 6 above will be within the Government's sole discretion, and will be determined based on the facts and circumstances applicable to each project.

Sincerely,

Printed Name: George E. Lopez
Official Title: President, BOARD OF COMMISSIONERS

Appendix B
St. Bernard Parish Non-Federal Pump Stations



St. Bernard Parish Non-Federal Pump Stations

Appendix C

Disaster Incident

See Section 6 of Main Report

Appendix D
Damages

Table of Contents

Pump Station Observation Sheet

Name of Pump Station — Fortification, Pump Station No 1

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 3 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

West Pump: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Engine is reported to be operable

Center Pump: Drive Type - (Electric Motor) Operable - No

Remarks –

1. Circuit breaker trips after motor has run for about 20 minutes. (Motor is 250HP, 2300V, 60 cycle.)

East Pump: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. One cylinder has a coolant leak, but the engine is reported to be operable

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. Power was restored after Hurricane.

Standby Backup Power Equipment:

1. 15kW Generator Set not functional (fuses in gray generator control box blow shortly after engine is started).

Switchgear and/or Motor Control Centers:

1. Seems OK except for possible breaker problem described above.

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. May be factor in motor circuit breaker tripping.

Pump Controls Systems:

1. No problems reported.

Fuel Systems and Supply:

1. Fuel tank vents came within a few inches of being covered with water otherwise the system is reported to be operable.

Compressed Air System:

1. Diesel air compressor leaks oil, gauges filled with water, air dryer was underwater.

Trash Racks:

1. Need to be cleaned

Trash Raking Equipment:

1. Bearings and gear boxes were underwater and should be rebuilt

Trash Rakes: N/A

Discharge Pipe Flap Gates:

1. East gate sticks in the closed position

Pump Station Building Structure:

1. The building structure, which is concrete, steel and brick structure, is in good condition. The upper level was not covered with water. No visible damage due to Hurricane Katrina, except for the wall siding. Sections of wall panels where damaged on the West and East walls. The entire wall siding on the North wall was damaged.
2. Workshop was underwater, but no visible structural damage. Work table is made of wood, and also was under water for several days, but no obvious damage was visible.
3. Trash screens where covered with water. No visible damage to the concrete structure or the screens. Work was done to the motors by the parish by replacing the 3 motors. The debris on top of the screen structure was not yet removed.

Pump Station Building Roof:

1. The steel roof structure is in good condition. Some roof panels at the North-West corners are missing.
2. Roof gutters on 4 corners are damaged and missing.

Pump Station Building Doors & Windows:

1. All doors and windows are in good condition.
2. Fence (6 foot section) on the west side is damaged.
3. Enclosure panels around the outside compressor are damaged.

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

1. Air compressor room exhaust fan is inoperable.

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

1. Pump station lower level equipment room requires thorough cleaning.
2. 7500W forced-air heater was submerged as was controller for compressed air dryer motor, along with three sets of on/off switches and duplex receptacles.
3. Two 1000W flood lights and two quartz lights were damaged.

4. Vent fan in office does not work (when switch is flipped, only a humming sound is heard).

Other:

1. Generator engine leaking oil.
2. Weed eater was underwater.
3. Pressure washer was under water.
4. Kubota and Bobcats were underwater.
5. Tools and fire extinguisher missing.
6. Station documentation needs to be located and reclaimed.
7. Space heater was underwater.
8. Hot water heater washed away by flood.

Pump Station No. 1 Fortification

Pump Station No. 1 Building

Pump Station No. 1 Roof Damage

Equipment Room Air Compressors

Motor Controller

Pump Station Observation Sheet

Name of Pump Station GUICHARD PUMPING STATION No. 2

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 4 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

Pump No. 1: Drive Type - (Diesel Engine) Operable - No

Remarks -

1. The engine was submerged for 6 days and is still full of water. The hydraulic drive system is a sealed system. It needs to be inspected and repaired as needed.

Pump No. 2: Drive Type - (Diesel Engine) Operable No

Remarks -

1. The engine was submerged for 6 days and is still full of water. The hydraulic drive system is a sealed system. It needs to be inspected and repaired as needed

Pump No. 3 Drive Type - (Diesel Engine) Operable - No

Remarks -

1. The engine was submerged for 6 days and is still full of water. The hydraulic drive system is a sealed system. It needs to be inspected and repaired as needed

P ump No 4: Drive Type - (Diesel Engine) Operable - No

Remarks -

1. The engine was submerged for 6 days and is still full of water. This is a direct drive unit so the pump was probably not damaged further by the hurricane..

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. No power.

Standby Backup Power Equipment:

1. No backup power

Switchgear and/or Motor Control Centers:

1. N/A

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. N/A

Pump Controls Systems:

1. The engine controls are damaged beyond repair

Fuel Systems and Supply:

1. Storage tank is no longer on its foundation and the days tanks were submerged.

Compressed Air System:

1. The compressor and motors were submerged by the flood. If pump no. 4 cannot be repaired the compressor is no longer needed.

Trash Racks:

1. Trash racks are made of wood. No debris was found. The screens are in good condition.

Trash Raking Equipment: N/A

Trash Rakes: N/A

Discharge Pipe Flap Gates:

1. None

Pump Station Building Structure:

1. The building structure, consist of concrete foundation, concrete parameter wall, and steel structure. The building is approx. 45' wide x 62' long x 25' high roof.
2. The building steel structure and siding are totally damaged on all 4 sides. The structure is rusted and unstable.
3. The equipment concrete foundations seem ok. But the building concrete wall has major cracks, which may be contributed to age.
4. The Diesel Fuel storage tank has moved off its concrete saddle foundations during the Hurricane.

Pump Station Building Roof:

1. The steel roof structure is rusted and in bad condition. Some roof panels are blown off the roof and missing.

Pump Station Building Doors & Windows:

1. All doors and windows are damaged.

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

1. Station does not include louvers or fans.

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

1. All exterior and at least 80% of ~30 interior lights were damaged (unable to determine whether lights that appeared undamaged could actually function because power has not been restored to facility).
2. Panelboard for lighting and duplex receptacles had gone under water.
3. Approximately 6-10 duplex receptacles had been under water.

