DRAFT INDIVIDUAL ENVIRONMENTAL REPORT

GOVERNMENT FURNISHED BORROW MATERIAL

JEFFERSON, ORLEANS, PLAQUEMINES, ST. CHARLES, AND ST. BERNARD PARISHES, LOUISIANA

IER #18

US Army Corps of Engineers®

JANUARY 2008

1. Introduction

The U.S. Army Corps of Engineers (USACE) Mississippi Valley Division, New Orleans District (CEMVN), has prepared this Individual Environmental Report #18 (IER #18) to evaluate the potential impacts associated with the proposed excavation of twelve Government Furnished borrow areas. The proposed action areas are located in southeastern Louisiana (Figures 1 - 7).

IER #18 has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality's Regulations (40 CFR §1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2. The execution of an IER, in lieu of a traditional Environmental Assessment (EA) or Environmental Impact Statement (EIS), is provided for in ER 200-2-2, Environmental Quality (33 CFR §230) Procedures for Implementing the NEPA and pursuant to the Council on Environmental Quality (CEQ) NEPA Implementation Regulations (40 CFR §1506.11). The Alternative Arrangements can be found at www.nolaenvironmental.gov, and are herein incorporated by reference.

CEMVN implemented Alternative Arrangements on 13 March 2007 under the provisions of the Council on Environmental Quality Regulations for Implementing the NEPA (40 CFR §1506.11). This process was implemented in order to expeditiously complete environmental analysis for any changes to the authorized system and the 100-year level of the Hurricane Protection System (HPS) (also known as the Hurricane and Storm Damage Reduction System) authorized and funded by Congress and the Administration. The proposed actions are located in southeastern Louisiana and are part of the Federal effort to rebuild and complete construction of the Hurricane and Storm Damage Reduction System in the New Orleans Metropolitan area as a result of Hurricanes Katrina and Rita.

A total of twelve potential Government Furnished borrow areas investigated by the CEMVN Borrow Project Delivery Team (PDT) are discussed in this IER. The goal of the CEMVN Borrow PDT is to acquire suitable borrow material needed for HPS improvements. Over 100,000,000 cubic yards of suitable material is estimated to be required to improve Federal and non-Federal levee and floodwall projects. Borrow areas investigated in this IER would provide approximately 26,511,000 cubic yards of suitable material for levee and floodwall projects.

Due to the importance of providing safety to the citizens of southeastern Louisiana, and the amount of borrow needed to supply levee projects for the HPS, multiple borrow IERs are being prepared.

1.1 Purpose and Need for the Proposed Action

The purpose of the proposed action is to identify borrow areas that contain suitable material that can be excavated to supply Federal HPS levee and floodwall projects. The proposed action resulted from the need to provide a total of over 100,000,000 cubic yards of suitable clay for HPS projects that include the completion and improvement of hurricane protection levees in southeastern Louisiana. Additional borrow IERs will be completed until the borrow need has been met. Raising levee elevations and the completion of levees requires the excavation of material from borrow areas necessary for project construction to ensure 100-year level of flood protection for local communities.

The term "100-year level of protection," as it is used throughout this document, refers to a level of protection which reduces the risk of hurricane surge and wave driven flooding that the New Orleans Metropolitan area has a 1% chance of experiencing each year.

1.2 Authority for the Proposed Action

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

The LPV project was authorized under the Flood Control Act of 1965 (P.L. 89-298, Title II, Sec. 204) which amended, authorized a "project for hurricane protection on Lake Pontchartrain, Louisiana ... substantially in accordance with the recommendations of the Chief of Engineers in House Document 231, Eighty-ninth Congress." The original statutory authorization for the LPV Project was amended by the Water Resources Development Acts (WRDA) of 1974 (P.L. 93-251, Title I, Sec. 92); 1986 (P.L. 99-662, Title VIII, Sec. 805); 1990 (P.L. 101-640, Sec. 116); 1992 (P.L. 102-580, Sec. 102); 1996 (P.L. 104-303, Sec. 325); 1999 (P.L. 106-53, Sec. 324); and 2000 (P.L. 106-541, Sec. 432).

The WBV project was authorized under the WRDA, as cited above. The Westwego to Harvey Canal Hurricane Protection Project was authorized by the WRDA of 1986. The WRDA of 1996 modified the project and added the Lake Cataouatche Project and the East of Harvey Canal Project. The WRDA 1999 combined the three projects into one project under the current name.

The Department of Defense, Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental - P.L. 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorized accelerated completion of the project and restoration of project features to design elevations at 100% Federal cost. The Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery of 2006 (4th Supplemental - P.L. 109-234, Title II, Chapter 3, Construction, and Flood Control and Coastal Emergencies) authorizes construction of a 100-year level of protection; the replacement or reinforcement of floodwalls; the construction of permanent closures at the outfall canals; the improvement of the Inner Harbor Navigation Canal (IHNC); and the construction of levee armoring at critical locations. Additional Supplemental Appropriations include the U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 H.R. 2206 (pg. 41-44) Title IV, Chapter 3, Flood Control and Coastal Emergencies, (5th Supplemental), General Provisions, SEC. 4302.

1.3 Prior Reports

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

Lake Pontchartrain and Vicinity Hurricane Protection Project

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

- On 30 October 1998, CEMVN signed a FONSI on EA # 279 entitled "Lake Pontchartrain Lakefront, Breakwaters, Pump Stations 2 and 3." The report evaluated the impacts associated with providing fronting protection for outfall canals and pump stations. It was determined that the action would not significantly impact resources in the immediate area.

- On 2 October 1998, CEMVN signed a FONSI on EA # 282 entitled "LPV, Jefferson Parish Lakefront Levee, Landside Runoff Control: Alternate Borrow." The report investigated the impacts of obtaining borrow material from an urban area in Jefferson Parish. No significant impacts to resources in the immediate area were expected.

- On 2 July 1992, CEMVN signed a FONSI on EA # 169 entitled "LPV, Hurricane Protection Project, East Jefferson Parish Levee System, Jefferson Parish, Louisiana, Gap Closure." The report addressed the construction of a floodwall in Jefferson Parish to close a "gap" in the levee system. The area was previously levied and under forced drainage, and it was determined that the action would not significantly impact the already disturbed area.

- On 22 February 1991, CEMVN signed a FONSI on EA # 164 entitled "LPV Hurricane Protection – Alternate Borrow Area for the St. Charles Parish Reach." The report addressed the impacts associated with the use of borrow material from the Mississippi River on the left descending back in front of the Bonnet Carré Spillway Forebay for LPV construction.

- On 30 August 1990, CEMVN signed a FONSI on EA # 163 entitled "LPV Hurricane Protection – Alternate Borrow Area for Jefferson Parish Lakefront Levee, Reach III." The report addressed the impacts associated with the use of a borrow area in Jefferson Parish for LPV construction.

- On 2 July 1991 CEMVN signed a FONSI on EA # 133 entitled "LPV Hurricane Protection – Alternate Borrow at Highway 433, Slidell, Louisiana." The report addressed the impacts associated with the excavation of a borrow area in Slidell, Louisiana for LPV construction.

- On 12 September 1990, CEMVN signed a FONSI on EA # 105 entitled "LPV Hurricane Protection – South Point to Gulf Intracoastal Waterway, A. V. Keeler and Company Alternative Borrow Site." The report addressed the impacts associated with the excavation of a borrow area in Slidell, Louisiana for LPV construction.

- On 12 March 1990, CEMVN signed a FONSI on EA # 102 entitled "LPV Hurricane Protection – 17th Street Canal Hurricane Protection." The report addressed the use alternative methods of providing flood protection for the 17th Street Outfall Canal in association with LPV activity. Impacts to resources were found to be minimal.

- On 4 August 1989, CEMVN signed a FONSI on EA # 89 entitled "LPV Hurricane Protection, High Level Plan - Alternate Borrow Site 1C-2B." The report addressed the impacts associated with the excavation of a borrow area along Chef Menteur Highway, Orleans Parish for LPV construction. The material was used in the construction of a levee west of the Inner Harbor Navigation Canal.

- On 27 October 1988, CEMVN signed a FONSI on EA # 79 entitled "LPV Hurricane Protection – London Avenue Outfall Canal." The report investigated the impacts of strengthening existing hurricane protection at the London Avenue Outfall Canal.

- On 21 July 1988, CEMVN signed a FONSI on EA # 76 entitled "LPV Hurricane Protection – Orleans Avenue Outfall Canal." The report investigated the impacts of strengthening existing hurricane protection at the Orleans Avenue Outfall Canal.

- On 26 February 1986, CEMVN signed a FONSI on EA # 52 entitled "LPV Hurricane Protection – Geohegan Canal." The report addressed the impacts associated with the excavation of borrow material from an extension of the Geohegan Canal for LPV construction.

- Supplemental Information Report (SIR) #25 entitled "LPV Hurricane Protection – Chalmette Area Plan, Alternate Borrow Area 1C-2A" was signed by CEMVN on 12 June 1987. The report addressed the used of an alternate contractor furnished borrow area for LPV construction.

- SIR #27 entitled "LPV Hurricane Protection – Alternate Borrow Site for Chalmette Area Plan" was signed by CEMVN on 12 June 1987. The report addressed the used of an alternate contractor furnished borrow area for LPV construction.

- SIR #28 entitled "LPV Hurricane Protection – Alternate Borrow Site, Mayfield Pit" was signed by CEMVN on 12 June 1987. The report addressed the used of an alternate contractor furnished borrow area for LPV construction.

- SIR #29 entitled "LPV Hurricane Protection – South Point to GIWW Levee Enlargement" was signed by CEMVN on 12 June 1987. The report discussed the impacts associated with the enlargement of the GIWW.

- SIR #30 entitled "LPV Hurricane Protection Project, Jefferson Lakefront Levee" was signed by CEMVN on 7 October 1987. The report investigated impacts associated with changes in Jefferson Parish LPV levee design.

- SIR #17 entitled "LPV Hurricane Protection – New Orleans East Alternative Borrow, North of Chef Menteur Highway" was signed by CEMVN on 30 April 1986. The report addressed the used of an alternate contractor furnished borrow area for LPV construction.

- SIR #22 entitled "LPV Hurricane Protection – Use of 17th Street Pumping Station Material for LPHP Levee" was signed by CEMVN on 5 August 1986. The report investigated the impacts of moving suitable borrow material from a levee at the 17th Street Canal in the construction of a stretch of levee from the Inner Harbor Navigation Canal to the London Avenue Canal.

- SIR #10 entitled "LPV Hurricane Protection, Bonnet Carré Spillway Borrow" was signed by CEMVN on 3 September 1985. The report evaluated the impacts associated with using the Bonnet Carré Spillway as a borrow source for LPV construction, and found "no significant adverse effect on the human environment."

- In December 1984, a SIR to complement the Supplement to Final EIS on the LPV Hurricane Protection project was filed with the Environmental Protection Agency.

- The Final EIS for the LPV Hurricane Protection Project, dated August 1974. A Statement of Findings was signed by CEMVN on 2 December 1974. Final Supplement I to the EIS, dated July 1984, was followed by a Record of Decision (ROD), signed by CEMVN on 7 February 1985. Final Supplement II to the EIS, dated August 1994, was followed by a ROD signed by CEMVN on 3 November 1994.

- A report entitled "Flood Control, Mississippi River and Tributaries," published as House Document No. 90, 70th Congress, 1st Session, submitted 18 December 1927 resulted in authorization of a project by the Flood Control Act of 1928. The project provided comprehensive flood control for the lower Mississippi Valley below Cairo, Illinois. The Flood Control Act of 1944 authorized the USACE to construct, operate, and maintain water resources development projects. The Flood Control Acts have had an important impact on water and land resources in the proposed project area.

<u>West Bank and Vicinity Hurricane Protection Project</u>

- In July 2006, CEMVN signed a FONSI on an EA # 433 entitled, "USACE Response to Hurricanes Katrina & Rita in Louisiana." The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of Hurricanes Katrina and Rita.

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

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

- On 5 May, 2003, CEMVN signed a FONSI on EA # 337 entitled "Algiers Canal Alternative Borrow Site."

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

- On 16 May 2002, CEMVN signed a FONSI on EA # 306 entitled "West Bank Hurricane Protection Project - Harvey Canal Sector Gate Site Relocation and

Construction Method Change." The report discussed the impacts related to the relocation of a proposed sector gate within the Harvey Canal, as authorized by the LPV Project.

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

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

- The Final EIS for the WBV, East of Harvey Canal, Hurricane Protection Project was completed in August 1994. A ROD was signed by CEMVN in September 1998.

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

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

- On 12 January, 1994, CEMVN signed a FONSI on an EA # 198 entitled, "West Bank of the Mississippi River in the Vicinity of New Orleans, LA, Hurricane Protection Project, Westwego to Harvey Canal, Jefferson Parish, Louisiana, Proposed Alternate Borrow Sources and Construction Options." The report evaluated the impacts associated with borrow sources and construction options to complete the Westwego to Harvey Canal Hurricane Protection Levee.

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

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

- In February 1992, the USACE completed a reconnaissance study entitled "West Bank Hurricane Protection, Lake Cataouatche, Louisiana." The study investigated the feasibility of providing hurricane surge protection to that portion of the west bank of the Mississippi River in Jefferson Parish, between Bayou Segnette and the St. Charles Parish line. The study found a 100-year level of protection to be economically justified based on constructing a combination levee/ sheetpile wall along the alignment followed by the existing non-Federal levee. Due to potential impacts to the Westwego to Harvey Canal project, the study is proceeding as a post-authorization change.

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

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

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

1.4 Integration with other Interim Environmental Reports

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

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

1.5 Public Concerns

According to the results of focus groups held by Unified New Orleans Plan (UNOP) the public places very high priority on storm protection. The public wants a 100-year or higher level of protection from storm events. The public also feels that the remaining land left in coastal parishes should not be excavated. Some members of the public feel that the borrow areas should be backfilled. The public is concerned about impacting wetlands. The public is concerned about truck haulers causing traffic congestion. Public comments received during the public review period and the 10 December 2007 public meeting for this IER are found in Appendix B.

1.6 Data Gaps and Uncertainties

Transportation routes for the delivery of borrow material have not been determined, as it currently is uncertain to which HPS construction sites each proposed borrow area would provide material. Large quantities of material would be delivered to HPS construction sites, as well as to other ongoing 100-year flood protection projects in the area. This could have localized short-term impacts to transportation corridors that can not be quantified at this time. CEMVN is completing a transportation study to determine any impacts associated with the transporting of material to construction sites. This analysis will be discussed in future IERs once it is completed.

CEMVN is studying the feasibility of backfilling Government Furnished borrow areas after excavation. Information will be discussed in future IERs once it becomes available.

Some construction schedules are changing or not known at this time.

2. Alternatives

2.1 Alternatives Development and Preliminary Screening Criteria

NEPA requires that in analyzing alternatives to a proposed action a Federal agency consider an alternative of "No Action." Likewise, Section 73 of the WRDA of 1974 (PL 93-251) requires Federal agencies to give consideration to non-structural measures to reduce or prevent flood damage. Because this IER deals with Government Furnished borrow material there are no non-structural alternatives. Non-structural alternatives will be evaluated in the IERs dealing directly with the construction of the HPS projects.

The US Fish and Wildlife Service (USFWS) supports CEMVN's prioritization selection of potential borrow areas in the following order: existing commercial pits, upland sources, previously disturbed/manipulated wetlands within a levee system, and low-quality wetlands outside a levee system (Appendix D). USFWS recommended that prior to utilizing borrow sites every effort should be made to reduce impacts by using sheetpile and/or floodwalls to increase levee heights wherever feasible. The USFWS also recommended the following protocol be adopted and utilized to identify borrow sources in descending order of priority:

1. "Permitted commercial sources, authorized borrow sources for which environmental clearance and mitigation have been completed, or non-functional levees after newly constructed adjacent levees are providing equal protection.

2. Areas under forced drainage that are protected from flooding by levees, and that are:

a) non-forested (e.g., pastures, fallow fields, abandoned orchards, former urban areas and non-wetlands;

b) wetland forests dominated by exotic tree species (i.e., Chinese tallow) or non-forested wetlands (e.g. wetland pastures), excluding marshes;

c) disturbed wetlands (e.g., hydrologically altered, artificially impounded).

3. Sites that are outside a forced drainage system and levees, and that are:

a) non-forested (e.g. pastures, fallow fields, abandoned orchards, former urban areas) and non-wetlands;

b) wetland forests dominated by exotic tree species (i.e., Chinese tallow) or non-forested wetlands (e.g. wetland pastures), excluding marshes;

c) disturbed wetlands (e.g., hydrologically altered, artificially impounded)."

The USFWS is currently assisting CEMVN in meeting this protocol.

The HPS includes the completion and raising of storm protection levees in southeastern Louisiana. Raising levee elevations and completion of levees requires the excavation of material from borrow pits for use in project construction. As part of the construction, numerous utilities, including electrical services, gas lines, telephone poles and lines, storm drainpipes, subdrain lines, and storm drain catch basins, would be avoided or relocated. The access routes and land would be cleared using bull dozers and excavators. Woody debris would be stockpiled on-site and placed in the pit once excavation is completed or in some cases the material may be removed to an approved landfill. Silt fencing would be installed around the perimeter of the borrow area to control runoff. Contractors would implement Best Management Practices (BMP), including standard USACE storm water prevention requirements at all borrow area locations. It is the intent of CEMVN to not discharge any waters off site from a borrow pit during mining operations. Should this become necessary, a National Pollutant Discharge Elimination System (NPDES) permits would be obtained, if required. In most cases excavation of the borrow areas would commence from the back of the areas to the access road to provide adequate space for staging haul trucks and stockpiled material. To make optimum use of available material, excavation shall begin at one end of the borrow area and be made continuous across the width of the areas to the required borrow depths to provide surface drainage to the low side of the borrow pit as excavation proceeds. During this process, the overburden (topsoil that lays on top of suitable borrow material) would be stockpiled. The excavation shall be long enough to provide the required quantity of material, and shall be accomplished in such manner that all available material within the required width to full depth will be utilized. Upon abandonment, site restoration will include placing the stockpiled overburden back into the pit and grading the slopes to the specified cross-section figure shown in the drawings. If additional overburden is available at the areas, it would be used to create gradual side slopes, islands, and smooth out corners within the borrow area to enhance wildlife and fishery habitat. The Environmental Design Considerations for Main Stem Levee Borrow Areas Along the Lower Mississippi River Report 4: Part V (Appendix E), and CEMVN operating procedures will be referred to when designing the borrow areas. However, the full depth of the borrow area could be excavated according to the plans and specifications of the approved borrow pit depths to avoid impacting additional acres of habitat to fish and wildlife resources elsewhere.

2.2 Description of the Alternatives

Two alternatives were considered. These included the No-Action and the Proposed Action.

No-Action. Under the No Action alternative the proposed borrow areas would not be used by CEMVN. The proposed borrow areas listed in the proposed action would not be excavated. The levees and floodwall projects would be built to authorized or 100-year levels using other sources of material from as yet unidentified sources.

Proposed Action. The proposed action consists of excavating the proposed twelve borrow areas (Figure 1) throughout the New Orleans Metropolitan area. The material would be transported to HPS levee and floodwall construction sites via truck unless otherwise discussed.

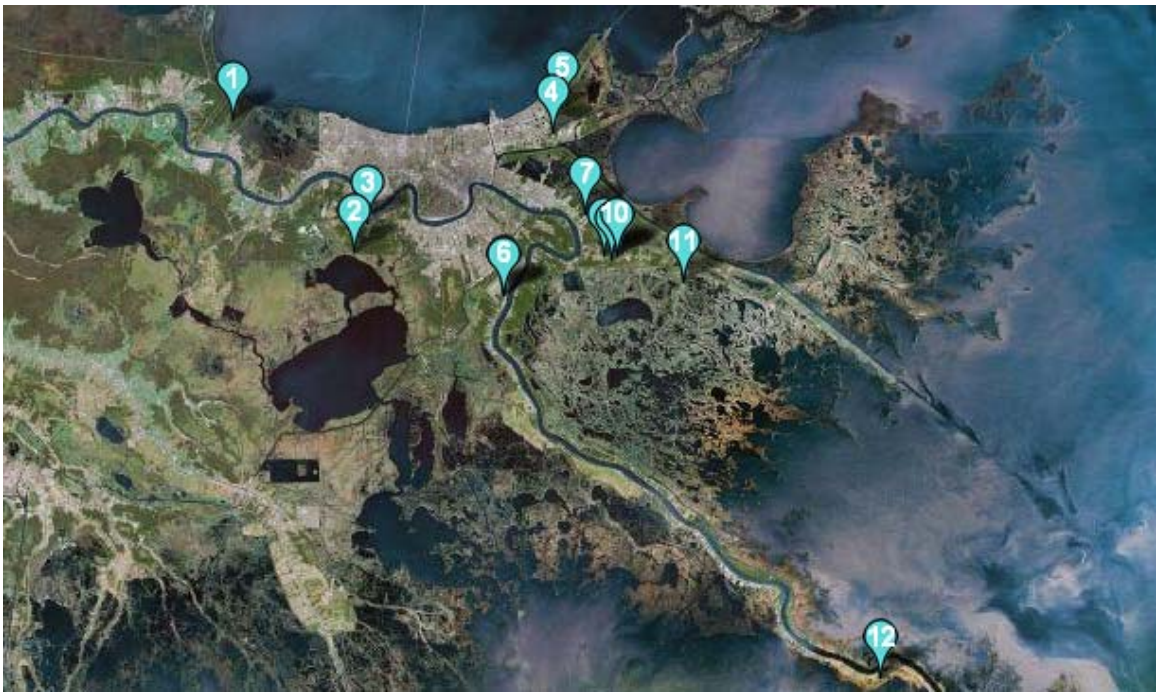


Figure 1: Proposed Borrow Areas

1: Bonne Carré North / 2: Churchill Farms / 3: Westbank Site G / 4: Maynard / 5: Cummings North / 6: Belle Chase / 7: Dockville / 8: 910 Bayou Road / 9: 1418/1420 Bayou Road / 10: 1572 Bayou Road / 11: 4001 Florissant Highway / 12: Triumph

Contractor Furnished Borrow Material. Due to the large quantities of clay material needed for HPS projects, the use of Pre-Approved Contractor Furnished borrow sources is an option that will be discussed in IER 19. IER 19 will also discuss barging or utilizing railroad to transport clay material from a remote site(s) as an alternative.

2.3 Proposed Action

The proposed action (preferred alternative) consists of excavating all suitable material from the proposed twelve borrow areas. In order to serve the borrow needs of CEMVN, personnel from CEMVN Engineering, Real Estate, Office of Counsel, Relocations, and Environmental branches established the Borrow PDT. This team worked closely with other CEMVN offices (Hurricane Protection Office, Protection and Restoration Office, and Regulatory Functions Branch) to accomplish its mission. The team's goal is to locate

and procure high quality clay borrow sources suitable for levee and floodwall construction in such a way as to be least damaging to both the natural and human environments within the proposed project areas.

The team investigated and completed environmental coordination on the proposed borrow areas and is currently investigating others. When an area was proposed for CEMVN borrow procurement, Real Estate personnel acquired right-of-entry to investigate the property. A map of the site was forwarded to the Regulatory Functions Branch for a jurisdictional wetland determination. The proposed borrow area was revised as necessary to avoid jurisdictional wetlands. A CEMVN Archeologist completed a preliminary, in-office survey of mapped cultural resource sites to detect any obvious cultural resources within the proposed borrow area. A CEMVN Biologist completed an in-office survey of aerial photos of the area to determine if the potential area raised Coastal Zone Management (CZM) issues based on location or if there were other obvious environmental issues that could be detected from aerial photography. The Biologist also coordinated with the USFWS to ensure the proposed area would not adversely affect threatened or endangered (T&E) species or their critical habitat.

Once the team completed a preliminary site approval, a site visit was conducted. The field team typically consisted of a Project Manager, Biologist, Geologist, Archeologist, and Hazardous, Toxic, and Radioactive Waste (HTRW) Investigator. The area was visually inspected for the presence of obvious HTRW issues and cultural resources. If no HTRW concerns or cultural resources were observed, the area was cleared to proceed with geotechnical borings to identify soil characteristics.

The proposed action consists of removing all suitable material from the following twelve borrow areas. Excavation would have no effect on cultural resources, or threatened and endangered species or their critical habitat. All jurisdictional wetlands and HTRW issues would be avoided.

- The 1418/1420 Bayou Road area is located on the south side of Bayou Road in St. Bernard Parish, Louisiana (Figures 2 and 8). The area is 22 acres, with a 0.5 acre access corridor. Approximately 13 acres of young non-jurisdictional bottomland hardwood (BLH) forest would be impacted. The remaining 9 acres is non-wetland pasture land. The borrow area is expected to contain approximately 439,000 cubic yards of suitable borrow material. The initial area investigated was 43.4 acres; 21.4 acres of jurisdictional wetlands were avoided.

- The 1572 Bayou Road area is located on the south side of Bayou Road in St. Bernard Parish, Louisiana (Figures 2 and 8). The area is 9.5 acres, with a 1 acre access corridor. Approximately 3.7 acres of young non-jurisdictional BLH would be impacted. The remaining 6.8 acres is non-wetland pasture land. The proposed borrow area is expected to contain approximately 164,000 cubic yards of suitable borrow material.

- The 910 Bayou Road area is located on the south side of Bayou Road in St. Bernard Parish, Louisiana (Figures 2 and 9). The area is 11.6 acres, with a 0.1 acre access corridor. Approximately 11.7 acres of non-wetland pasture land would be impacted. The proposed borrow area is expected to contain approximately 117,000 cubic yards of suitable borrow material.

- The 4001 Florissant area is located on the south side of Florissant Highway in St. Bernard Parish, Louisiana (Figures 2 and 10). The area was initially 10.8 acres, with a 2.2 acre access corridor. The area was reduced to 9.4 acres to leave a

buffer between the proposed borrow area and a levee. Approximately 11.6 acres of non-wetland pasture land would be impacted. The proposed borrow area is expected to contain approximately 214,000 cubic yards of suitable borrow material.

- The Dockville area is located on the north side of Bayou Road in St. Bernard Parish, Louisiana (Figures 2 and 11). The area is 107 acres, with a 7 acre access corridor. Approximately 107 acres of non-jurisdictional BLH would be impacted. The proposed borrow area is expected to contain approximately 1,000,000 cubic yards of suitable borrow material.

- The Belle Chasse area is located on the Belle Chasse Naval Air Base (BCB) in Plaquemines Parish, Louisiana (Figures 3 and 12). The area was initially proposed as a 37 acre investigation and was decreased to 8.4 acres at the request of the BCB. Approximately 8 acres of non-jurisdictional BLH would be impacted. The proposed borrow area is expected to contain approximately 207,000 cubic yards of suitable borrow material. The BCB is developing this area into a recreational area for base personnel.

- The Triumph area is located on the south side of Highway 23, near Boothville, Louisiana, in Plaquemines Parish (Figures 4 and 13). This area would be an expansion of an area that was previously environmentally cleared as a borrow and stockpile area. The area is approximately 2.6 acres and was used as a stockpile area during CEMVN Task Force Guardian. The proposed borrow area is expected to contain approximately 50,000 cubic yards of suitable borrow material.

- The Maynard area is located on the west side of I-510 near the intersection of I-10 in Orleans Parish, Louisiana (Figures 5 and 14). The area was initially investigated for borrow pit suitability on 102 acres. However, the area was reduced to 44 acres to avoid jurisdictional wetlands. Approximately 44 acres of non-jurisdictional BLH would be impacted. The proposed borrow area is expected to contain approximately 438,000 cubic yards of suitable borrow material.

- The Cummings North area is located on the east side of Michoud Boulevard in Orleans Parish, Louisiana (Figures 5 and 15). The area was initially investigated for borrow suitability on 2,000 acres. However, 1,263 acres were excluded because of the presence of jurisdictional wetlands and 510 acres excluded because of unsuitable soils. The proposed borrow area is 182 acres of young Chinese tallow trees, including a 7 acre access corridor and 26 acre stockpile area. Most of the trees in the area died from wind damage and inundation during Hurricane Katrina. The area is now covered in dewberry and some Chinese tallow. The proposed borrow area is expected to contain approximately 4,000,000 cubic yards of suitable borrow material.

- The Churchill Farms Pit A area is located on the south side of Highway 90 in Jefferson Parish, Louisiana (Figures 6 and 16). The 110-acre area contains approximately 43 acres of forested land and the remaining area is non-wetland pasture. The proposed borrow area is expected to contain approximately 1,150,000 cubic yards of suitable borrow material.

- The Westbank Site G area is located on the south side of Highway 90 in Jefferson Parish, Louisiana (Figure 17). The 82-acre area is forested land. The proposed

borrow area is expected to contain approximately 1,800,000 cubic yards of suitable borrow material.

- The Bonnet Carré Spillway area between the Mississippi River and Airline Highway has been used as a Government Furnished borrow source since 1985. The area has been disturbed by sand haulers maintaining the Spillway, and existing borrow pits are scattered throughout the area. The area of the Spillway north of Airline Highway (herein referred to as Bonnet Carré North) encompasses 680 acres (Figures 7 and 18). The new proposed borrow areas would be designed

Figure 2: 1418/1420 Bayou Road, 1572 Bayou Road, 910 Bayou Road, 4001 Florissant, and Dockville Proposed Borrow Areas