Other:

1. The vacuum pumps were submerged by the flood for 6 days. If engine no. 4 cannot be repaired the vacuum pump is no longer needed.

Pump Station No 2. Guichard

Pump Station No. 2 Building

Pump Station No. 2 Building

Flood Damaged Engine and Pump

Flood Damaged Engine and Pump

Flood Damaged Engine and Pump

Flood Damaged Engine and Pump

Pump Station Observation Sheet

Name of Pump Station – BAYOU VILLERE PUMPING STATION No. 3

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 3 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

Pump No. 1: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. The engine was submerged for 6 days and is still full of water. The hydraulic drive system is a sealed system, but it needs to be inspected and repaired as needed

Pump No. 2: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. The engine was submerged for 6 days and is still full of water. The hydraulic drive system is a sealed system, but it needs to be inspected and repaired as needed.

Pump No. 3: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. The engine was submerged for 6 days and is still full of water. This is a direct drive unit, so the pump was probably not damaged further by the hurricane

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. Utility has not yet restored electric power to the transformers feeding the facility.

Standby Backup Power Equipment:

1. No backup power

Switchgear and/or Motor Control Centers:

1. n/a

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. n/a

Pump Controls Systems:

1. Damaged from flood

Fuel Systems and Supply:

1. Storage tank is no longer on foundation

Compressed Air System:

1. Flooded

Trash Racks:

1. Trash racks are made of wood. No debris was found. The screens are in good condition.

Trash Raking Equipment: N/A

Trash Rakes: N/A

Discharge Pipe Flap Gates:

1. none

Pump Station Building Structure:

1. The building structure, consist of concrete foundation, concrete parameter wall, and steel structure. The building is approx. 45’ wide x 62’ long x 25’ high roof.
2. The building steel structure is in fair condition, some rusted column bases and beams.
3. Sidings on all 4 sides at the lower half of the building are damaged up to 15’ from the bottom.
4. The bottom angle supports for the siding are eroded.
5. The interior slab of the building looks clean. Some debris and silt was found in the pipe trenches.
6. The equipment foundation seems in good condition.
7. The building foundation and parameter wall seems in good condition.

Pump Station Building Roof:

1. Roof is in good condition. No damage

Pump Station Building Doors & Windows:

1. All doors and windows are damaged.
2. West wall; Double door 8’ wide x 12’ high damaged.
3. South wall; (2) 3’ wide x 7’ high doors are damaged.
4. North wall; All pump suctions (4’ x 4’) are damaged.

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

1. Air system, vacuum system, fuel system, vent systems were all flooded

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

1. All exterior and at least 50% of ~20 interior lights were damaged (unable to determine whether lights that appeared undamaged could actually function because power has not been restored to facility).
2. Panelboard (18 ckt- either 7 or 8 ckts actually used) for lighting and duplex receptacles had gone under water.
3. Approximately 6-10 duplex receptacles had been under water.

Other: none

Pump Station No. 3, Bayou Villere

Pump Station No. 3 Building

Pump Station No. 3 Building

Electric Panel Box

Vacuum Pump

Engines with Hydraulic Drive

Engines with Direct Drive

Pump Station Observation Sheet

Name of Pump Station – MERAUX PUMPING STATION No. 4

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 3 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

West Pump: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Discharge gates are damaged.

Center Pump: Drive Type - (Electric Motor) Operable - Yes

Remarks –

1. No electric power to test the pump.

East Pump: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Discharge gates are damaged.

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. Utility has not yet gotten power back to the transformers that supply the facility.

Standby Backup Power Equipment:

1. 15kW Generator Set not functional (engine start blows fuses in gray generator control box).

Switchgear and/or Motor Control Centers:

1. OK.

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. OK.

Pump Controls Systems:

1. Pyrometers and switching valves are inoperable

Fuel Systems and Supply:

1. Storage tanks need to be inspected and chemically cleaned if rusted internally.

Compressed Air System:

1. Backup diesel unit doesn't operate

Trash Racks:

1. Racks are operational.

2. No debris.

Trash Raking Equipment:

1. Bearings and gear boxes were underwater and should be rebuilt.

Trash Rakes: N/A

Discharge Pipe Flap Gates:

1. West pump flap gate is damaged and not operational. The west gates must be removed and repaired.

Pump Station Building Structure:

1. The building structure, which is concrete, steel and brick structure, is in good condition. The upper level was not covered with water. No visible damage due to Hurricane Katrina, except for the wall sidings. Sections of wall panels where damaged on the West, East and South walls. The entire wall siding on the North wall was damaged.

2. Siding girt (C8) are rusted all around the building.

3. Fence (10' x 6' high) piece on the East side was damaged. And one post at the North side was damaged.

4. The diesel fuel tanks where covered with water and the fuel got contaminated in the tanks. The parish has cleaned the tanks since then and placed a water separator.

5. Workshop was underwater, but no visible structural damage. Work table is made of wood, and also was under water for several days, but no obvious damage was visible.

6. Trash screens where covered with water. No visible damage to the concrete structure or the screens. Some visible rusted element of the screen. Work was done to the motors by the parish by replacing the 3 motors.

Pump Station Building Roof:

1. The steel roof structure is in good condition with signs of skin rust. Some roof panels at the North-West corners are missing.

2. Roof gutters on 4 corners are damaged and missing.

Pump Station Building Doors & Windows:

1. Workshop door has been underwater and needs maintenance.

2. Building windows and doors on the upper level where not under water. They are in good condition.

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

The equipment is functional.

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

The following items went under water:

1. 7500W forced-air heater

2. Controller for compressed air dryer motor

3. Much of the electrical conduit run from the building to the intake area

4. Three sets of on/off switches and duplex receptacles

5. Exterior telephone jack

Other:

1. West muffler exhaust pipe has been damaged and missing. A new muffler is needed.

2. Access road damaged at the end of the crossing canal bridge. Approx. (10’ wide x 50’ long) gravel road.

Pump Station No.4, Meraux

Pump Station No. 4 Building

Damage to the Roof

Electromode heater

Discharge Gate

Discharge Gate

Pump Station Observation Sheet

Name of Pump Station – E. J. GORE PUMPING STATION No. 5

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 6 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

Pump No. 1: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. Recommend pumps not be operated until completely rebuilt.
2. Electric motor (200HP) and its controller had gone under water.
   Rated voltage: 460V Rated current: 219A
   Frame: 445TSC 1780 RPM
   NEMA Design: B NEMA Insulation: B NEMA Code: G
   Service Factor: 1.15 Time Rating: Cont
   Dripproof Maximum Ambient Temperature: 40 Degrees C

Pump No. 2: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. Recommend pumps not be operated until completely rebuilt

Pump No. 3: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. Recommend pumps not be operated until completely rebuilt

Pump No. 4: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. Recommend pumps not be operated until completely rebuilt

Pump No. 5: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. Recommend pumps not be operated until completely rebuilt

Pump No. 6: Drive Type - (Diesel Engine) Operable - No

Remarks –

1. **RECOMMEND PUMPS NOT BE OPERATED UNTIL COMPLETELY REBUILT**

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. No city power at time of inspection. Technicians were working on restoring power.

Standby Backup Power Equipment:

1. The generator set (15kW) had been submerged.

Switchgear and/or Motor Control Centers:

1. n/a

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. Cables were submerged.

Pump Controls Systems:

1. All controls flooded.

Fuel Systems and Supply:

1. Storage tank was not flooded. Lines from tank to engines needs to be chemically cleaned if it was contaminated

Compressed Air System:

1. None required.

Trash Racks:

1. Rusted and some damage not related to Hurricane, in need of extensive repair.
2. No debris.
3. Concrete walkway supported by timber piles is in good condition.

Trash Raking Equipment:

1. None.

Trash Rakes: None.

Discharge Pipe Flap Gates:

1. Flap gates are intact but rusted.
2. Concrete slope paving at discharge pipes are broken. They are located left of pipe #1, between pipe #1 & 2, and right of pipe #6.

Pump Station Building Structure:

1. The building structure, which is concrete block wall with steel frame roofing and insulted roof. The building (30’ wide x 60’ long x 25’ high) was flooded with 10’ of water.
2. Bathroom was flooded. The shower stand and sink were damaged.
3. Office (12’ x 12’ x 10’ high) was flooded. Wooden wall panels with insulations are damaged as well as the rest room; sink, stool and wash basin are damaged.

4. A/C wall unit is damaged.
5. Protection riprap north of the building has been eroded.

Pump Station Building Roof:

1. The roof structure seems in good condition.
2. Roof flashing is damaged at the North side of building.
3. Roof insulation looks intact but may have some damage due to roof leaks
3. 3 or 4 roof vents are damaged, even though only one of the vents penetrates the roof to the inside of the building.

Pump Station Building Doors & Windows:

1. The East rollup door is damaged (10’ wide x 12’ high).

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

Gravity ventilation.

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

1. VHF radio and antenna were damaged.
2. Panelboard, switches, receptacles, and conduit were being replaced and rewired by a contractor.
3. Utility had not yet gotten power back to the transformers that serve the facility.

Other:

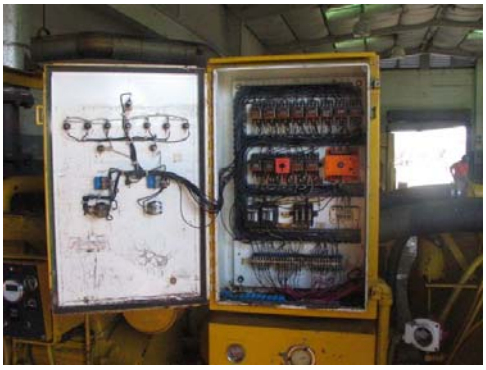
1. None.

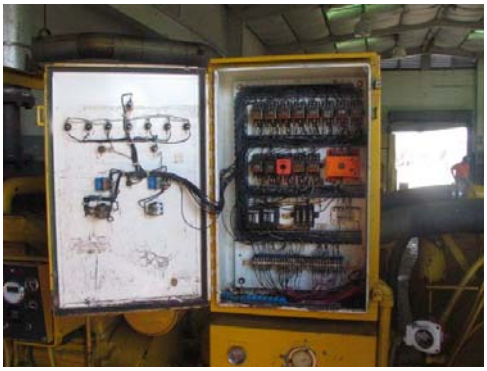
Pump Station No. 5, E.J. Gore

Pump Station No. 5 Building

Pump Station No. 5 Building

Engines with Hydraulics





Generator

Discharge Pipes

Pump Station Observation Sheet

Name of Pump Station – JEAN LAFITTE PUMPING STATION No. 6

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 3 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

Pump No. 1: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Exhaust discharge covers require repair and insulation needs repair

Pump No. 2: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Exhaust discharge covers require repair and insulation needs repair

Pump No. 3: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Exhaust discharge covers require repair and insulation needs repair

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. Utility power has been restored.

Standby Backup Power Equipment:

2. Operable.
3. Fan belt on generator needs to be replaced.
4. Discharge needs a deflector.

Switchgear and/or Motor Control Centers:

1. Appears in good condition.

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. n/a

Pump Controls Systems:

1. Discharge water level transducer is missing.

Fuel Systems and Supply:

1. Storage tanks were almost flooded.

Compressed Air System:

1. None required.

Trash Racks:

1. Screens are in good condition.
2. Walkway handrail is bent at west stairs. Anchor bolts are OK.
3. Concrete walkway is chipped by (1' x 6") at west end cantilever.

Trash Raking Equipment:

1. One rake light assembly (mast Included) is gone.
2. One rake light is dangling from where the two pieces of the mast connect.
3. Rake gear boxes need to be inspected and repaired.
4. Chain drive covers need to be cleaned and oil replaced

Trash Rakes: n/a

Discharge Pipe Flap Gates:

1. n/a

Pump Station Building Structure:

1. No signs of damage to the building exterior.
2. Concrete walkway and handrails around the building are in good condition.
3. No damage to the concrete basement under the building.
4. No damage to the discharge pipe supports.
5. No damage to the radiators' steel platform, handrails and gratings.