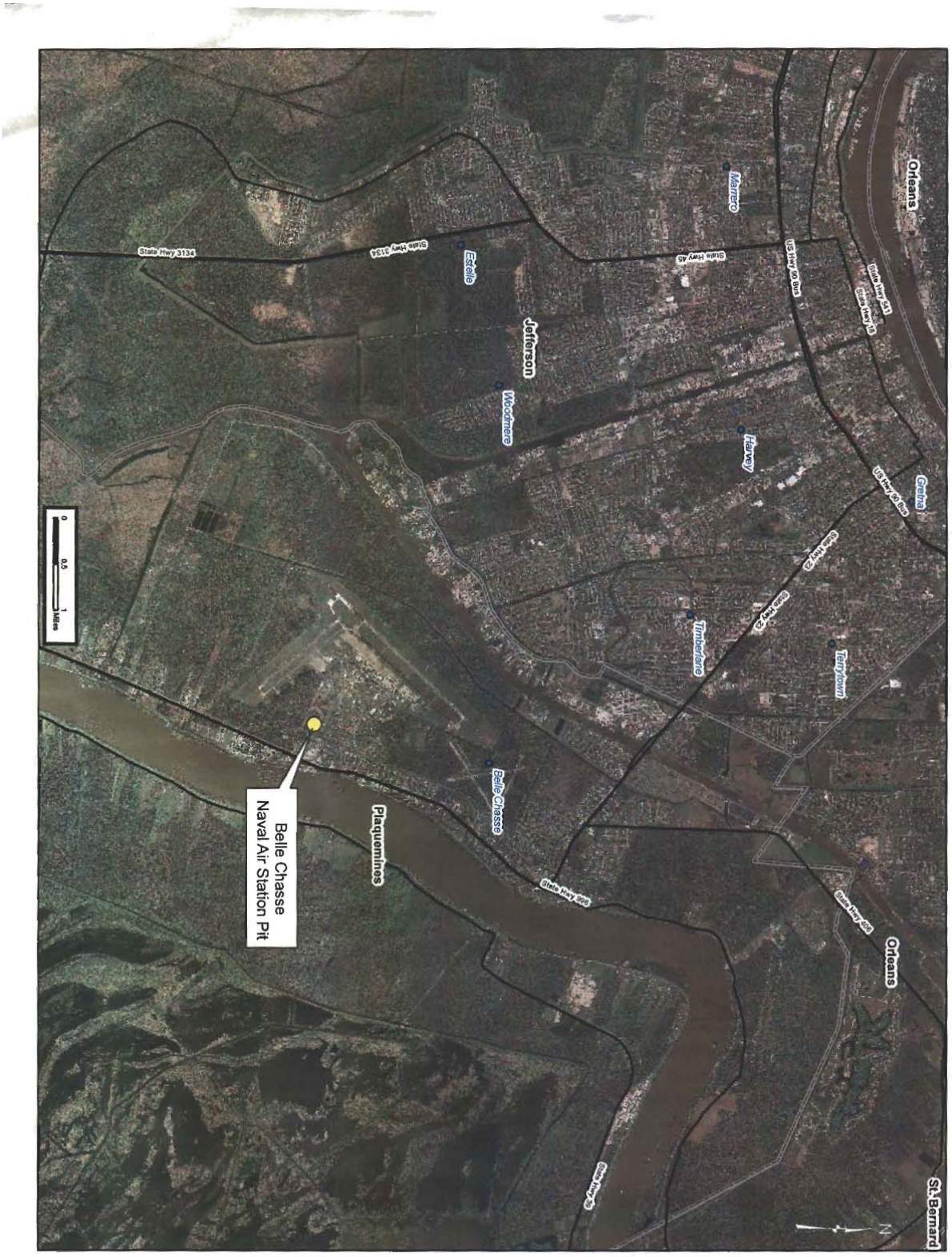


Figure 3: Belle Chasse Proposed Borrow Area

Figure 4: Triumph Proposed Borrow Area

Figure 5: Maynard and Cummings North Proposed Borrow Areas

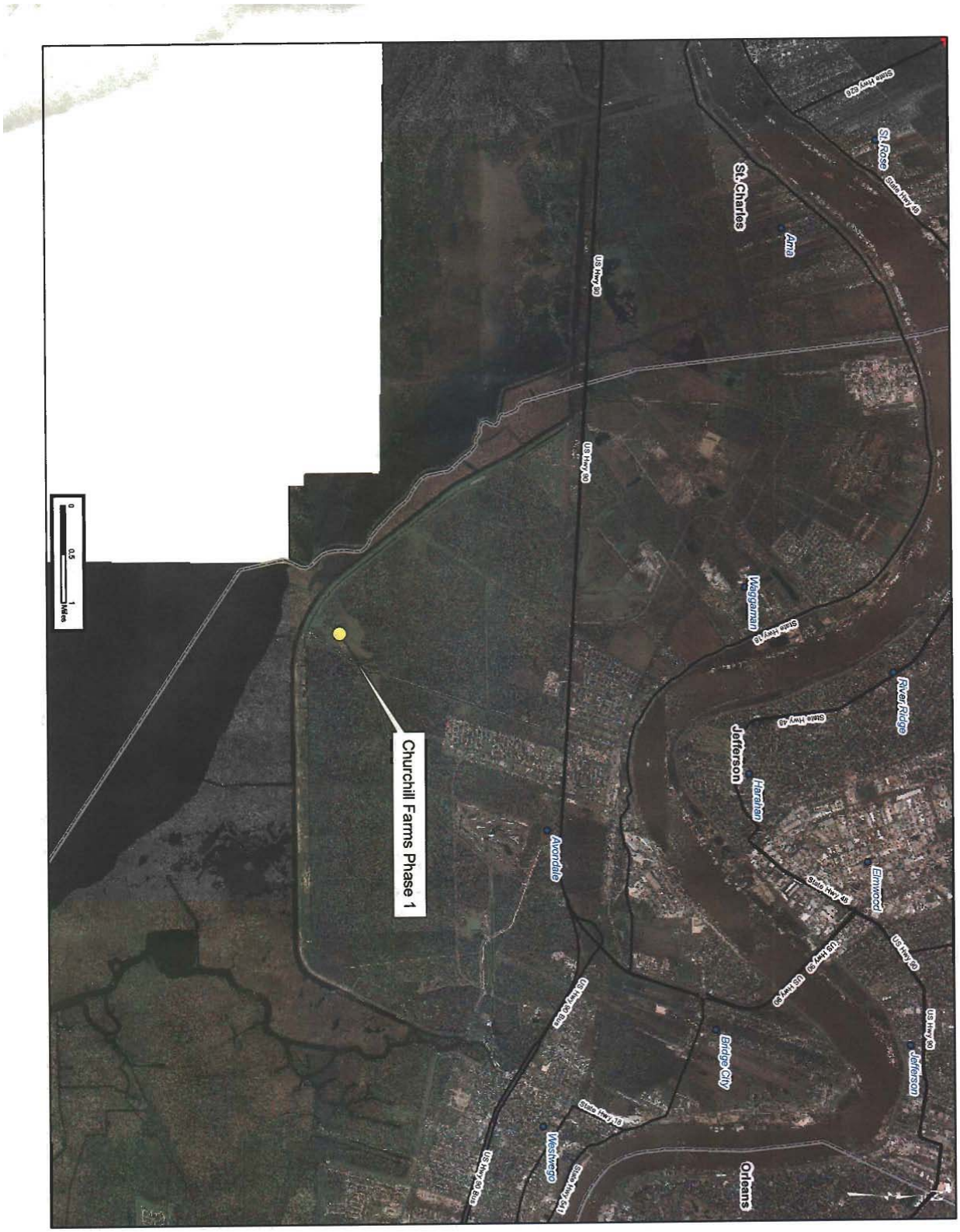


Figure 6: Churchill Farms Pit A Proposed Borrow Area

Figure 7: Bonnet Carré North Proposed Borrow Area

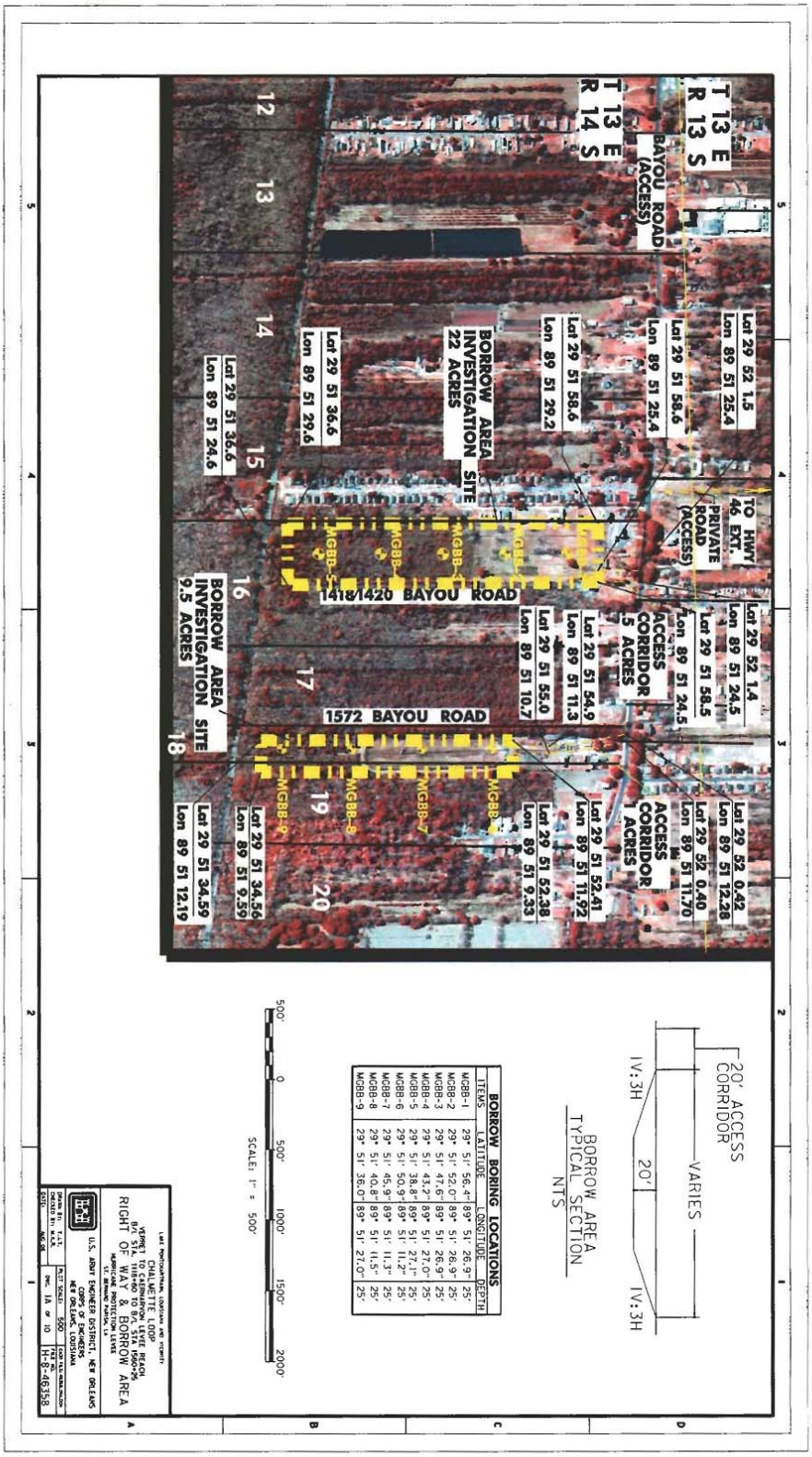


Figure 8: 1418/ 1420 Bayou Road and 1572 Bayou Road Proposed Borrow Areas

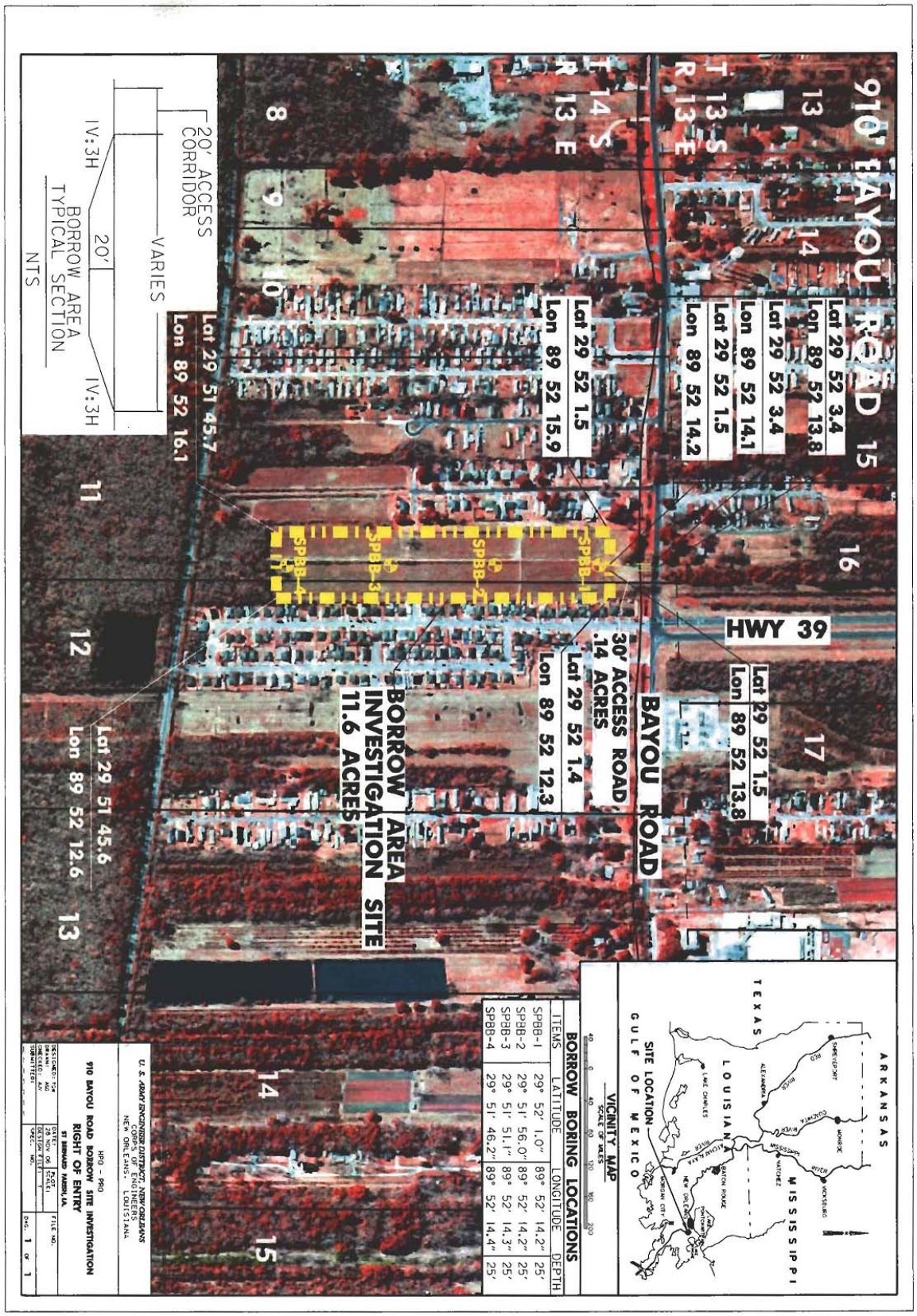


Figure 9: 910 Bayou Road Proposed Borrow Area

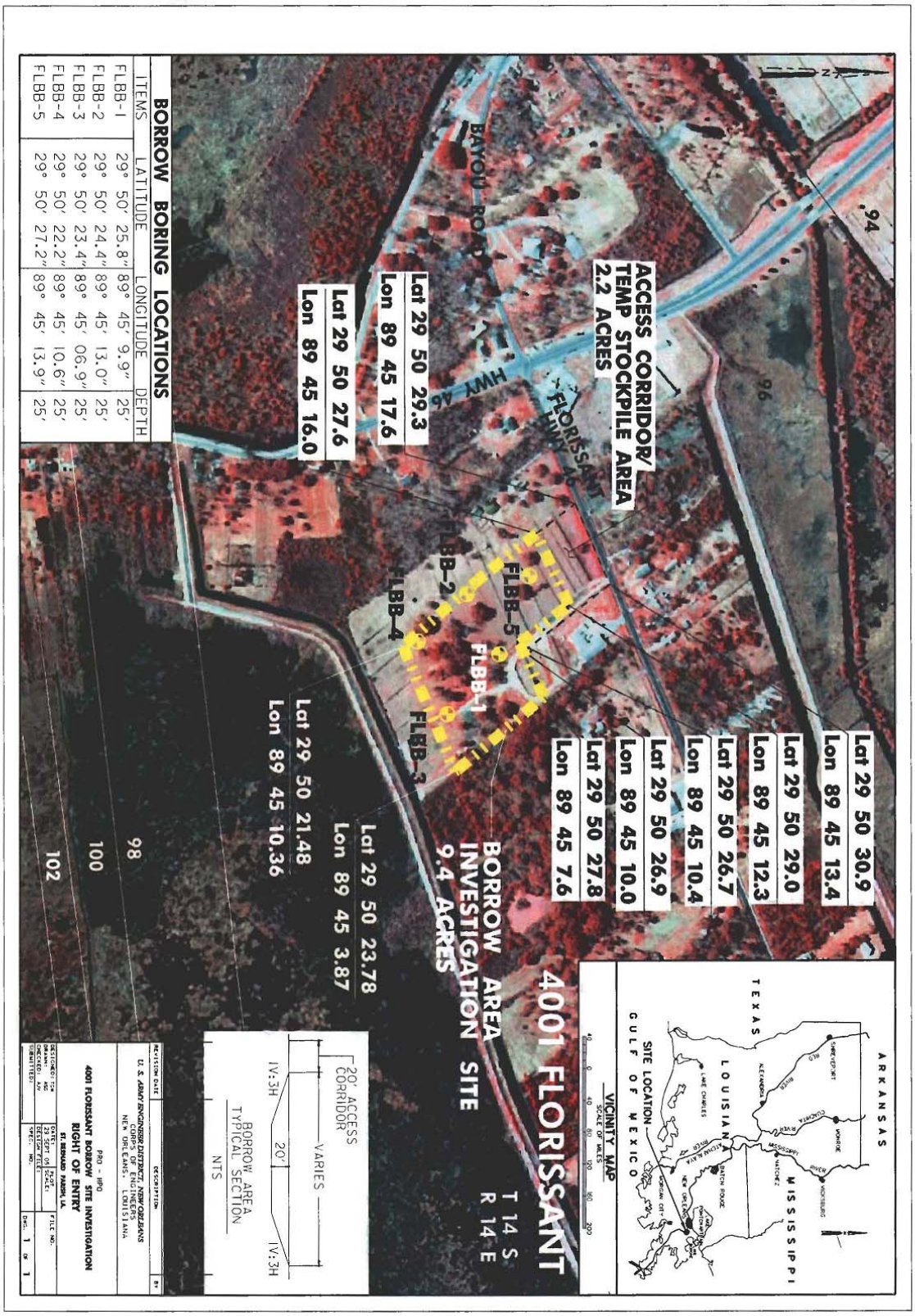


Figure 10: 4001 Florissant Proposed Borrow Area

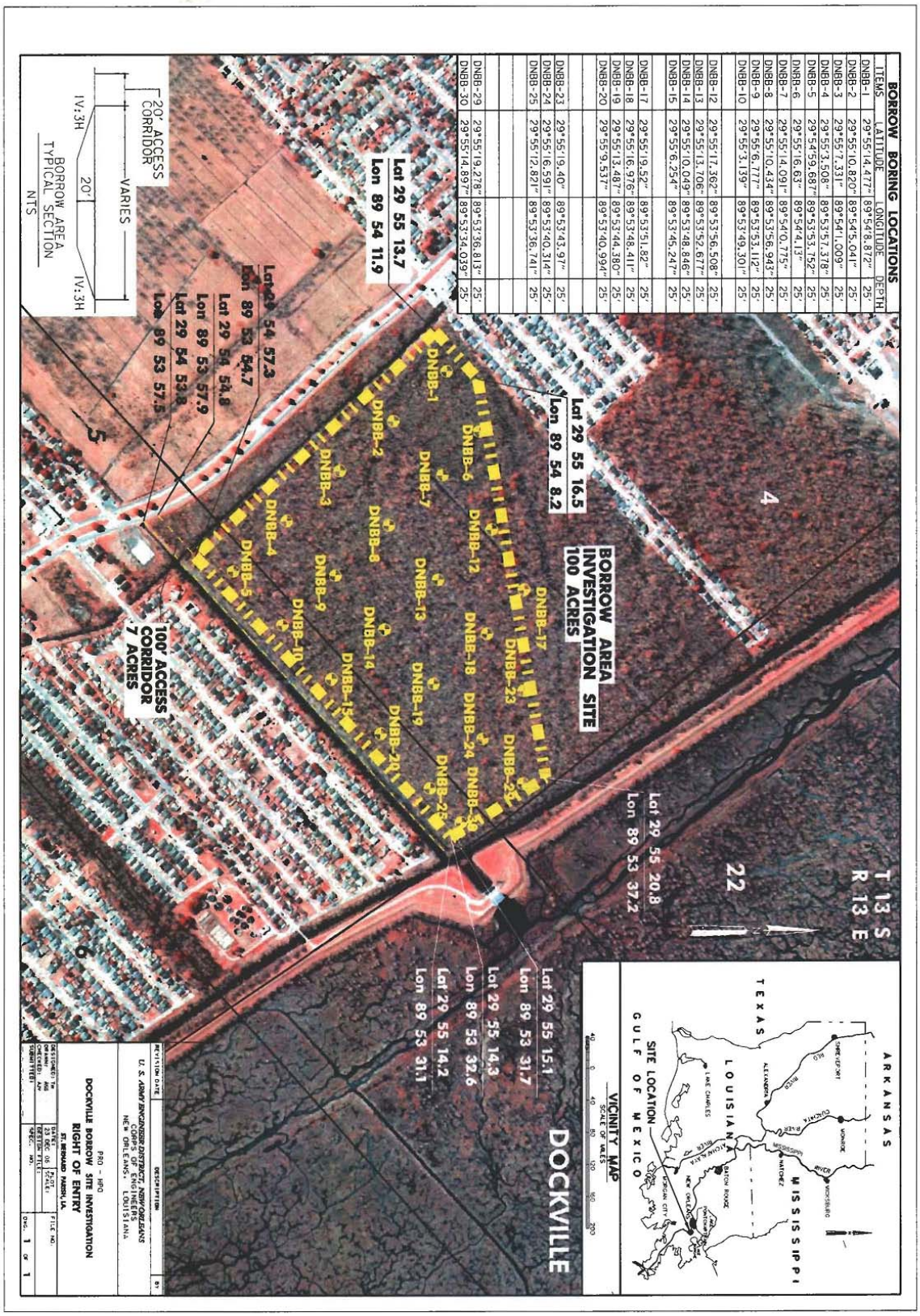


Figure 11: Dockville Proposed Borrow Area

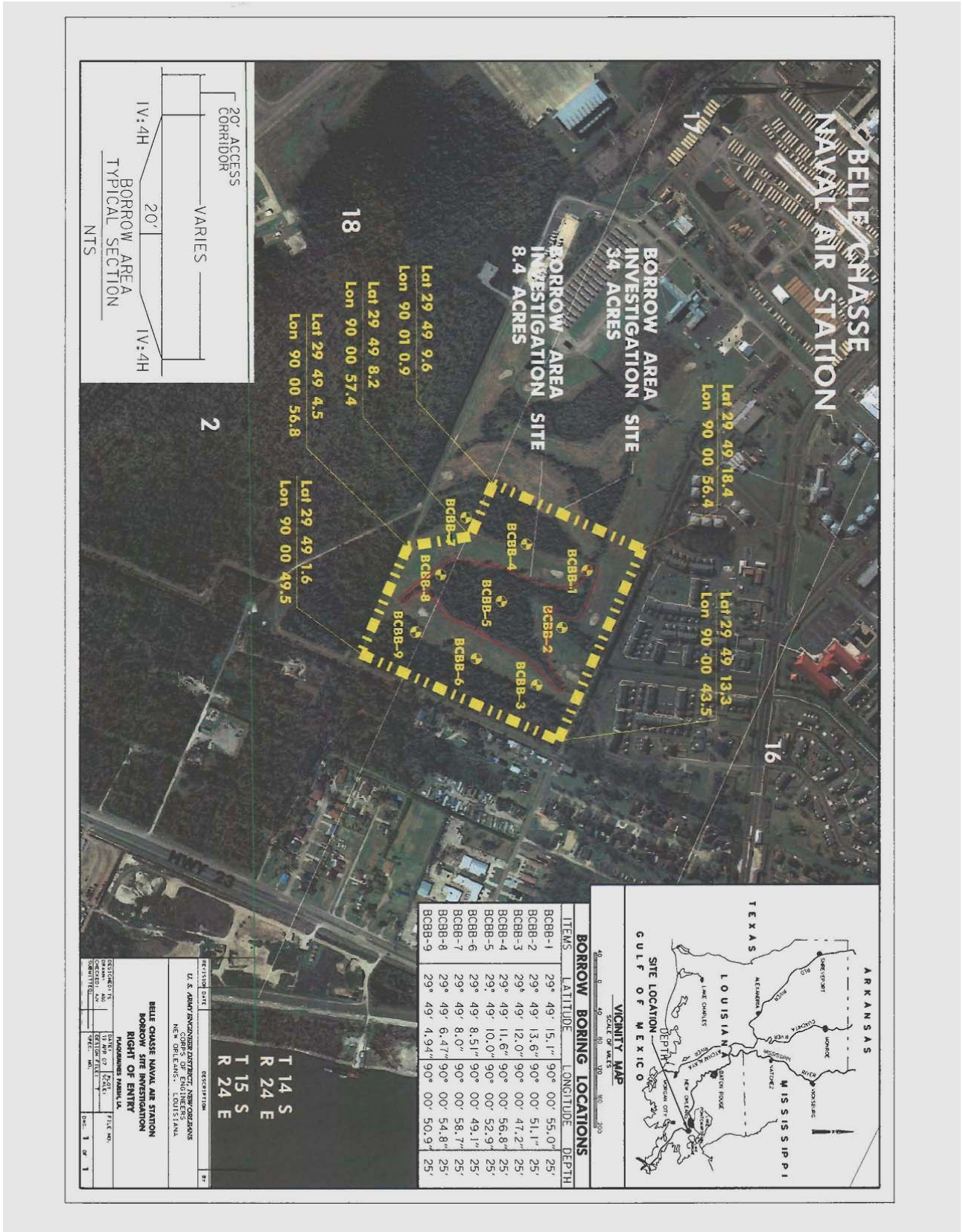


Figure 12: Belle Chase Proposed Borrow Area

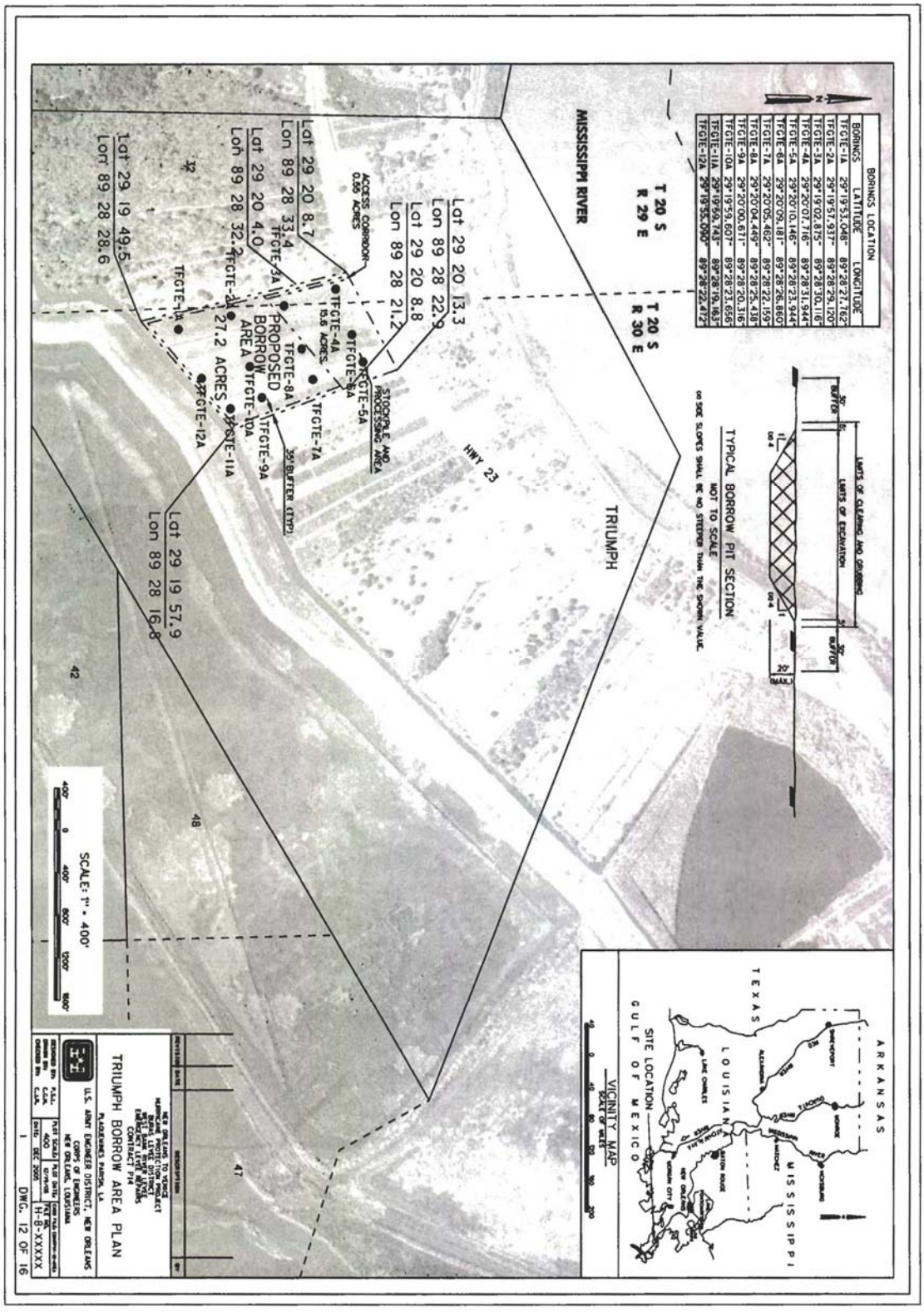


Figure 13: Triumph Proposed Borrow Area

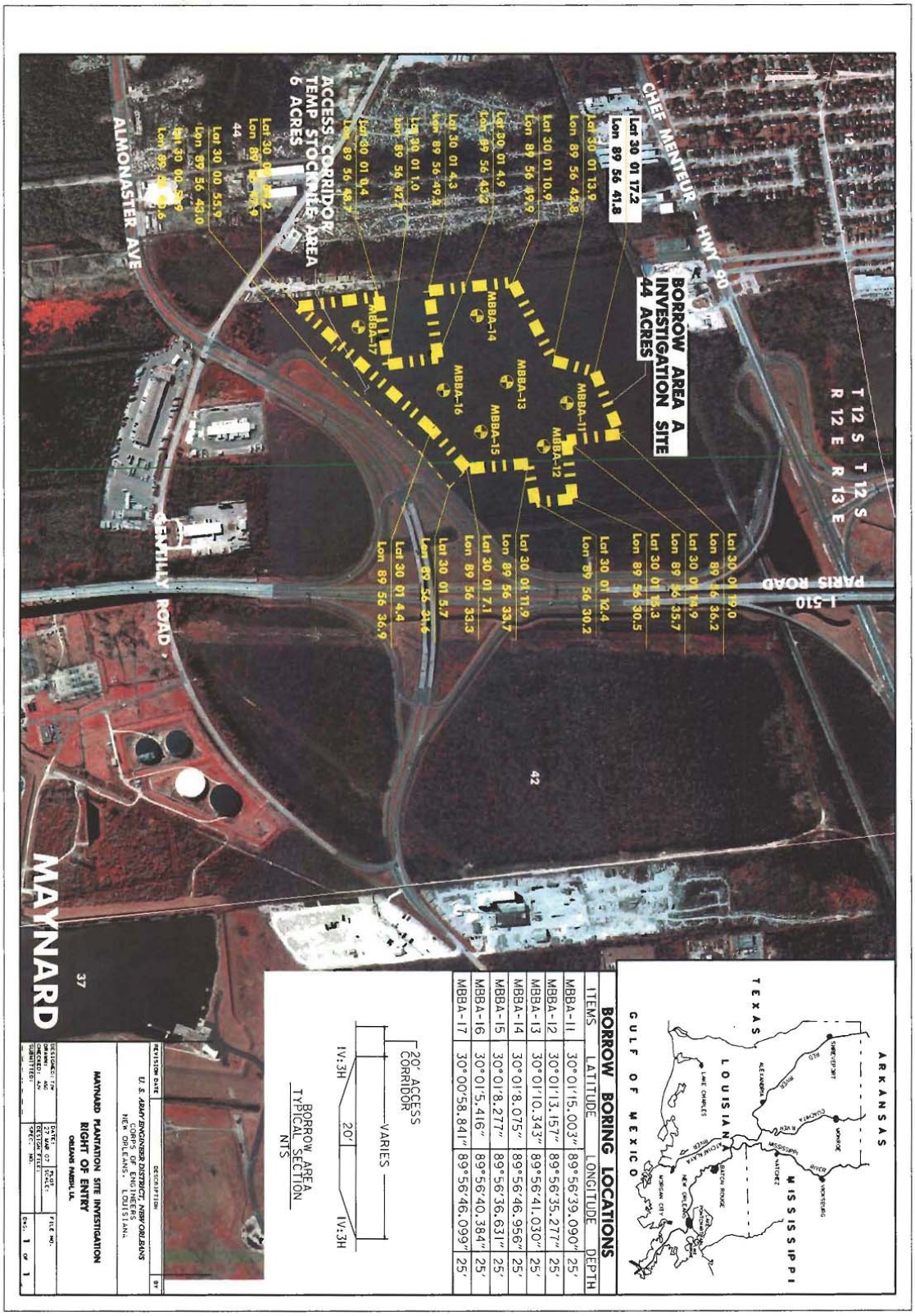


Figure 14: Maynard Proposed Borrow Area

BORROW BORING LOCATIONS

ITEMS	LATITUDE	LONGITUDE	DEPTH