Pump Station Building Roof:

1. North West corner of the roof panel is damaged with series of holes penetrates the panel.
2. Roof panel tie down screws are missing in few areas.
3. North wall roof gutter running along the length of the building is bent.

Pump Station Building Doors & Windows:

1. No door or windows are damaged.

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

1. No problems observed.

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

1. Much of electrical conduit running from building to intake area was submerged.
2. Eight lighting fixtures on the lower level took water.

3. Remote engine alarm panel (Rochester Instrument Systems Model Number AN-3196A) does not function.
4. Lightning rod is no longer properly secured at roof.
5. Center exterior floodlight is not working.
6. Sewage aerator motor and timer went under water.
7. Water leaked into fluorescent lights (QTY 4) in office.
8. Water leaked into light/heater/vent in restroom.
9. Light over office door does not illuminate
10. Breaker No. 1 (20A?) in panelboard trips intermittently.
11. One on/off switch and one duplex receptacle were submerged

Other:

1. Exhaust pipe insulations are cracked and chipped off.
2. Muffler pipe flaps are broken and missing.

Pump Station No. 6, Jean Lafitte

Pump Station No. 6

Roof

Remote Engine Alarm

Trash Racks

Sewage Aerator Motor

Pump Station Observation Sheet

Name of Pump Station – BAYOU DUCROS PUMPING STATION No. 7

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 3 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

Pump No. 1: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Exhaust discharge covers require repair and insulation needs repair.

Pump No. 2: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Exhaust discharge covers require repair and insulation needs repair.

2. Radiator motor (15HP) makes squealing noise.
   Rated voltage: 230/460V Rated current: 39.2/19.5A
   Frame: 254T 1750 RPM
   NEMA Design: B NEMA Insulation: F NEMA Code: H
   Service Factor: 1.15 Time Rating: Cont
   Totally Enclosed Maximum Ambient Temperature: 40 Degrees C

Pump No. 3: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Exhaust discharge covers require repair and insulation needs repair.

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. Utility has not yet gotten power back to the transformers that supply the facility.

Standby Backup Power Equipment:

1. Operating.

Switchgear and/or Motor Control Centers:

1. In good condition (from outside).

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. N/A.

Pump Controls Systems:

1. Intake water level transducer is not working.

Fuel Systems and Supply:

1. ”A” day tank has small leak near hand pump.
2. Indicator boards on “A” and “B” fuel day tanks are damaged.

Compressed Air System:

1. None required.

Trash Racks:

1. Screens are in good condition.
2. Walkway handrails are in good condition. No grout under posts at the stairs.
3. Concrete walkway is in good condition.

Trash Raking Equipment:

1. Rake gear boxes need to be inspected and repaired. Chain drive covers need to be cleaned and oil replaced.

Trash Rakes: N/A

Discharge Pipe Flap Gates:

1. Unknown.

Pump Station Building Structure:

1. No signs of damage to the building exterior.
2. Concrete walkway and handrails around the building are in good condition.
3. No damage to the concrete basement under the building.
4. No damage to the discharge pipe supports.
5. No damage to the radiators’ steel platform, handrails and gratings.

Pump Station Building Roof:

1. New roof was installed by the parish after Katrina.

Pump Station Building Doors & Windows:

2. No door or windows are damaged.

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

1. Operational.

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

1. Much of electrical conduit running from building to intake area was submerged.
2. Eight lighting fixtures on the lower level took water.
3. Remote engine alarm panel (Rochester Instrument Systems Model Number AN-3196A) does not function.
4. Lightning rod is no longer properly secured at roof.
5. Ramp floodlight (between radiators 2 & 3) is not working.
6. Sewage aerator motor and timer went under water.
7. Water leaked into fluorescent lights (QTY 4) in office.
6. Exit lights (QTY 4) are damaged.
7. Light over office door does not illuminate

8. One engine room light is out.
9. One floodlight on the building wall exterior is not working.
10. One on/off switch and one duplex receptacle were submerged.
11. Exterior telephone jack went under water?

Other:

1. Scours at sheet piles behind pump station has been covered with dirt by the parish. (300’ long x 10’ wide x 3’ deep).

2. Scour section behind pump station adjacent to the west slab, has not yet been patched. (40’ long x 20’ wide x 3’ deep).

3. Scoured area under the West end stairs. (20’ x 20’ x 1’ deep)

4. The West diesel Fuel storage tank has moved 2” south. No damage to the foundations or pipes attached to tank. An angle support for the lower pipe is bent.

5. Muffler flaps are broken and missing.

Erosion at Pump Station No. 7

Fuel Tank

Generator

Sewage Aerator Motor

Trash Rack

Trash Rack

Pump Station Observation Sheet

Name of Pump Station – SAINT MARY PUMPING STATION No. 8

Parish (drainage basin) where pump station is located: **St. Bernard Parish**

A. Number of Pumps – 3 Pumps

Pump Info (Circle the appropriate answer) The pumps may be operable and still be damaged. What about submersed equipment if any such as impellers? Pump capacity gpm (or cfs), Hp, Voltage, Cycles (Hz), discharge size, horizontal or vertical

Pump No. 1: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

1. Engine coolant piping replaced with 20 ft. hose. Original piping should be installed.

Pump No. 2: Drive Type - (Diesel Engine) Operable - Yes

Remarks –

Pump No. 3: Drive Type - (Diesel Engine) Operable - Yes

Remarks -

B. Auxiliary Equipment and Features (note damage and problems):

Incoming Electric Power Service:

1. Utility has not gotten power.back to the transformers that supply the facility.

Standby Backup Power Equipment:

1. Operating.

Switchgear and/or Motor Control Centers:

1. In good condition (from outside).

Motor Feeder Power Cables and wiring: (motor cables and splice seals):

1. N/A

Pump Controls Systems:

1. Discharge level gauge does not operate, stick gauge needs replacement.
2. Discharge water level transducer is missing.

Fuel Systems and Supply:

1. Operational.

Compressed Air System:

1. N/A

Trash Racks:

1. Screens are in good condition.
2. Walkway handrails are in good condition.
3. Concrete walkway is in good condition.

Trash Raking Equipment:

1. Rake gear boxes need to be inspected and repaired.

Trash Rakes: N/A

Discharge Pipe Flap Gates:

1. Unknown.

Pump Station Building Structure:

1. No signs of damage to the building exterior.
2. Concrete walkway and handrails around the building are in good condition.
3. No damage to the concrete basement under the building.
4. No damage to the discharge pipe supports.
5. No damage to the radiators' steel platform, handrails and gratings.

Pump Station Building Roof:

1. Roof panels are loose and need to be tightened.

Pump Station Building Doors & Windows:

1. No door or windows are damaged.

Pump Station Mechanical Building Systems: [Mechanical Ventilation (Louvers & Fans)]:

1. Office AC needs remote control.

Pump Station Electrical Bldg. Systems: Building Power, Panelboard. Lights, Communications):

1. Much of electrical conduit running from building to intake area was submerged.
2. Eight lighting fixtures on the lower level took water.
3. Sewage aerator motor and timer went under water.
4. One floodlight on the building wall exterior is not working.
5. Two on/off switches and one GFCI duplex receptacle were submerged.
6. Exterior telephone jack went under water?

Other:

1. Scour section behind pump station on the south side adjacent to discharge pipe no.1. (5' long x 5' wide x 2' deep).

Pump Station No. 8, St. Mary

Engine Cooling Hose


Scour


Pump Leaking


Front End Loader


Trash Rack

Appendix E

Repair Alternatives

See Section 9 of Main Report

Appendix F

Economic Analysis

See Section 12 of Main Report

Appendix G

Environmental

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

REPLY TO
ATTENTION OF:

Planning, Programs and Project
Management Division
Environmental Planning and
Compliance Branch

MEMORANDUM FOR New Orleans District Staff and All Interested Parties

SUBJECT: Imminent Threat of Flooding Due to Damaged Hurricane Protection Works

1. On August 29, 2005, Hurricane Katrina caused major damage to the hurricane protection system in Orleans, St. Bernard, Plaquemines, and Jefferson Parishes, Louisiana. Since the storm, the U.S. Army Corps of Engineers has been working to restore the hurricane protection system to the level of protection provided prior to the 2005 hurricane season. These efforts have been conducted mainly under the authority provided by Public Law 84-99, Rehabilitation of Damaged Flood Control Works.

2. While significant progress is being made in restoring the hurricane protection system to its pre-storm conditions, the system remains vulnerable to tropical weather systems. It is imperative that all hurricane protection works are restored to their pre-storm conditions as soon as possible to protect life, health, property, and economic losses.

3. Engineering Regulation 200-2-2, Environmental Quality, Procedures for Implementing the National Environmental Policy Act (NEPA) provides for District commanders to respond to emergency situations to prevent or reduce imminent risk of life, health, property, or severe economic losses without first preparing specific documentation and following the procedural requirements of the NEPA. Engineering Regulation 500-1-1, Emergency Employment of Army and Other Resources - Civil Emergency Management Program, provides that emergency flood control activities performed under Public Law 84-99 are not subject to the NEPA documentation requirements if risk to life, health, property, or severe economic losses is imminent. This regulation defines imminent risk as a subjective, statistically supported evaluation of how quickly a threat scenario can develop, how likely that threat is to develop in a given geographical location, and how likely the threat will produce catastrophic consequences to life and improved property. Implicit in the timing aspect can be considerations of time or season or of known cyclical activities.

4. Several words in the above definition are important in determining if there is an imminent threat to flooding within the four parishes listed above. The first is "subjective" which allows a decision to be based on sound reasoning. The second and third are "statistically supported evaluation" and "how likely that threat is to develop in a given geographical location." During the past four hurricane seasons, New Orleans has had 13 tropical storms or hurricanes pass within 300 miles of the city (three in 2002, two in 2003, three in 2004, and five in 2005), an average of over three storms per hurricane season. The National Hurricane Center has been reporting for the past several years that we have entered a period of more active hurricane seasons. The next key phrase is "how likely the threat will produce catastrophic consequences to life and improved property." Nothing demonstrates this better than Hurricane Rita in 2005. Hurricane Rita came ashore along the Louisiana/Texas state line, approximately 250 miles from New Orleans, yet the impacts of the storm in the Metropolitan New Orleans area were significant. Without a complete rehabilitation of the hurricane protection system to pre-storm levels, the New Orleans area could again be faced with the potential for catastrophic damages from a storm making landfall hundreds of miles away. The last phrase of significance is "known cyclical activities." As every day passes, the 2006 hurricane season gets closer, and the threat to life and property increases without adequate storm surge protection.

5. Based upon applicable regulations and guidance, I consider the Metropolitan New Orleans Area to be under an imminent threat from flooding due to the damaged hurricane protection system. I consider this threat to remain in effect until the hurricane protection system is restored to its pre-storm condition. The District will continue preparing an environmental assessment of the impacts associated with restoration of the hurricane protection system, and release the document for public and agency review and comment as soon as possible after all features of the restoration work are determined.

1/5/06
Date

Richard P. Wagenaar
Colonel, U.S. Army
District Engineer

The information contained in Appendix H is proprietary to the Government and can not be posted on the public website.

APPENDIX Q

CECW-HS, Memorandum for Assistant Secretary of the Army for Civil Works (ASA(CW)), SUBJECT: Recommendations for One-Time Deviations to Certain Policies Regarding Use of P. L. 84-99 (33 U.S.C. 701n) in New Orleans and Vicinity following Hurricane Katrina-FOR APPROVAL, dated October 7, 2005

On Following 6 pages

DEPARTMENT OF THE ARMY
U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000

REPLY TO
ATTENTION OF:

CECW-HS (500-1-1)

OCT 0 7 2005

MEMORANDUM FOR Assistant Secretary of the Army for Civil Works (ASA(CW)).