JCBB-21	30°03'17.872"	89°55'43.100"	25'
JCBB-22	30°03'12.815"	89°55'42.995"	25'
JCBB-23	30°03'17.759"	89°55'37.242"	25'
JCBB-24	30°03'12.815"	89°55'37.277"	25'
JCBB-25	30°03'17.698"	89°55'31.525"	25'
JCBB-26	30°03'12.694"	89°55'31.701"	40'
JCBB-27	30°03'7.808"	89°55'31.695"	25'
JCBB-28	30°03'12.663"	89°55'25.877"	25'
JCBB-29	30°03'12.781"	89°55'26.050"	25'
JCBB-58	30°03'2.882"	89°55'43.203"	40'
JCBB-59	30°03'2.831"	89°55'37.531"	25'
JCBB-60	30°03'2.781"	89°55'31.891"	25'
JCBB-61	30°03'2.731"	89°55'26.114"	25'
JCBB-62	30°02'58.648"	89°55'43.292"	25'
JCBB-63	30°02'58.597"	89°55'37.619"	25'
JCBB-64	30°02'58.546"	89°55'31.979"	25'
JCBB-65	30°02'58.497"	89°55'26.205"	25'
JCBB-66	30°02'54.499"	89°55'43.211"	25'
JCBB-67	30°02'54.452"	89°55'37.707"	25'
JCBB-68	30°02'54.402"	89°55'32.067"	25'
JCBB-69	30°02'54.350"	89°55'26.287"	25'

REVISION DATE	DESCRIPTION	BY

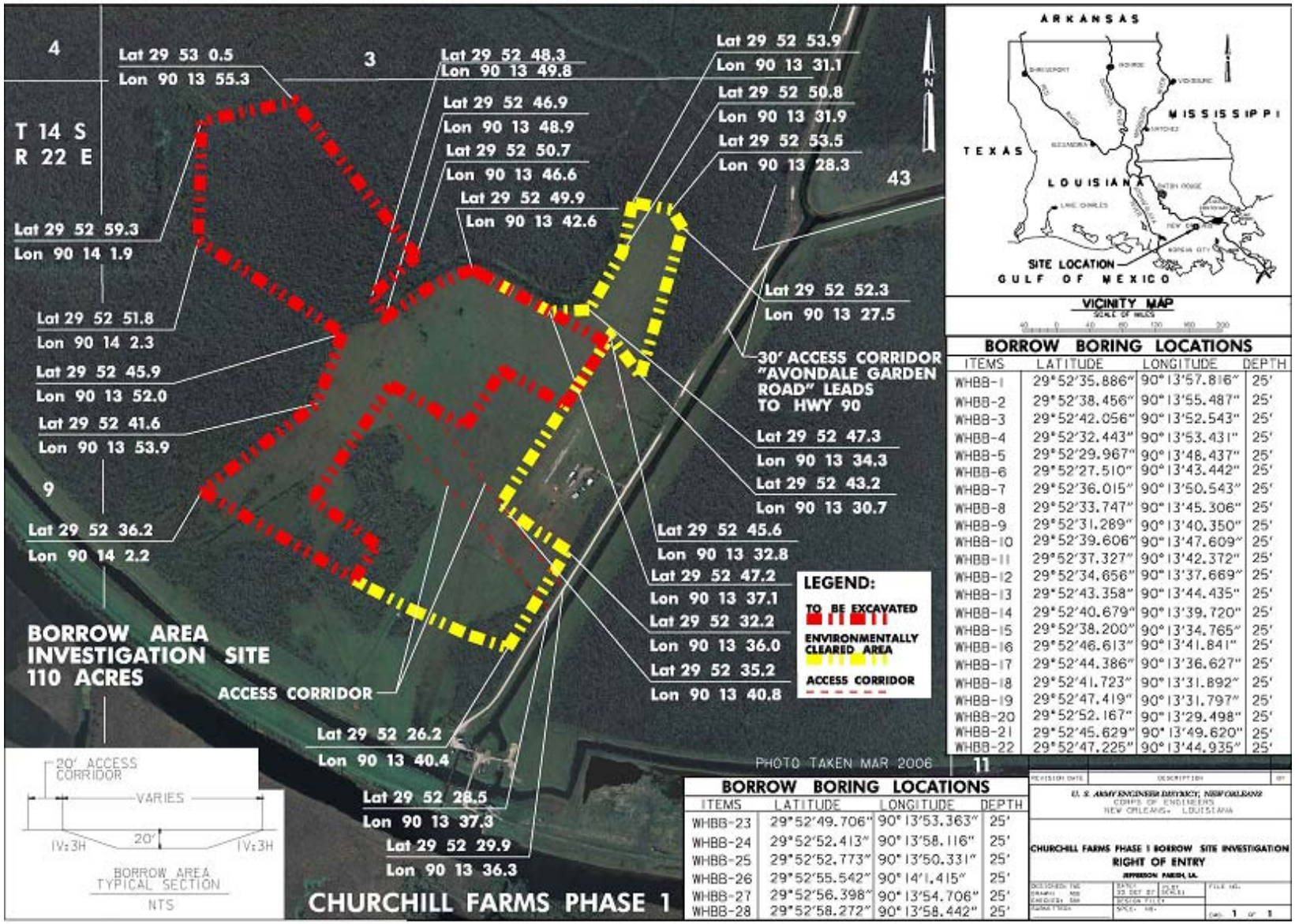
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

PRO - HPO

CUMMINGS NORTH BORROW SITE INVESTIGATION
RIGHT OF ENTRY
ORLEANS PARISH, LA.