SUBJECT: Recommendations for One-Time Deviations to Certain Policies Regarding Use of P.L. 84-99 (33 U.S.C. 701n) in New Orleans & Vicinity following Hurricane Katrina- FOR APPROVAL

1. Purpose: The purposes of this decision paper are to describe policies regarding the use of funds provided pursuant to P.L. 84-99 (33 U.S.C. 701n); to recommend certain policy deviations; and to provide for your decision options for accomplishing those recommended policy deviations. Approval of the recommended course of action will establish a way forward to facilitate expedient permanent rehabilitation of the flood damage reduction and hurricane and storm damage reduction systems protecting New Orleans, LA. Enclosure 1 is a chart and cost table which sets out the items in this paper. Enclosure 2 contains maps of Lake Pontchartrain & Vicinity and New Orleans to Venice projects showing project categorization and a list of associated contracts. Detail project information for West Bank & Vicinity and SELA is still being developed.

2. Background: P.L. 84-99 authorizes the use of Flood Control and Coastal Emergencies (FCCE) funds for, among other things, natural disaster preparedness; flood fighting and rescue operations; and permanent rehabilitation of federal and non-federal flood damage reduction projects and federally authorized hurricane and storm damage reduction projects. P.L. 84-99 has been implemented in accordance with guidance and policies set out in 33 CFR 203, ER 500-1-1 and EP 500-1-1. Under these policies, the Corps of Engineers uses FCCE funds to supplement State and local activities.

Hurricane Katrina has been identified as the second greatest recorded hurricane to make landfall in the U.S., with a point of impact at a major metropolitan area important to national economic infrastructure and national defense. Hurricane Katrina has caused large-scale damage over large portions of the shared local and federal infrastructure. In light of these extraordinary circumstances, this paper addresses potential deviations to policy to advance expedient and coordinated permanent rehabilitation of the flood damage and hurricane and storm damage reduction infrastructure in New Orleans.

3. Issue: Whether permanent rehabilitation to pre-storm condition, at full federal expense using FCCE funds, should be undertaken for all damaged federal and non-federal flood damage reduction projects and federally authorized hurricane and storm damage reduction projects.

4. Policies Established in Regulations Implementing PL 84-99: 33 C.F.R. 203, ER 500-1-1, and EP 500-1-1 establish the policies and procedures followed by the Corps in carrying out its

responsibilities under P.L. 84-99. The following are several key policies established in the implementing guidance:

a. Corps assistance provided under authority of P.L. 84-99 is intended to supplement State and local efforts in the areas of disaster preparedness; emergency operations; and permanent rehabilitation of federal & non-federal flood damage reduction projects and federally authorized hurricane and storm damage reduction projects.

b. There will be no reimbursement of State and local emergency costs for preparedness, emergency operations, or permanent rehabilitation.

c. Completed flood damage reduction projects and federally authorized hurricane and storm damage reduction projects are eligible for permanent rehabilitation to the pre-storm condition at full federal expense using FCCE funding. Regulations establish eligibility based on when the federal projects are "turned over" to the non-federal sponsor for OMRR&R.

d. Damages to federally authorized projects that are still under construction are repaired with Construction, General project construction funds and cost-shared with the project's non-federal sponsor in accordance with the Project Cooperation Agreement (PCA).

e. Non-federal flood damage reduction projects that are active in the Corps-established Rehabilitation and Inspection Program (RIP) are eligible for permanent rehabilitation to the pre-storm condition, using FCCE funding, with 80 % federal / 20 % non-federal cost sharing.

f. Permanent rehabilitation assistance is provided when the work is clearly beyond the normal physical and financial capabilities of the non-federal sponsor.

g. Permanent rehabilitation must be economically justified and meet Corps criteria for a favorable benefit-to-cost ratio.

h. Non-federal sponsors must provide all necessary lands, easements, rights-of-way, relocations, and borrow or disposal areas (LERRDs), and do not receive credit for the value of these LERRDs toward any required cost share contribution.

5. Discussion:

Although P.L. 84-99 is broadly written, by regulation the Corps has limited permanent rehabilitation of non-federal flood damage reduction projects active in the Corps' RIP and imposed non-federal cost sharing of 20 %. In addition, for federally authorized projects under construction, the Corps has funded repair of those projects with Construction, General project

construction funds and cost-shared that repair with the non-federal sponsor in accordance with the PCA.

Hurricane Katrina struck the New Orleans, LA area directly, causing unprecedented damage and loss of infrastructure. In this case, the local infrastructure is so impacted that local governments will have extreme difficulty in restoring basic infrastructure and services. Further, their tax and revenue bases have been greatly reduced. Under these circumstances, to facilitate rebuilding with minimal additional impact on local governments, it appears appropriate to consider deviations to policy to restore the flood damage reduction and hurricane and storm damage reduction infrastructure at full federal expense.

6. Potential Deviations to Policy:

a. The first potential deviation provides that for federally authorized and constructed projects turned over to the non-federal sponsor, at full federal expense use FCCE funds to fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation. The estimated cost of this proposal is $11.5 million. This proposal conflicts with paragraph 4.h above.

b. The second potential deviation provides that for non-federal flood damage reduction projects active in the RIP, at full federal expense use FCCE funds, to 1) undertake the permanent rehabilitation to pre-storm condition, i.e., waive the 20 % cost share established by policy, and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation. No projects have been identified that fit this category.

c. The third potential deviation provides that for non-federal flood damage reduction projects, including pumps and pump stations, not active in the RIP, at full federal expense use FCCE funds, to 1) undertake permanent rehabilitation to pre-storm condition and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation. The estimated cost of this proposal, which conflicts with paragraphs 4.e. and 4.h. above, is $155 million for Jefferson, Orleans, St. Bernard and Plaquemines parishes.

d. The fourth potential deviation provides that for federally authorized flood damage reduction or hurricane and storm damage reduction projects currently under construction, under the authority of P. L. 84-99, at full federal expense use FCCE funds to 1) undertake permanent rehabilitation to pre-storm condition and 2) fund the acquisition of lands, easements,

rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation. The projects in this category are, New Orleans to Venice, Southeast Louisiana, and West Bank and Vicinity. This proposal, which conflicts with paragraphs 4.d. and 4.h. above, involves undertaking rehabilitation pursuant to the authority provided in P.L. 84-99, rather than pursuing such work under the PCA.