DESIGNED: ASC	DATE: 28 NOV 06	FILE NO.
DRAWN: ASC	SCALE:	
CHECKED: ASC	DESIGN TITLE:	
SUBMITTED:	TDEC NO.	DWG. 1 OF 1

Figure 15: Cummings North Proposed Borrow Area



BORROW BORING LOCATIONS

ITEMS	LATITUDE	LONGITUDE	DEPTH
WHBB-1	29°52'35.886"	90°13'57.816"	25'
WHBB-2	29°52'38.456"	90°13'55.487"	25'
WHBB-3	29°52'42.056"	90°13'52.543"	25'
WHBB-4	29°52'32.443"	90°13'53.431"	25'
WHBB-5	29°52'29.967"	90°13'48.437"	25'
WHBB-6	29°52'27.510"	90°13'43.442"	25'
WHBB-7	29°52'36.015"	90°13'50.543"	25'
WHBB-8	29°52'33.747"	90°13'45.306"	25'
WHBB-9	29°52'31.289"	90°13'40.350"	25'
WHBB-10	29°52'39.606"	90°13'47.609"	25'
WHBB-11	29°52'37.327"	90°13'42.372"	25'
WHBB-12	29°52'34.656"	90°13'37.669"	25'
WHBB-13	29°52'43.358"	90°13'44.435"	25'
WHBB-14	29°52'40.679"	90°13'39.720"	25'
WHBB-15	29°52'38.200"	90°13'34.765"	25'
WHBB-16	29°52'46.613"	90°13'41.841"	25'
WHBB-17	29°52'44.386"	90°13'36.627"	25'
WHBB-18	29°52'41.723"	90°13'31.892"	25'
WHBB-19	29°52'47.419"	90°13'31.797"	25'
WHBB-20	29°52'52.167"	90°13'29.498"	25'
WHBB-21	29°52'45.629"	90°13'49.620"	25'
WHBB-22	29°52'47.225"	90°13'44.935"	25'

BORROW BORING LOCATIONS

ITEMS	LATITUDE	LONGITUDE	DEPTH
WHBB-23	29°52'49.706"	90°13'53.363"	25'
WHBB-24	29°52'52.413"	90°13'58.116"	25'
WHBB-25	29°52'52.773"	90°13'50.331"	25'
WHBB-26	29°52'55.542"	90°14'1.415"	25'
WHBB-27	29°52'56.398"	90°13'54.706"	25'
WHBB-28	29°52'58.272"	90°13'58.442"	25'

REVISION DATE | DESCRIPTION | BY

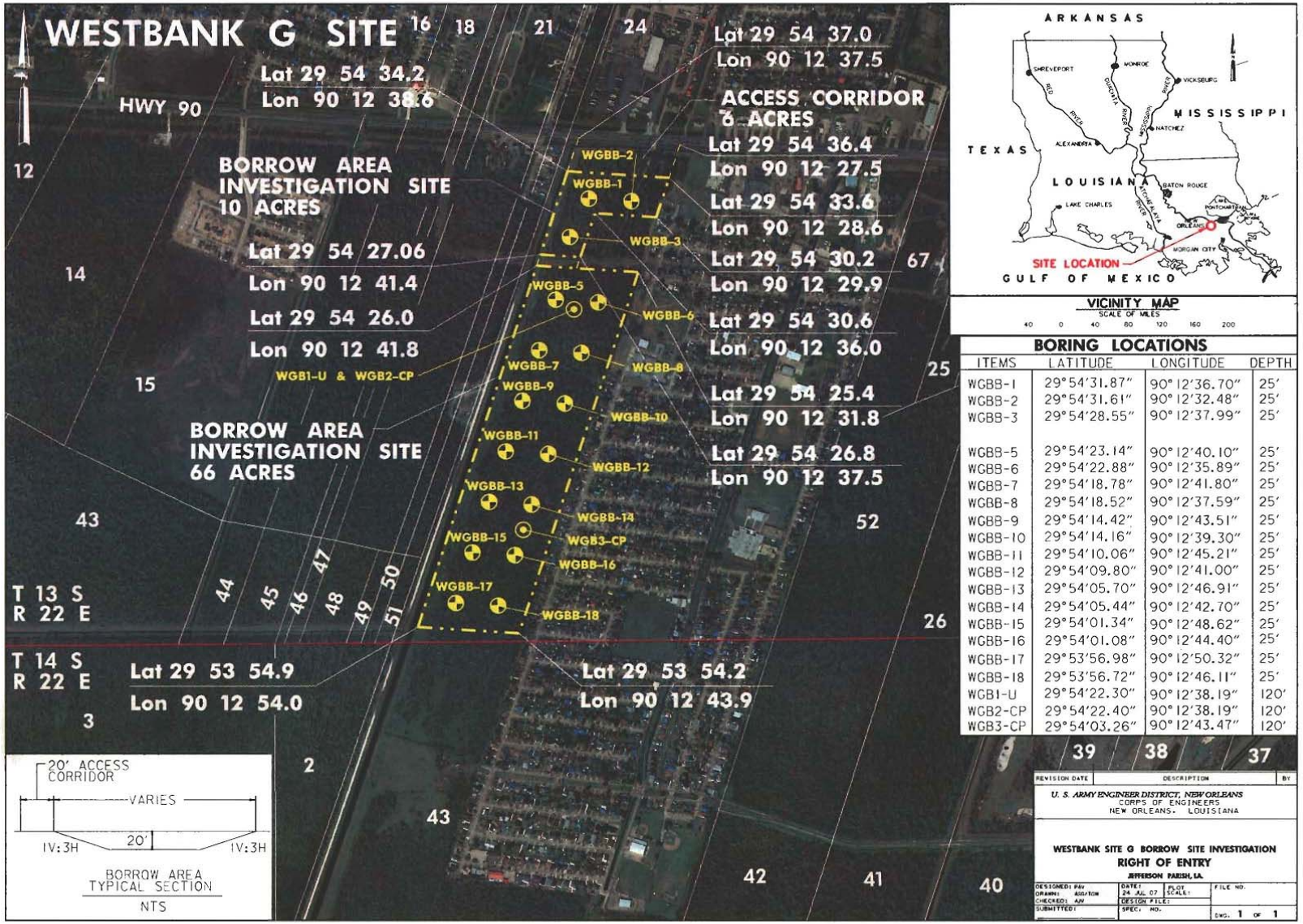
U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

CHURCHILL FARMS PHASE 1 BORROW SITE INVESTIGATION
RIGHT OF ENTRY
JEFFERSON PARISH, LA.

DESIGNED: TAE | DATE: 22 OCT 07 | SCALE: | FILE NO.:
DRAWN: MB | CHECKED: SM | DESIGN FILE:
SUBMITTED: | NOTE: NR

SHT. 1 OF 1

Figure 16: Churchill Farms Pit A Proposed Borrow Area



BORING LOCATIONS

ITEMS	LATITUDE	LONGITUDE	DEPTH
WGBB-1	29°54'31.87"	90°12'36.70"	25'
WGBB-2	29°54'31.61"	90°12'32.48"	25'
WGBB-3	29°54'28.55"	90°12'37.99"	25'
WGBB-5	29°54'23.14"	90°12'40.10"	25'
WGBB-6	29°54'22.88"	90°12'35.89"	25'
WGBB-7	29°54'18.78"	90°12'41.80"	25'
WGBB-8	29°54'18.52"	90°12'37.59"	25'
WGBB-9	29°54'14.42"	90°12'43.51"	25'
WGBB-10	29°54'14.16"	90°12'39.30"	25'
WGBB-11	29°54'10.06"	90°12'45.21"	25'
WGBB-12	29°54'09.80"	90°12'41.00"	25'
WGBB-13	29°54'05.70"	90°12'46.91"	25'
WGBB-14	29°54'05.44"	90°12'42.70"	25'
WGBB-15	29°54'01.34"	90°12'48.62"	25'
WGBB-16	29°54'01.08"	90°12'44.40"	25'
WGBB-17	29°53'56.98"	90°12'50.32"	25'
WGBB-18	29°53'56.72"	90°12'46.11"	25'
WGB1-U	29°54'22.30"	90°12'38.19"	120'
WGB2-CP	29°54'22.40"	90°12'38.19"	120'
WGB3-CP	29°54'03.26"	90°12'43.47"	120'

REVISION DATE | DESCRIPTION | BY

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
NEW ORLEANS, LOUISIANA

WESTBANK SITE G BORROW SITE INVESTIGATION
RIGHT OF ENTRY
JEFFERSON PARISH, LA.

DESIGNED: PAV | DRAWN: ASG/TCM | CHECKED: AJV | SUBMITTED: | DATE: 24 JUL 07 | PLOT SCALE: | DESIGN FILE: | SPEC. NO. | FILE NO. | DWG. 1 OF 1

Figure 17: Westbank Site G Proposed Borrow Area

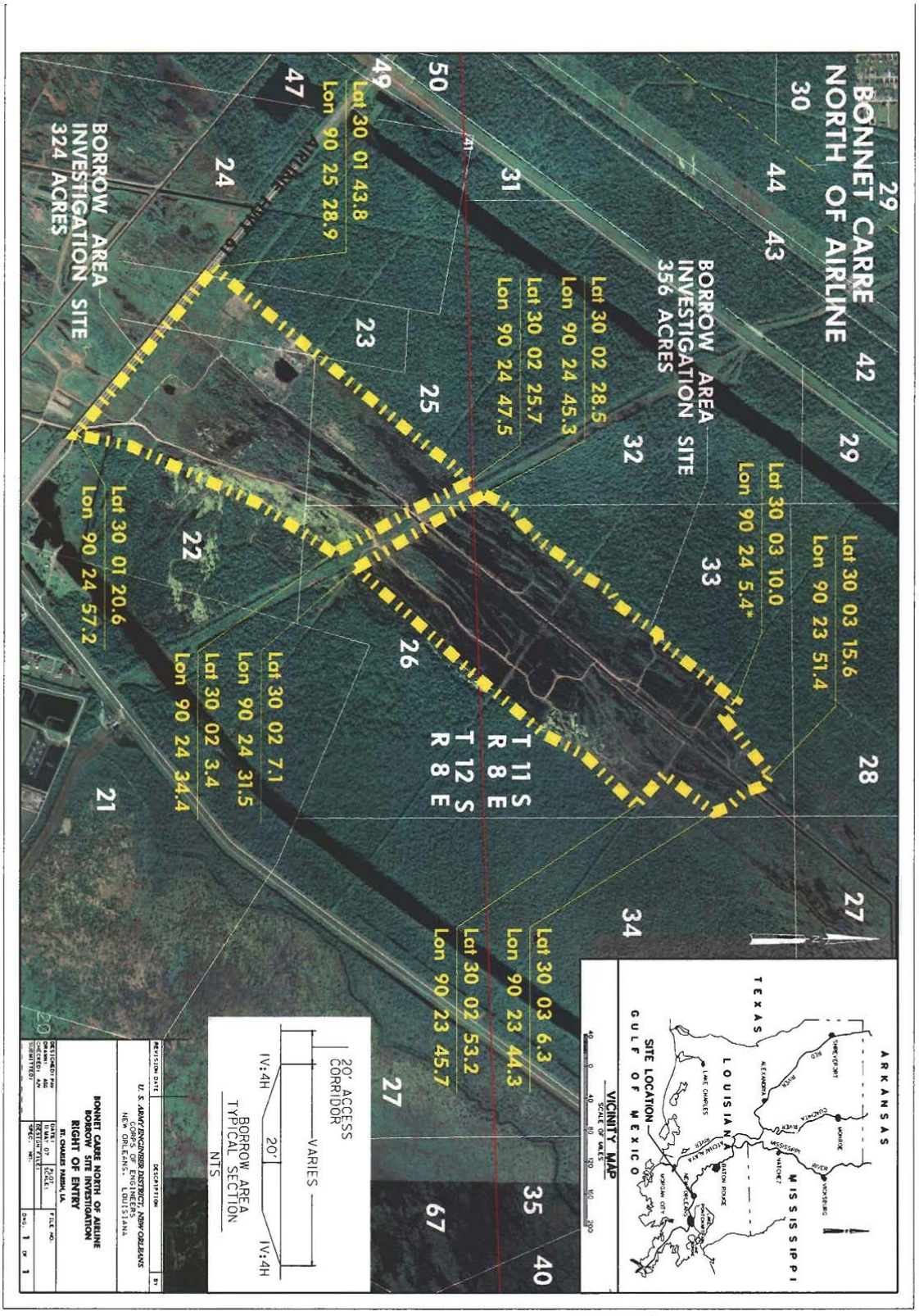


Figure 18: Bonnet Carré North Proposed Borrow Area

- and constructed with gradual side slopes, irregular shapes, and have some islands to provide fishery habitat. The Environmental Design Considerations for Main Stem Levee Borrow Areas Along the Lower Mississippi River Report 4: Part V (Appendix E) and CEMVN operating procedures will be referred to when designing the borrow areas. However, the full depth of the borrow area should be excavated according to the plans and specifications of the approved borrow pit depths to avoid impacting additional acres elsewhere. The proposed Bonnet Carré North borrow area is expected to contain approximately 16,932,000 cubic yards of suitable borrow material.

Some of the proposed borrow areas have a designated stockpile area. If additional material is needed for levee construction, the stockpile areas may be utilized as a borrow source if suitable soils are present, as opposed to impacting new areas.

2.4 Alternatives to the Proposed Action

Other alternatives to the proposed action were considered, as described below.

No-Action. Under the No Action alternative the proposed borrow areas would not be used by CEMVN. The borrow areas listed in the proposed action would not be excavated. The levees and floodwall projects would be built to authorized 100-year levels using other sources of material from as yet identified sources.

Contractor Furnished Borrow Material. Due to the large quantities of clay material needed for the 100-year levee and floodwall projects, Pre-Approved Contractor Furnished borrow is an option that will be discussed in IERs 19 and 23, and other future borrow IERs. IER 19 will also discuss barging or utilizing railroad to transport clay material from a remote area(s) as an alternative.

2.5 Alternatives Eliminated from Further Consideration

The following investigated areas were deemed unsuitable by CEMVN for HPS activities:

- The Cummings South area is located in Orleans Parish. This 153 acre area was investigated and was declined due to the presence of wetlands and unsuitable soil conditions. The area was not investigated further and will not be used as a Government Furnished borrow source.

- The Myrtle Grove North area is located in Plaquemines Parish. The area was 14.7 acres and, according to a CEMVN jurisdictional wetland determination, the area contained 3.65 acres of wetlands mixed into upland areas, making it impractical to excavate without disturbing the wetlands. The area was not investigated further and will not be used as a Government Furnished borrow source.

- The Fisher area is located in St. Bernard Parish. The area was investigated and a CEMVN jurisdictional wetland determination indicated that the 17.7 acre area contained approximately 15 acres of wetlands and had an unresolved wetland filling violation. Therefore, the area was not investigated further and will not be used as a Government Furnished borrow source.

- City Park ponds were offered as a potential borrow source by Orleans Parish. The area was declined because the Parish wanted debris and silt removed from the ponds to maintain a shallow depth as opposed to deeper, more efficient excavation.

- The Kenilworth area is located in St. Bernard Parish. The 11.7 acre site contains 3 acres of wetlands and 3 acres of mixed wetlands. The site was declined because it was deemed too small to provide a sizeable amount of borrow material.