1) For these projects, there are large segments which have not been officially "turned over" but for which the sponsors are performing operation and maintenance. The estimated additional federal cost of undertaking the rehabilitation of these segments under P.L. 84-99 is $68 million, i.e., what would have been the non-federal share if the work was pursued under the PCA.

2) For these projects, there are segments under active construction. The estimated additional federal cost of undertaking the rehabilitation of these segments under P.L. 84-99 is $14.5 million.

7. Options:

a. Allow no deviations: Implement in accordance with existing policy.

b. Allow deviations after legislation: Seek legislative direction for some or all recommended deviations to policy in the next emergency supplemental appropriations act related to Hurricane Katrina. As legislation will be required in any event to provide all the necessary funding, it is desirable that Congress provide legislative direction on use of the funds. This approach provides confirmation that Congress understands and agrees to use of the funds for items not traditionally included by the Corps in implementation of P.L. 84-99 authority. Additionally, specific Congressional direction would limit the precedential effect of funding work not normally covered. At Enclosure 3 is draft legislation that covers all the recommended deviations from rehabilitation policy.

c. Defer non-federal cost share: Defer payment of the non-federal contribution for federally authorized projects under construction. Under section 103(k) of WRDA 1986 (33 USC 2213(k)), the ASA(CW) may defer payment of the non-federal contribution for up to thirty years from the date of completion of the project, subject to the payment of interest. Although there is merit to this approach, implementation will entail delays related to the contracts and the existing PCAs and prevent expeditious completion of the permanent rehabilitation of the flood damage reduction and federally authorized hurricane and storm damage reduction systems.

d. Approve deviations as one-time exceptions to policy: Approve some or all of the recommended deviations as one-time exceptions to policy after coordination with OMB and the Congressional oversight committees. This approach may establish a precedent and make it more difficult for the Corps to follow its policy in the future. However, it now appears that Congress will delay until after October 2005 the enactment of legislation providing additional funds dealing with Hurricane Katrina. Therefore, this approach would allow more timely initiation and completion of the rehabilitation under discussion.

8. Recommended Course of Action:

a. Based on the magnitude of the devastation, the following deviations are recommended for your approval, after coordination with OMB and the Congressional oversight committees, as one-time exceptions to policy specific to New Orleans following Hurricane Katrina.

1. For federally authorized and constructed projects that have been turned over to the non-federal sponsor, use FCCE funds at full federal expense to fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation.

Approved JBW Approved, w/Comments _____ Disapproved _____

2. For non-federal flood damage reduction projects, including pumps and pump stations, not active in the RIP, at full federal expense use FCCE funds, to 1) undertake permanent rehabilitation to pre-storm condition and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation.

Approved JBW Approved, w/Comments _____ Disapproved _____

3. For those segments of federally authorized projects not been officially "turned over" but for which the sponsors are performing operation and maintenance, use FCCE funds at full federal expense to 1) undertake permanent rehabilitation to pre-storm condition and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation.

Approved JBW Approved, w/Comments _____ Disapproved _____

CECW-HS (500-1-1)
SUBJECT: Recommendations for One-Time Deviations to Certain Policies Regarding Use of P.L. 84-99 (33 U.S.C. 701n) in New Orleans & Vicinity following Hurricane Katrina- FOR APPROVAL

4. For those segments of Federally authorized projects under active construction, use FCCE funds at full Federal expense to 1) undertake permanent rehabilitation to pre-storm condition and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-federal sponsor, as well as the performance of relocations, that are needed for the rehabilitation.

Approved JRW Approved, w/Comments_____ Disapproved_____

b. For any recommended deviation that the ASA(CW) determines should not be administratively approved as an exception to policy, it is recommended the ASA(CW) pursue Congressional direction in the next emergency supplemental appropriations act related to Hurricane Katrina.

STEVEN L. STOCKTON
Acting Director of Civil Works

3 Encls
1. Project category chart & cost table
2. Project maps & list of contracts
3. Draft legislation

6

APPENDIX R

Letter from Office of Assistant Secretary of the Army for Civil Works (ASA(CW)) John Paul Woodley, Jr. to Director of Office of Management and Budget, Joshua Bolten, dated October 12, 2005

On Following 2 pages

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
108 ARMY PENTAGON
WASHINGTON DC 20310-0108

12 OCT 2005

Honorable Joshua Bolten
Director
Office of Management and Budget
Washington, D.C. 20503-0009

Dear Mr. Bolten:

This letter provides the Army's recommendations for additional emergency supplemental appropriations expected to be needed during the next six months to finance remaining costs associated with response to and recovery from Hurricanes Katrina, Ophelia and Rita; as well as other recent storms; readiness and preparedness activities; and reimbursement of prior transfers. This letter also describes decisions I have made, subject to coordination with your office and Congress, regarding deviations to policy to restore the flood damage reduction and hurricane and storm damage reduction infrastructure at full Federal expense.

The Army received a total of $400 million in the second emergency supplemental appropriations act. By law, these funds can be used only for work associated with damages caused by Hurricane Katrina. I have approved the emergency transfer of $64 million from other Civil Works accounts, primarily for critical activities that cannot be paid out of the emergency supplemental appropriations we have received to date.

I recommend that the President request additional emergency supplemental appropriations for the Army Corps of Engineers Civil Works program in the amount of $1.6 billion, distributed among accounts as shown on the enclosed summary table. Also enclosed is a back up table providing detailed information on how the funds would be used.