- The Bohemia area is located on the north side of Highway 15 in Plaquemines Parish. The 146 acre area was declined because of unsuitable soil conditions.

- The Vise Highway 46 (St. Bernard Parish), 3336 Bayou Road (St. Bernard Parish), 2938 Bayou Road (St. Bernard Parish), 2129 Bayou Road (St. Bernard Parish), and Oak Grove Lane (Plaquemines Parish) areas were declined because the areas were too small.

3. Affected Environment and Environmental Consequences

3.1 Environmental Setting

The proposed borrow areas described in this IER are located in Jefferson, Orleans, St. Charles, Plaquemines, and St. Bernard Parishes. The area is bounded to the north by Lake Pontchartrain and to the east by the Bonnet Carré Spillway heading south into Lake Salvador and eventually into marsh. The area is bordered on three sides by an extensive marsh system that provides a barrier between the cities within these parishes and the Gulf of Mexico. Louisiana's coastal plain remains the largest expanse of coastal wetlands in the contiguous United States. The five St. Bernard Parish areas are located in an urban area of the parish. Four of the areas are located behind the Federal levee system and the 4001 Florissant area is outside. The Triumph area is located in a rural area of Plaquemines Parish while the Belle Chasse area is more urban due to its location on the Naval Base. The Maynard and Cummings North areas are located in the New Orleans East industrial area. The Churchill Farms Pit A and Westbank Site G proposed borrow area are located in an urban area south of Highway 90. The Bonnet Carré North area is located in a rural area between the Mississippi River and Lake Pontchartrain.

Fauna and Flora

The Louisiana Coastal Plain area contains an extraordinary diversity of estuarine habitats that range from narrow natural levee and beach ridges to expanses of bottomland hardwood (BLH) forest, forested swamps and fresh, brackish, and saline marshes, and pasture lands. The wetlands support various functions and values, including commercial fisheries harvesting of furbearers, recreational fishing and hunting, ecotourism, critical wildlife habitat (including threatened and endangered species), water quality improvement, navigation and waterborne commerce, flood control, and buffering protection from storms.

Terrestrial animals that may inhabit some of the proposed borrow areas include nutria, muskrat, raccoon, mink, and otter, which are harvested for their furs. White-tailed deer, feral hogs, rabbits, various small mammals, and a variety of birds, reptiles, amphibians, and mosquitos also occur in the study area. Forests, wetlands, bottomland hardwood forests, and pastures may be found in some of the proposed borrow areas. Agricultural crops grown in the vicinity of some of the proposed borrow areas include citrus fruits and truck crops.

Soils

The term "suitable" as it relates to borrow material discussed in this document is defined as meeting the following current criteria after placement as levee fill:

- Soils classified as clays (CH or CL) are allowed as per the Unified Soils Classification System;
- Soils with organic contents greater than 9% are not allowed;
- Soils with plasticity indices (PI) less than 10 are not allowed;
- Soils classified as Silts (ML) are not allowed;
- Clays will not have more than 35% sand content.

The USACE Hurricane and Storm Damage Reduction System Design Guidelines, of which the soil standards previously discussed are a part, are reviewed and updated as necessary to ensure that the USACE is constructing the safest levees possible. Changes to the guidelines are reviewed and approved by USACE experts at the local, regional and headquarters level; additional reviews are completed by academia and private individuals who are recognized experts in their fields. Additionally, the guidelines being utilized by CEMVN have been reviewed by members of the Interagency Performance Evaluation Team (IPET). The design guidelines may be updated from time to time to respond to new engineering analysis of improved technology, innovative processes, or new data. An implementation plan for an external review should be finalized in February 2008.

Geotechnical borings were collected at each area to determine the suitability of the material for levee construction use. The borings were spaced to adequately define the material in the pit, but in no case spaced greater than 500 feet on center. Borings along the proposed borrow area boundary were located no further than one-half of the boring spacing in the area or 250 feet, whichever was less.

The soils were classified, logged, and recorded within seven days of obtaining the samples in the field. The Unified Soil Classification System was used in classifying the soils. A water content determination was made and recorded on all samples classified as fat clay (CH), lean clay (CL), and silt (ML) at one foot intervals (recommended) or two foot intervals (required). For (CH), (CL), and (ML) soils, Atterberg Limits and Organic Content Testing (American Society of Testing and Materials [ASTM] D 2974, Method C), was required every five feet (minimum). Samples with moisture contents at 70% or higher or having a Liquid Limit of 70 or higher were tested for organic content, as well as for a sample two feet above and two feet below that sample (2.5 feet also acceptable). Grain size distribution determinations including both sieve (#200 sieve required) and hydrometer testing was required for samples that classify as CL with a plasticity index (PI) greater than 10 for 2 or more consecutive feet, but not more than one test every 5 feet of sampling.

The resulting classification, plasticity, water content, and organic content determinations and borrow area boring logs with GPS readings at the boring locations were analyzed for potential borrow use by CEMVN to determine the suitability of the soil (Table 1). Geotechnical testing and soil analysis is ongoing at some of the areas; the area acreages may change due to the results.

3.2 Significant Resources

This section contains a list of the significant resources located in the vicinity of the proposed action, and describes in detail those resources that would be impacted, directly or indirectly, by the alternatives. Direct impacts are those that are caused by the action

taken and occur at the same time and place (40 CFR §1508.8(a)). Indirect impacts are those that are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable (40 CFR §1508.8(b)). Cumulative impacts are discussed in Section 4.

The resources described in this section are those recognized as significant by laws, executive orders, regulations, and other standards of National, State, or Regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public. Further detail on the significance of each of these resources can be found by contacting CEMVN or on www.nolaenvironmental.gov, which offers information on the ecological and human value of these resources, as well as the laws and regulations governing each resource. Search for "Significant Resources Background Material" in the website's digital library for additional information. Table 1 shows those significant resources found within the project area and notes whether they would be impacted by the proposed alternative.

Table 1: Significant Resources in Project Study Area

Significant Resource	Impacted	Not Impacted
Jurisdictional Wetlands		X
Non-Jurisdictional Bottomland Hardwood Forest	X	
Non-Wetland Resources/Upland Resources	X	
Prime and Unique Farmland	X	
Fisheries		X
Wildlife	X	
Threatened and Endangered Species		X
Cultural Resources		X
Recreational Resources		X
Noise	X	
Air Quality	X	
Water Quality		X
Aesthetics		X
Socioeconomics	X	
Transportation	X	

3.2.1 Jurisdictional Wetlands

Existing Conditions

The jurisdictional wetland habitat types in the proposed borrow areas may include pasture wetlands and cypress swamps. The jurisdictional wetlands contain hydrophytic vegetation, hydric soils, and hydrology indicators. Pasture wetlands are comprised of soft rushes, flat sedges, smartweed, alligator weed, and other wetland grasses. Cypress swamp areas are dominated by bald cypress and tupelo gum. The jurisdictional bottomland hardwood tree species include hackberry, Chinese tallow tree, pecan, American elm, live oak, water oak, green ash, bald cypress, black willow, box elder, and red maple.

The CEMVN Regulatory Functions Branch delineated jurisdictional wetlands during initial investigations of potential borrow areas. At this time, CEMVN is working diligently to avoid impacts to Clean Water Act Section 404 jurisdictional wetlands,associated with providing borrow material for authorized and 100-year hurricane protection construction. CEMVN selection prioritization of potential borrow

areas (Section 2.1), as well as USFWS guidance (Appendix D), relating to impacts to jurisdictional wetlands are and will continue to be followed. CEMVN will coordinate with Governmental agencies and the public if jurisdictional wetland may be impacted during future proposed borrow activities.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impact to jurisdictional wetlands at the proposed borrow areas would occur.

Proposed Action

With implementation of the proposed action, no direct or indirect impact to jurisdictional wetlands at the proposed borrow areas would occur. The jurisdictional wetland areas determined by the jurisdictional wetland determination provided by the Regulatory Functions Branch would be avoided (Table 2). The remaining areas would be used as a borrow source.

Table 2: Jurisdictional Wetland Acreage Avoided

Proposed Borrow Area	Parish	Initial Area Investigated (acres)	Jurisdictional Wetlands Avoided (acres)	Size After Jurisdictional Wetland Avoidance (acres)
1418/1420 Bayou Rd.	St. Bernard	43.4	21.4	22
Dockville	St. Bernard	144	49	95
Maynard	Orleans	102	58	44
Bonnet Carré North	St. Charles	1,115	435 mixed	680
Cummings North	Orleans	2,000	1,263	182

The Cummings North area had additional areas avoided due to geotechnical analysis.

3.2.2 Non-Jurisdictional Bottomland Hardwood Forest

Existing Conditions

The non-jurisdictional bottomland hardwood (BLH) forests are comprised of dominant species such as hackberry, Chinese tallow tree, pecan, American elm, live oak, water oak, green ash, bald cypress, black willow, box elder, and red maple. Some understory species include dewberry, lizard's tail, and poison ivy. A variety of birds utilize these hardwoods for nesting, breeding, brooding, and as perches. Hard mast (nuts) and soft mast (samaras, berries) provide a valuable nutritional food source for birds, mammals, and other wildlife species. Non-jurisdictional BLH forests lack one or more of the following criteria to be considered a Clean Water Act Section 404 wetland: hydrophytic vegetation, hydric soils, and/ or wetland hydrology (USACE 1987). Manmade ditches, canals, and/ or pumping stations are present at some of the proposed borrow areas.

- The 1418/1420 Bayou Road area includes 13 acres of forested area, comprised of red maple, box elder, pecan, Chinese tallow tree, hackberry, and live oaks.

- The 1572 Bayou Road area contains 3.7 acres of forested area, comprised of box elder, red maple, Chinese tallow tree, pecan, hackberry, and live oaks.

- The Dockville area is 107 acres of forested non-wetlands. The tree canopy is comprised of red maple, green ash, box elder, elm, bald cypress, hackberry, Chinese tallow tree, and live oak.

- The Belle Chasse area contains 8 acres of black willow, Chinese tallow, red maple, and hackberry.

- The Maynard area contains 44 acres of forested areas with species including Chinese tallow tree, red maple, box elder, and mulberry.

- The Churchill Farms Pit A area contains 43 acres of forested land. The forested area is dominated by Chinese tallow tree.

- The Cummings North area contains 182 acres of young Chinese tallow forest.

- The Westbank Site G would impact 82 acres of forested land.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impacts to BLH forest would occur to the proposed borrow areas described in this document.

Proposed Action

With implementation of the proposed action, there would be direct and indirect impacts to BLH forest. Mature trees would be cut down with the use of chainsaws or pushed down with bull dozers and excavators. Saw logs could be sold to the mill and younger trees could be processed into pulp wood for paper products. Woody debris remaining would be cleaned up and all berms would be leveled to eliminate hydrologic impacts. Once excavated, the area would no longer be viable for silviculture practices and some wildlife habitat would be lost. The area would be converted to ponds and small lakes if water is retained, or by vegetation and woody plants if water is not retained. It is expected that either type of area would attract a variety of wildlife including birds, reptiles, amphibians, and small mammals.

This office has assessed the environmental impacts of the proposed action and has determined that the proposed action would have unavoidable impacts to a total of 461.3 acres and 197.8 Average Annualized Habitat Units (AAHUs) of non-jurisdictional BLH. (Habitat Units represent a numerical combination of habitat quality [Habitat Suitability Index] and habitat quantity [acres] within a given area at a given point in time. Average Annual Habitat Units represent the average number of Habitat Units within any given year over the project life for a given area.) Mitigation for unavoidable impacts to non-jurisdictional BLH will be described under a separate IER.

3.2.3 Non-Wetland Resources/Upland Resources

Existing Conditions

Species identified in the non-wet pasture areas include Johnson grass, yellow bristle grass, annual sumpweed, arrow-leaf sida, vasey grass, Brazilian vervain, and eastern false-willow. The scrub/ shrub areas are comprised of Chinese tallow tree, eastern false-

willow, wax myrtle, giant ragweed, dew berry, elderberry, red mulberry, pepper vine, and dog-fennel.

The areas listed below show representative vegetation found in the pasture and scrub/ shrub areas.

- The 910 Bayou Road area is approximately 11.7 acres of pasture land. The herbaceous layer comprised of Johnson grass, vasey grass, and great ragweed.

- The 4001 Florissant area is approximately 11.6 acres of non-wet pasture. The herbaceous layer is comprised of yellow bristle grass, annual sumpweed, arrow-leaf sida, eastern false-willow, and Johnson grass.

- The Cummings North area is 182 acres of overgrown thicket predominately dewberry and some Chinese tallow saplings.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impact to non-wetland resources/upland resources would occur at the proposed borrow areas.

Proposed Action

With implementation of the proposed action, non-wetland resources/upland resources would be cleared and excavated. The areas would likely be converted to ponds and small lakes. The pasture areas would no longer provide grasses for herbivores such as deer, rabbits, and cattle. The thick scrub/shrub areas that provided cover for wildlife would be removed. Some scrub/shrub areas may redevelop around the borrow pit perimeters in time. Borrow pits that remain dry would be expected to be colonized by vegetation and woody plants, which could offset some habitat loss. The Bonnet Carré North area would hold water and would fill in with sediment if and when the Bonnet Carré Spillway is open.

3.2.4 Prime and Unique Farmland

Existing Conditions

Eight proposed borrow areas contain prime and unique soils according to the NRCS (Table 3). The Maynard area is located in an area that is zoned as urban and developed in Orleans Parish and is exempt.

Table 3: Prime and Unique Farmland Soils Present

Proposed Borrow Area	Parish	Soil map unit(s)	Prime and Unique Farmland Present	Acres of Prime and Unique Farmland
1418/1420 Bayou Rd.	St. Bernard	Cancienne silt loam	Yes	22.0
		Cancienne silty clay loam	Yes	
1572 Bayou Rd.	St. Bernard	Cancienne silt loam	Yes	9.5
		Shriever clay	Yes	
910 Bayou Rd.	St. Bernard	Cancienne silt loam	Yes	11.6
		Cancienne silty clay loam	Yes	
4001 Florissant	St. Bernard	Commerce silt loam	Yes	10.8
		Shriever clay	Yes	
Dockville	St. Bernard	Shriever clay	Yes	80.0
		Westwego clay	No	
Triumph	Plaquemines	Harahan clay	No	N/A
Belle Chasse	Plaquemines	Shriever clay	Yes	N/A
		Rita mucky clay	No	
Maynard	Orleans	Harahan clay	exempt	N/A
		Shriever clay	exempt	N/A
Cummings North	Orleans	Kenner muck, drained	No	N/A
Churchill Farms Pit A	Jefferson	Kenner muck	No	N/A
Westbank Site G	Jefferson	Harahan	No	N/A
		Shriever clay	Yes	66.0
Bonnet Carré North	St. Charles	Cancienne frequently flooded	No	N/A

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impact to prime and unique farmlands would occur to the proposed borrow areas.

Proposed Action

With implementation of the proposed action, prime and unique farmlands would be cleared and excavated. Removing soils from these proposed borrow areas would result in a permanent loss of prime and unique farmlands and the areas would no longer be available for farming. The proposed borrow areas would most likely fill with water and would be converted to ponds or small lakes. Borrow areas that do not retain water would probably not be able to produce food and fiber crops. The land would no longer provide grasses for herbivores such as deer, rabbits, or cattle.

3.2.5 Fisheries

Existing Conditions

The Bonnet Carré North area is the only proposed borrow area that contains fisheries. Fish observed in Bonnet Carré's existing borrow ponds include mosquitofish, killifish, shortnose and spotted gar, redfin shad, bass, bluegill, and catfish. The area currently provides suitable breeding habitat for various species of mosquitoes. Local parish mosquito control programs currently implement mosquito control.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impact to fisheries would occur.

Proposed Action

With implementation of the proposed action, non-jurisdictional wetland and upland resources would be cleared and excavated. The existing Bonnet Carré North borrow ponds would be pumped into adjacent ponds and some fish mortality may occur. Dry land sites may be converted to ponds and small lakes. The areas could provide fishery habitats if stocked by landowners, which would not be inconsistent with other land uses near the project area. Fish that may thrive in the borrow pits include mosquitofish, killifish, shortnose and spotted gar, redfin shad, bass, bluegill, and catfish. Landowners could enjoy benefits from fishing once the areas are established. The area could provide suitable breeding habitat for various species of mosquitoes. While the proposed borrow areas have the potential to become mosquito breeding areas, the amount of surface acres of water is considered to be small compared to surrounding wetlands. Local parish mosquito control programs would implement mosquito control.

If overburden is sufficient, sloped and fringe shallows may be created to provide shallows for both near edge and submergent vegetative growth. Overburden material would be used, to the maximum extent practicable, to create fringe wetlands and fishery habitats.

3.2.6 Wildlife

Existing Conditions

The study area contains a great variety of mammals, birds, reptiles, and amphibians. Species inhabiting the area include nutria, muskrat, mink, otter, raccoon, white-tailed deer, skunks, rabbits, squirrels, armadillos, and a variety of smaller mammals. Wood ducks and some migratory waterfowl may be present during winter, especially in the

Triumph area due to the proximity of the Mississippi River, which is a major flyway, as well as in coastal wetlands.

Non-game wading birds, shore birds, and sea birds including egrets, ibis, herons, sandpipers, willets, black-necked stilts, gulls, terns, skimmers, grebes, loons, cormorants, and white and brown pelicans are found in the project vicinity. Various raptors such as barred owls, red-shouldered hawks, northern harriers (marsh hawks), American kestrel, and red-tailed hawks may be present. Passerine birds in the areas include sparrows, vireos, warblers, mockingbirds, grackles, red-winged blackbirds, wrens, blue jays, cardinals, and crows. Many of these birds are present primarily during periods of spring and fall migrations. The areas may also provide habitat for the American alligator, salamanders, toads, frogs, turtles, and several species of poisonous and nonpoisonous snakes. The area also currently provides suitable breeding habitat for various species of mosquitoes. While the proposed borrow areas have the potential to become mosquito breeding areas, the amount of surface acres of water is considered to be small compared to surrounding wetlands. Local parish mosquito control programs would implement mosquito control.

The bald eagle is a raptor that is found in various areas throughout the United States and Canada as well as throughout the study area. Bald eagles are federally recognized under the Bald Eagle Protection Act of 1940. The bald eagle feeds on fish, rabbits, waterfowl, seabirds, and carrion (Ehrlich et al. 1988). The main basis of the bald eagle diet is fish, but they will feed on other items such as birds and carrion depending upon availability of the various foods. Eagles require roosting and nesting habitat, which in Louisiana consists of large trees in fairly open stands (Anthony et al. 1982). Bald eagles nest in Louisiana from October through mid-May. Eagles typically nest in bald cypress trees near fresh to intermediate marshes or open water in the southeastern parishes.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impact to wildlife would occur to the proposed borrow areas.

Proposed Action

With implementation of the proposed action, wildlife would be displaced when the areas are cleared and excavated. The areas may be converted to ponds and small lakes. At that time, some aquatic vegetation may colonize the shallow littoral edge of the pits, and wildlife (otters, alligators, raccoons, wading birds, and ducks) adapted to an aquatic environment would be expected to expand their range into the new waterbodies. A variety of plant types may develop adjacent to the water that could provide important wildlife habitat utilized for nesting, feeding, and cover. Any pits that remain dry would be expected to be colonized by vegetation and woody plants, which could offset some habitat loss. The dense vegetation could attract a variety of wildlife including birds, reptiles, amphibians, small mammals, and mosquitoes.

A recent survey conducted by the Louisiana Department of Wildlife and Fisheries (LDWF) confirmed that a new eagle nest was built in the vicinity of one of the proposed borrow areas. The nest would be avoided by 1,500 feet as per USFWS guidance from the Bald Eagle Act. An eagle nest was in the vicinity but outside the 1,500-foot buffer zone required by the USFWS of another proposed borrow area.

The USFWS concurred with the CEMVN in a 29 May 2007 memo that the proposed borrow areas were not likely to adversely affect bald eagles or their critical habitat.

3.2.7 Threatened and Endangered Species

Existing Conditions

The brown pelican was the only T&E species that may be in the vicinity of the proposed borrow areas. It is a year-round resident that typically forages on fish throughout the study area. In winter, spring, and summer, nests are built in mangrove trees or other shrubby vegetation, although occasionally ground nesting may occur. Small coastal islands and sand bars are typically used as loafing areas and nocturnal roosting areas.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impacts to threatened or endangered species or their critical habitats would occur to the proposed borrow areas.

Proposed Action

The proposed action is not likely to adversely affect these T&E species or their critical habitats. The endangered brown pelican may be present in the project vicinity. However, none were observed at the borrow areas described in this document. The USFWS concurred with the CEMVN that excavation of the proposed borrow areas would not be likely to adversely affect the brown pelican or other T&E species, or their critical habitat (Table 4).

Table 4: USFWS T&E Concurrence

Proposed Borrow Area	USFWS Concurrence
1418/1420 Bayou Rd.	15 March, 2007
1572 Bayou Rd.	15 March, 2007
910 Bayou Rd.	7 March, 2007
4001 Florissant	7 March, 2007
Dockville	15 March, 2007
Triumph	20 August, 2007
Belle Chasse	17 April, 2007
Maynard	29 May, 2007
Cummings North	5 April, 2007
Churchill Farms Pit A	17 April, 2007
Westbank Site G	24 May, 2007
Bonnet Carré North	29 May, 2007

3.2.8 Cultural Resources

Existing Conditions

Cultural resources have been considered for each proposed borrow area (Table 5). The level of investigation varied depending on the probability of cultural resources being located within the project area. CEMVN Archaeologists initially evaluated the proposed borrow areas to identify known cultural resources and to asses the potential presence of unrecorded sites. In some cases, CEMVN contracted Cultural Resource Management

(CRM) consulting firm to further investigate the proposed areas. Investigations varied for each project area and included background research, reconnaissance surveys, and, in some cases, subsurface testing (Handly et al. 2007). Section 106 of the National Historic Preservation Act, as amended, involved consultation with the Louisiana State Historic Preservation Officer (LASHPO) and Native American tribes. Initially, consultation was limited to the LASHPO and their staff at the Louisiana Division of Archaeology and the Louisiana Division of Historic Preservation. The consultation was later expanded to include twelve Federally recognized tribes that have an interest in the region.

The results of these investigations revealed that no known listed National Register of Historic Places properties or sites eligible for listing on the National Register of Historic Places exist within the proposed borrow area locations. Background research of the Bonnet Carré North area revealed that no known cultural resources were present within the proposed 680 acre parcel. The geomorphology and land use history of the Bonnet Carré North area suggests that it is highly unlikely that cultural resources exist within this parcel. Current conditions at the proposed borrow area made testing impracticable.

Archaeological surveys in the vicinity of the proposed borrow areas have identified both prehistoric and historic sites in the vicinity of the proposed action (Wiseman et al. 1979). Given the recent geologic development of the Mississippi delta and the age of deposits within the project area, archaeological sites are not expected to date prior to the Poverty Point phase (1700 – 500 B.C.) (Wiseman et al. 1979). Prehistoric sites, such as shell middens, hunting and gathering camps, habitation sites, villages, and mound sites, tend to be located on active and abandoned distributary channel levee complexes, major beach ridges and on older stable portions of the delta, and in association with freshwater marshes. Similarly, historic period sites, such as forts, plantations, and industrial features, tend to be located on levees and waterways.

The dynamic nature of flooding and sedimentation from the Mississippi River has likely buried some archaeological sites and subsidence has likely inundated others. The proposed borrow areas tend to be located in drained backswamps. While backswamps were utilized for resource extraction during both prehistoric and historic periods, there is little evidence of occupation within this habitat, and thus the likelihood for the presence of undiscovered cultural sites within the proposed project areas remain low.

Discussion of Impacts

No Action

Without implementation of the proposed action, any undiscovered or unreported cultural resources or traditional cultural properties would remain intact and in their current state of preservation. The burial or subsidence of historic land surfaces would continue in the current pattern. There is no reason to believe that this alternative would have any positive or negative impact to cultural resources.

Proposed Action

With implementation of the proposed action, no known cultural resources would be impacted because they would be properly buffered and avoided. CEMVN will implement an archaeological monitoring program during excavation of borrow pits at the Bonnet Carré North area to ensure that unrecorded cultural sites are not inadvertently damaged or destroyed.

Table 5: Summary of Cultural Resource Investigations & Section 106 Consultation for Government Furnished Borrow Areas

Borrow Area	Cultural Resource Investigations	Date Consulting Party Provided Concurrence on the Project											
		LA SHPO	Chitimacha Tribe of LA	MS Band of Choctaw Indians	Alabama Coushatta Tribe of TX	Caddo Nation of OK	Choctaw Nation of OK	Coushatta Tribe of LA	Jena Band of Choctaw Indians	Quapaw Tribe of OK	Seminole Nation of OK	Seminole Tribe of FL	Tunica-Biloxi Tribe of LA
1418/1420 Bayou Road	CEMVN Investigation	9/14/06	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
1572 Bayou Road	CEMVN Investigation	9/14/06	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
910 Bayou Road	Phase I Cultural Resource Survey by R. Christopher Goodwin	3/29/07	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
4001 Florissant	Phase I Cultural Resource Survey by R. Christopher Goodwin	1/22/07	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Dockville	CEMVN Investigation	6/6/07	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Belle Chasse Naval Air Base	Phase I Cultural Resource Survey by Hardlines Design Company	5/31/07	NR	5/7/07	NR	NR	5/3/07	NR	NR	5/3/07	NR	NR	NR
Triumph	CEMVN Investigation	11/7/05	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Maynard	Reconnaissance Survey by Earth Search, Inc.	6/7/07	NR	5/11/07	NR	NR	5/22/07	NR	NR	NR	NR	NR	NR
Cummings North	COE Investigation	10/5/06 & 5/8/07	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Churchill Farms Pit A	Reconnaissance Survey by Earth Search, Inc.	8/14/07	NR	NR	NR	NR	7/30/07	NR	NR	NR	7/30/07	NR	NR
Westbank site G	Reconnaissance Survey by Earth Search, Inc	8/14/07	NR	NR	NR	NR	7/30/07	NR	NR	NR	7/30/07	NR	NR
Bonnet Carré North	Background Research and Proposed monitoring	6/18/07	NR	6/12/07	NR	NR	5/31/07	NR	NR	NR	NR	NR	NR

NC- This organization was *not consulted* during the consultation process

NR- Information on the proposed borrow area was sent to the organization; however, the organization did not to respond. As per 36 CFR 800.3(c)(4), no response implies concurrence with the Federal undertaking.

Any undiscovered cultural resources may be damaged during borrow and construction operations. However, it is unlikely that any cultural sites would be inadvertently damaged because the borrow areas tend to be located in areas not associated with cultural sites. Furthermore, the CEMVN will instruct all construction contractors to halt excavations should cultural resources be encountered during the excavation of any borrow pit. Therefore, no direct or indirect impacts to cultural resources are expected and there is no reason to believe that the proposed action would have any positive or negative impact to cultural resources or traditional cultural properties.

3.2.9 Recreational Resources

Existing Conditions

The region in which the proposed action may take place is rich with recreation resources. The potential borrow areas, with the exception of Bonnet Carré North, have some recreational potential, but contain no recreational infrastructure or specific features and are located on privately owned land not accessible to the public.

The primary function of Bonnet Carré Spillway is to relieve flooding of the Mississippi River by diverting water from the river into Lake Pontchartrain. The corridor has historically been use by the local population for recreation. In the past decade public use of the spillway for recreational purposes has become more organized and regulated. Visitors to the spillway engage in a variety of outdoor recreation activities including boating, water skiing, fishing, crawfishing, swimming, hunting, birding, dog training, camping, picnicking, birding, bicycling, operating off-road motorcycles, all-terrain vehicles (ATV), and remote controlled (R/C) airplanes.

Use of the spillway is estimated in the hundreds of thousands visitors each year, and there are several recreation outgrants and leases issued to State and Local agencies/ organizations. The U.S. 61 Lower Guide Levee Recreation Area, an outgrant to St. Charles Parish, is heavily utilized and officially designated as a recreational area on the project lands. The recreation area currently features a two-lane concrete boat launch, paved parking for 15 vehicles with trailers, fishing docks, a metal shed pavilion, several picnic tables, primitive camping sites, and two portable toilets for visitors. Since 1972, CEMVN has issued annual use permits to the Spillway Radio Control Club Inc. to operate radio controlled model airplanes from a designated site near the spillway structure. The club has an exemplary record in the maintenance of its designated area, its safe manner of operation, and its compliance with all permit conditions. More recent outgrants include the South Louisiana Trailblazers, the ATV Club maintaining the off-road ATV trails, and New Orleans Metro Area Mountain Bike Organization, which maintains the mountain bike trail. Numerous use permits for recreational activities are issued by CEMVN on a case-by-case basis. These include permits for dog trial events, cross country running races, scout groups, and similar type activities.

Discussion of Impacts

No Action

Without implementation of the proposed action, there would be no direct or indirect impacts to recreation resources at the proposed borrow areas.

Proposed Action

With the exception of the actions in the Bonnet Carré North area, the proposed action would cause no significant direct or indirect impacts to recreation. In some cases, depending on how the end site is left, the habitat may be suitable to support some recreational activities it didn't previously support (e.g., wildlife viewing, fishing) on land that is privately owned and not accessible to the public.

In the Bonnet Carré North area, if and when possible, efforts would be made to avoid directly impacting the recreation infrastructure. In general, the proposed action would likely disrupt recreation activities temporarily during the excavation process. The excavated areas should retain water and become aquatic habitats that would provide additional fishing and birding areas. In some areas, the excavation may impact areas and trails designated for off-road (ATV) recreation. One of the proposed borrow areas appears to include the area utilized and maintained by the radio control airplane club. This site should be avoided if possible or recreated in another area.

3.2.10 Noise Quality

Existing Conditions

Some of the proposed borrow sites are located near highways, interstates, and residential areas, while others are located in rural areas. Currently, sound levels would be expected to be moderate, and the primary producers of sound would be from traffic, people, and, wildlife. Local traffic may have short-term sound levels that are high.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impact to noise would occur at the proposed areas.

Proposed Action

With implementation of the proposed action, there would be an elevation of noise levels during construction. This noise would be associated with construction equipment such as bull dozers, excavators, haul trucks, and/ or chainsaws. Portable pumps could also be used if needed. Elevated noise levels temporarily may impact nearby residents. However, these impacts are expected to be constrained to construction hours.

3.2.11 Air Quality

Existing Conditions

As of 15 June 2005, the 1-hour ozone standard for the New Orleans area (Orleans, Jefferson, St. Bernard, Plaquemines, and St. Charles Parishes) was revoked and replaced by an 8-hour standard. The New Orleans area is currently not subject to any conformity requirements of the Clean Air Act. In other words, these parishes are now in attainment of the 8-hour ozone standard and all other criteria pollutant National Ambient Air Quality Standards (NAAQS). The parishes listed above are currently in attainment of all NAAQS. This classification is the result of area-wide air quality modeling studies.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impact to air quality would occur at the proposed areas.

Proposed Action

With implementation of the proposed action, there would be short duration impacts to air quality that would result from the construction of borrow areas in Orleans, Jefferson, St. Bernard, Plaquemines, and St. Charles Parishes. These impacts would be controlled by proper best management practices (BMP). Air quality impacts would be limited to those produced by heavy equipment, and suspended dust particles could be generated by bulldozing, dumping, and grading operations. Operation of construction equipment and support vehicles would generate volatile organic compunds (VOCs), particulate matter (PM) 10, PM 2.5, nitrogen oxides (NO_x), carbon monoxide (CO), ozone (O_3) and sulfur oxides (SO_x) emissions from diesel engine combustion. The construction equipment and haul trucks should have catalytic converters and mufflers to reduce exhaust emissions. The construction equipment should have the same emissions as local traffic in the areas.

Dust suppression methods would be implemented to minimize dust emissions. Air emissions from the proposed action would be temporary and should not significantly impair air quality in the region. Due to the short duration of the construction projects, any increases or impacts on ambient air quality are expected to be short-term and minor and are not expected to cause or contribute to a violation of Federal or State ambient air quality standards.

3.2.12 Water Quality

Existing Conditions

Louisiana Department of Environmental Quality (LDEQ) regulates both point and nonpoint source pollution. Many of the proposed borrow areas are uplands with associated man-made drainage features.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impacts to water quality would occur.

Proposed Action

Despite the use of best management practices, with implementation of the proposed action there would be some disturbances to water quality in the immediate vicinity of the proposed borrow areas. The contractor would be required to secure all proper local, State, and Federal permits required for potentially impacting water quality. The CEMVN requires that construction BMPs be implemented and followed during the construction phase. Silt fencing and hay bales would be installed around the perimeter of the proposed borrow areas to control runoff. To make optimal use of available material, excavation would begin at one end of the borrow area and be made continuous across the width of the areas to the required borrow depths, to provide surface drainage to the low side of the borrow pit as excavation proceeds.

Excavation for semi-compacted fill would not be permitted in water nor shall excavated material be scraped, dragged, or otherwise moved through water. In some cases the borrow areas may need to be drained with the use of a sump pump. Upon abandonment, site restoration would include placing the stockpiled overburden back into the pit and grading the slopes to the specified cross-section figures. Abrupt changes in grade shall be avoided, and the bottom of the borrow pit shall be left relatively smooth and sloped from one end to the other. Any excavation below the depths and slopes specified shall be backfilled to the specified permissible excavation line in accordance with construction plans and specifications. Abrupt changes in borrow area alignment shall be avoided.

3.2.13 Transportation

Existing Conditions

Additional information on the potential impacts associated with transporting borrow material is being developed by CEMVN and will be discussed in future IERs.

The following is a listing of each proposed borrow area by parish and the sites' proximity to roads and highways.