We have considered a number of options for repairing hurricane and flood protection projects that were damaged by the hurricanes, where the non-Federal cost sharing sponsor has been severely affected by the hurricanes and is not in a position to pay the normal non-Federal share of project costs. The enclosed estimates comprising this request for emergency supplemental appropriations reflect my recommendations for one-time exceptions to cost sharing policy, which are described in the enclosed memorandum from the Corps of Engineers dated October 7, 2005.

Also enclosed for OMB clearance are draft letters to the appropriations subcommittees informing them of our plans to deviate from cost sharing policy. OMB clearance of these letters is needed as soon as possible, so that I can inform Congress

of our plans and not delay the award of contracts that are critical to facilitate expedient rehabilitation of the flood damage reduction and hurricane and storm damage reduction systems protecting New Orleans and vicinity. Contracts are scheduled for award this week, so anything you can do to expedite clearance of the letters would be appreciated.

I look forward to working together on the Administration's request for these additional emergency supplemental appropriations for the Civil Works program.

Very truly yours,

John Paul Woodley, Jr.
Assistant Secretary of the Army
(Civil Works)

Enclosures

APPENDIX Z

Eligibility Checklist for FCW Rehabilitation Projects
ER 500-1-1, 30 Sept 01
PROJECT: NON-FEDERAL PUMP STATIONS FLOOD CONTROL

PIR Review Checklist for FCW Rehabilitation Projects				
	YES	**NO**	**N/A**	
1.		X		The project is active in the RIP. [ER, 5-2.a.] See Note Below
2.	X			The project was damaged by flood(s) or coastal storm(s) [ER, 5-2.]
3.	X			The Public Sponsor has requested Rehabilitation Assistance in writing. [EP, 5-10.]
4.	X			The Public Sponsor has agreed to sign the Cooperation Agreement, which will occur before USACE begins rehabilitation work. [ER, 5-10]
5.	X			The estimated construction cost of the rehabilitation is greater than $15,000, and is not considered sponsor maintenance. [ER, 5-2.q.]
6.	X			The repair option selected is the option that is the least cost to the Federal government , or, the sponsor's preferred alternative is selected with all increases in cost paid by the public sponsor. [ER, 5-2.h. and 5-11.e.(3)]
7.	X			The public sponsor is aware of the opportunity to seek a nonstructural alternative project, and has decided to proceed with a structural rehabilitation. [ER, 5-16]
8.	X			The cost estimate in the PIR itemized the work to identify the Public Sponsor's cost share [ER, 5-11]
9.	X			The rehabilitation project has a favorable benefit cost ratio of greater than1.0:1. [ER, 5-2.r]
10.	X			The proposed work will not modify the FCW to increase the degree of protection or capacity, or to provide protection to a larger area [ER, 5-2.n.]
11.			X	Betterments are paid 100% by the Public Sponsor. [ER, 5-2.o.]
12.		X		The CA contains a provision for 80% Federal and 20% local cost share for non-Federal projects. [ER, 5-11.a.] See Note Below
13.			X	Cost for any betterments are identified separately in the cost estimate. [ER, 5-2.o.]
14.			X	Repair of deliberate levee cuts is the responsibility of the public sponsor, except as provided for in ER 500-1-1, paragraphs 5-2.j. and 4-3.h. [ER, 5-2.j. and 4-3.h.]
15.			X	All deficient and deferred maintenance will be paid for or accomplished by the public sponsor, without receiving credit toward any sponsor's cost share. [ER, 5-2.g.]
16.			X	Any relocation of levees is adequately justified. [ER, 5-2.h.]

17.	X			USACE assistance does not correct design or construction deficiencies. [ER, 5-12.a.]
18.	X			An assessment of environmental requirements was completed [ER, 5-13.]
19.	X			The project complies with NEPA, and required documentation was completed and placed in PIR. [ER, 2-3.k. and 5-13.] See Note Below
20.	X			The Endangered Species Act was appropriately considered. [ER, 5-13.g.]
21.	X			EO 11988 requirements were considered in the process of evaluation the proposed project for rehabilitation. [ER, 5-13.f.]
22.	X			The completed PIR has been reviewed and the PIR checklist has been reviewed and signed by the Emergency Management Office.
23.	X			The completed PIR meets all policy, procedural, content, and formatting requirements of ER 500-1-1 [ER, 2-3.b.] See Note Below

Items 1 and 12. ER-500-1-1, Section 5-11, paragraph a, requires that non-Federal projects be cost shared at 80% Federal and 20% from the public sponsor for cost shareable items. However, the ASA(CW) by memorandum dated October 7, 2005 approved a deviation as a one time exception to policy to allow non Federal flood damage reduction projects, including pumps and pump stations, not active in the RIP, at full federal expense use FCCE funds. to 1) undertake permanent rehabilitation to pre-storm conditions and 2) fund the acquisition of lands, easements, rights-of-way, and disposal or borrow areas not owned or under the control of the non-Federal sponsor, as well as the performance of relocations. that are needed for the rehabilitation.

Item 19. The environmental effects of the pump station work will be included in an after-the-fact environmental assessment that is under preparation for all of the flood protection repair work being undertaken by the Corps in the Metropolitan New Orleans area. The authority for this approach is per ER 500-1-1, Paragraph 2-3.k(1). and ER 200-2-2, Paragraph 8, and a determination made by the New Orleans District Commander on January 5, 2006, that this work prevents or reduces an imminent risk of life, health, property, or severe economic losses. (See Appendix G).

Item 23. ER-500-1-1, Section 5-2, paragraph a(1) limits the construction contingency to 10%; however, because of the emergency conditions under which the design and contract documents will be prepared, the short amount of time allowed for construction completion, and the high level of competition for construction contractor resources in the area, a 25% construction contingency is used. Additionally, because of the nature of rehabilitating mechanical and electrical work, including the uncertainty of rebuilding equipment and hidden damage, E&D of 10 percent and S&A of 12 percent of the construction cost is used.

EM REVIEWING OFFICIAL'S SIGNATURE

NAME: Herbert J. Wagner
TITLE: Acting Chief, Readiness Branch CEMVN-OD-R

Z 2