- St. Bernard Parish: Bayou Road and Florissant Highway are two lane streets that intersect Highway 39 (East Judge Perez Drive), a four lane traffic corridor. The Dockville area fronts East Judge Perez Drive on the southwest. The St. Bernard Parish area is still undergoing clean-up from the devastation due to Hurricanes Katrina and Rita. As of October 2007, debris hauling trucks are still working in the area.

- Plaquemines Parish: The Belle Chasse area is on the Belle Chasse Naval Air Station property just south of Rinard Road a two way street that leads into Russel Drive, which intersects the Belle Chasse Highway. The Triumph area fronts Highway 23 in the southern end of Plaquemines Parish.

- Orleans Parish: The Maynard area fronts a service road that connects Almonaster Avenue with the Chef Menteur Highway. The Cummings North area fronts Michoud Boulevard on the west. Michoud Boulevard bisects Lake Forest Boulevard that leads to Interstate 510. The New Orleans east area is still undergoing clean-up from the devastation due to Hurricanes Katrina and Rita. As of October 2007, debris hauling trucks are still working in the area.

- Jefferson Parish: The Churchill Farms Pit A area is adjacent to an unnamed shell road on the east. The Westbank Site G area is located across the street from the Churchill area. Garbage trucks can be seen daily traversing Highway 90 in route to local landfills. The northern entrance to the proposed Churchill Farms Pit A area also intersects with Highway 90.

- St. Charles Parish: The Bonnet Carré North area has been a source for Government Furnished borrow material since 3 September 1985, according to several SIRs for the LPV Project. The only two vehicular transportation routes that pass through the spillway are Airline Highway (U.S. Highway 61) and Interstate Highway 10 (I-10). There is no access to I-10 directly from the spillway. U.S. Highway 61 is the major usable transportation corridor across the Bonnet Carré North area. River Road and CCC Road are also utilized for accessing from the east and west. Sand haulers utilize the floodway as a sand pit and haul on a daily basis. Optional transportation corridors include railroads that traverse the spillway and the Mississippi River on the south end.

Discussion of Impacts

No Action

Without implementation of the proposed action, no direct or indirect impacts to ground transportation would occur. Alternative transportation would be required to move borrow material to HPS construction sites. Material would continue to be excavated from the Bonnet Carré North area for authorized projects.

Proposed Action

With implementation of the proposed action, construction equipment such as bulldozers and excavators would need to be delivered and haul trucks would be entering and exiting the areas on a daily basis during the period of construction. The truck hauling would temporarily impede vehicle traffic and result in a minimal reduction of the level of service (LOS, a metric describing traffic volume relative to capacity) on some local road segments. Flagmen, signage, cones, barricades, and detours would be used where required to facilitate the movement of heavy equipment and local traffic on affected road segments. As previously mentioned, the proposed design of all areas would require methods to avoid exposure of adjacent traffic routes and other urban developments. Appropriate measures to ensure safety and facilitate the movement of traffic would be implemented at all approved borrow areas. The current traffic volumes at these areas is unknown.

- St. Bernard Parish: The 1418/1420, 910, 1572 Bayou Road, and 4001 Florissant Highway areas are located on a road segment in the southern portion of St. Bernard parish that doesn't receive heavy traffic loads. If the proposed borrow areas are used, material would more than likely be used for levees closest to the construction sites, minimizing the disruption of transportation through developed areas. The process used in transporting the borrow material would be similar to methods used in removing debris following Hurricanes Katrina and Rita. Ongoing clean-up of the parish utilizes haul trucks to move construction and demolition debris. Therefore, transportation is currently somewhat altered by the clean-up work. While efforts to restore existing developments in the parish are ongoing, the reduced population has also led to reduced residential congestion at the present time.

- Plaquemines Parish: The Belle Chasse area is near Highway 23, a road segment that is used by large trucks daily hauling freight to and from Venice, Louisiana to supply local industry. The area is only 8 acres in size, so truck hauling would be short lived from the area.

- Orleans Parish: The Maynard and Cummings areas are in Orleans Parish. One of the areas is located in the Almonaster-Michoud industrial district along the Gulf Intracoastal Waterway between Almonaster Boulevard and Chef Menteur Highway just west of Paris Road. The Cummings area is located between Chef Menteur Highway and I-10, just east of Paris Road and Interstate 510. The area is commercial in nature, the majority being automobile junk yards. The area sustains commercial trucking and a truck stop is located on Almonaster Avenue. Clay haulers should blend in with the local commercial traffic in the area.

- Jefferson Parish: The Churchill Farms Pit A and Westbank Site G areas are located in a rural area close to Highway 90, a heavily used commercial road on

the west bank of Jefferson Parish. Following Hurricane Katrina much of the traffic included debris disposal in surrounding land fills. The area is commercial in nature with some large landfills in the area. Currently, an unnamed road is being used to supply clay material for the Lake Cataouatche levee. Clay haulers should blend in with the local commercial traffic in the area. U.S. Highway 90 and an adjacent unnamed road would be used for accessing the area.

- St. Charles Parish: The Bonnet Carré North area, if utilized with proper pit management, should have minimal effects on transportation due to the large expanse of land and road accessibility to the individual pits.

Appropriate measures to ensure safety and facilitate the movement of traffic would be implemented at all potential borrow areas. The current traffic volume at these areas is unknown.

3.2.14 Aesthetics

Existing Conditions

The proposed borrow areas may contain distinct qualities that make them visually significant. Some of the proposed borrow areas are located in residential areas; however, most of the proposed borrow areas are remote and all are inaccessible. Therefore, they generally lack visual significance as their private land use does not allow for public access. The Bonnet Carré North area is the exception. The Bonnet Carré Spillway provides public access utilizing maintenance roads as conduits to various recreational activities (Section 3.2.9). The Bonnet Carré North maintenance roads provide differing viewsheds into both irregular- and geometrically-shaped pits surrounded by a variety of vegetation. Duckweed and water hyacinth are carried on the borrow areas' water surfaces with the occasional view of cypress stumps. Vegetation present at the edges of the pits includes smartweed, Cyprus, alligator weed, and pennywort. Maintenance activities and sand deposited as the result of spillway operations has resulted in elevation changes where willow and Baccharis thrive as backdrops and serve to visually screen the sightlines from one borrow pit to another. Visually, the Bonnet Carré Spillway area appears to contain borrow areas as defined in Figure 16-4, Appendix 16, Mississippi River Mainline Levees Enlargement and Seepage Control Study, July 1998 (a supplement to the EIS: Mississippi River and Tributaries Project Mississippi River Levees and Channel Improvement).

Discussion of Impacts

No Action

Without implementation of the proposed action, visual resources would either evolve from Existing Conditions in a natural process, or be manipulated as dictated by required Bonnet Carré Spillway operations and maintenance. The Bonnet Carré North area routinely is denuded of vegetation and sand deposits are cleared in order to meet required hydrological flow requirements for the operation of the floodway. Sand is redeposited during spillway events, and the borrow pits may be reconfigured as the result of sand deposits from floodways operations and, thus, are somewhat temporary.

Proposed Action

The proposed action involves the development of borrow pit(s) in the Bonnet Carré North area. The development of these borrow pits would involve denuding the area of vegetation and the probable development of one large borrow pit. Previously,

traditional borrow areas were excavated in a rectangular shape with no aesthetic concerns as outlined in Figure 16-1, Appendix 16, Mississippi River Mainline Levees Enlargement and Seepage Control. Maintaining the aesthetic and habitat quality along the river is a high priority. To achieve this, borrow areas should be utilized as positive environmental features. Bonnet Carré Spillway's proposed borrow area at Bonnet Carré North should be designed and constructed with gradual side slopes, irregular shapes, and have some islands, and where practical vegetation should be allowed to serve as its backdrop. Specific design guidelines for these borrow areas are found in Environmental Design Considerations for Main Stem Levee Borrow Areas Along the Lower Mississippi River, Lower Mississippi River Environmental Program, Report 4, April 1986 (Appendix E), and CEMVN operating principles.

It is recognized that some proposed borrow areas are located near the San Bernardo Scenic Byway. Current restrictions to development along Louisiana State recognized byways apply only to signage such as advertising billboards. Developmental actions such as borrow areas are not currently restricted. It is also recognized that some proposed borrow areas are adjacent to residential areas where their existence may not be considered as positive environmental features. All borrow sites should be developed as positive environmental features if practicable. Where it is not feasible to develop these borrow sites as positive environmental features, measures such as landscaping could be utilized to screen off negative viewsheds into the borrow areas.

3.3 Socioeconomic Resources

As previously indicated, the purpose of this report is to describe existing conditions, possible future of no action at the proposed sites, and potential future impacts of extracting clay materials at the sites within five parishes of the New Orleans Metropolitan Statistical Area (MSA) needed to restore and improve protection damages caused by Hurricanes Katrina and Rita. For the purpose of this IER, the No Action alternative assumes that these specific sites would not be selected for use but alternate sites will be found and the 100-year levee work would continue. The incremental impacts to significant resources of acquiring the borrow material from different, unspecified alternate sites are assumed to be zero.

3.3.1 Land, Water, Minerals, Fisheries, and Agriculture

Existing Conditions

The existing conditions include land, water, natural resources, and pasture land that may be influenced by the proposed action, and the metropolitan areas needing additional protection under the emergency recovery program. Under this proposal, approximately 1,268.5 acres of land would be used in collecting material from various sites. All of the proposed borrow sites fall within areas of the LPV, WBV, and the New Orleans to Venice, Louisiana (NOV) projects.

The proposed borrow areas in St. Bernard Parish include approximately 162.3 acres from five levied areas, including a 107-acre site at Dockville along LA Highway 39; three smaller sites of 9.4, 10.5, and 11.7 acres eastward along Bayou Road; and another 10.6 acres along the Florissant Highway in the vicinity of Yscloskey. About 127 acres are BLH forests adjacent to patches of pasture and other agricultural land.

Two levied borrow areas totaling 192 acres along the west bank of Jefferson Parish are proposed, including 110 acres of Churchill Farms Pit A south of U.S. Highway 90, 43

acres of it pasture and 67 acres forest; and another 82 acre in the Westbank G site along the south side of U.S. 90 in the vicinity of Westwego, Louisiana. Land within the Churchill Farms Pit A area is within an undeveloped levied area. The Westbank G area is immediately adjacent to residential development east of the site and undeveloped land and a canal along the west side.

Two levied Orleans Parish areas totaling 226 acres are proposed in the vicinity of the Almonaster-Michoud Industrial District and a second industrial site in New Orleans East, including 44 acres below Chef Menteur Highway, near the intersection of Almonaster Avenue and Paris Road, and a 182 acre site east of Paris Road and south of Chef Menteur Highway (U.S. Highway 90).

Proposed borrow areas in Plaquemines Parish include approximately 2.6 levied acres along the west bank of the river in the community of Triumph, Louisiana; and 8.4 levied acres adjacent to the Belle Chasse Naval Air Base in Belle Chasse, Louisiana.

In addition, proposed borrow would be taken as needed from 680 acres within the Bonnet Carré Spillway in St. Charles Parish operated and maintained by the CEMVN to reduce flood damage under high river stages along the Mississippi River. The periodic opening of the spillway has led to the collection of top soil that is a source of material used for building CEMVN hurricane protection levees and commercial purposes by local haulers. The spillway has also been used for recreation as well.

Discussion of Impacts

No Action

As a result of the unprecedented quantities of clay borrow material required to bring hurricane protection systems to the 100-year level of protection, the alternatives for completing this work are limited in scope. For the purpose of this IER, the No Action alternative is defined such that if the proposed borrow sites listed in the IER are not selected for use, an alternate site(s) would be found and the 100-year HPS work would continue. The incremental impacts to significant resources of acquiring the borrow material from a different unspecified alternate site are assumed to be zero.

If none of the proposed borrow sites are used, the land would then be available for other purposes since most are within the Metropolitan New Orleans area, and all are within the HPS. However, borrow material would have to be procured from another location in the area in order to have enough suitable borrow material to build the HPS to the 100-year level of protection.

Proposed Action

With implementation of the proposed action, non-wetland areas would be converted for use as borrow areas to be used for levee and floodwall construction in adjacent areas. The cumulative impacts and added level of protection provided would be dependent upon a variety of factors, including the latest technical information available for construction and the level of protection needed based on public concerns and related cost considerations. While small sections of Jefferson Parish would be converted from pasture for flood protection purposes, all parishes under consideration are part of the New Orleans MSA, and a relatively small amount of land is used for agricultural purposes. The conversion of land to open water areas

would potentially enhance fisheries. No areas have been identified as threatening mineral rights or timber production. The social and economic purposes of the project are designed to protect land and other resources of the local, regional, and national economy.

3.3.2 Flood Control and Hurricane Protection

Existing Conditions

With the exception of the proposed Florissant area, all proposed areas fall within existing flood and hurricane protection areas of Jefferson, Orleans, St. Bernard, Plaquemines, and St. Charles Parishes. The Florissant area is unlevied. All parishes in the vicinity have been highly sensitive to flood and hurricane damage, requiring an extensive network of structures, pumping systems, and evacuation routes. The rate of erosion in some areas appears to have declined since the 1960's, but the loss of barrier islands, erosion, and subsidence of wetlands have continued in many areas in close proximity of the project sites. Hurricanes Katrina and Rita, which occurred in August and September of 2005, respectively, created heavy damage that required an immediate effort to restore existing conditions and re-establish protected areas of the community whenever possible.

Discussion of Impacts

No Action

With implementation of this alternative, Federal HPS projects would be built to authorized or 100-year levels using Pre-Approved Contractor Furnished or other borrow areas. No action at the proposed project sites would require material from alternative sites.

Proposed Action

With implementation of the proposed action, suitable material would be excavated from the proposed borrow areas areas in order to continue raising flood protection to the authorized or 100-year level. This is the procedure used to create most of the storm surge reduction infrastructure for the Metropolitan New Orleans area.

3.3.3 Business, Industry, Employment, and Income

Existing Conditions

Most of the proposed sites are not currently used for business and industrial purposes generating employment. However, non-wetland areas in close proximity to urban areas provide value and potential income. Some of the sites were previously used as pasture for agricultural purposes, and the owners of these businesses may not have returned post-Katrina. The project sites total approximately 1268.5 acres within close proximity to urban developments of the New Orleans MSA.

Discussion of Impacts

No Action

With implementation of this alternative, Federal HPS projects would be built to authorized or 100-year levels using Pre-Approved Contractor Furnished or other borrow areas. No action at the proposed project sites would require material from alternative sites. The collection of alternative material may be an added cost to the project that would be reflected in the project construction cost. However, no

incremental impacts on business and industry relative to the proposed alternative are anticipated.

Proposed Action

None of the proposed project sites have been identified as impacting currently existing businesses, industries or related employment. If borrow material is taken from the proposed sites, they could not be developed for the use of other businesses. However, the proposed project would support business and industry by advancing the HPS, providing protection from storm surges during storm events.

3.3.4 Population and Housing

Existing Conditions

Most of the borrow sites are vacant and in unpopulated areas, with the exception of the St. Bernard sites that are directly adjacent to residential properties. While the proposed borrow areas are themselves unpopulated, they are all within project areas established for additional hurricane and flood protection, which influences the metropolitan population and housing.

Discussion of Impacts

No Action

With implementation of this alternative, Federal HPS projects would be built to authorized or 100-year levels using Contractor Furnished or other borrow areas. No action at the proposed project sites would require material from alternative sites. Material taken from alternative sites will have no incremental effect on population settlement patterns, but may further delay recovery from Hurricanes Katrina and Rita.

Proposed Action

While most of the proposed borrow areas are located within levied areas of the New Orleans MSA, the preferred alternative would not require the relocation of existing housing units or the displacement of population. While adjacent areas include urban and suburban developments, the engineering design and environmental analysis indicate no permanent adverse impacts to housing units or that would cause residential displacement. While there would be noise and transportation impacts during the excavation period, these would be temporary.

The smaller proposed borrow areas in St. Bernard Parish are adjacent to residential properties. The largest tract, 107 acres at Dockville, was previously undeveloped.

The proposed borrow site in Churchill Farms Pit A is vacant levied land that is undeveloped for residential purposes. The 82- acre site on Westbank G is vacant but located immediately adjacent to a residential development.

As previously noted, the two proposed borrow areas in Orleans Parish are in the vicinity of the Almonaster-Michoud Industrial District and a New Orleans East industrial site. No adverse impact to residential property is anticipated.

The Plaquemines Parish proposed borrow areas are levied, but have not been developed for residential purposes.

The proposed borrow area in the Bonnet Carré Spillway is used for public land and would have no impact on adjacent population and housing. The function of the spillway is to protect property in adjacent areas, including residential developments.

3.3.5 Property Values, Tax Revenues, Public Facilities, and Services

Existing Conditions

Located within the Metropolitan New Orleans area, all of the proposed borrow areas have more value than the large tracts of in close proximity to public facilities and services, by indirectly if not directly contributing to the local tax base. The close proximity of the project sites to additional urban developments adds value to the adjacent area, commercial and residential property values, public facilities and services, utilities, public transit, safe highways, streets and bridges, police and fire protection facilities and services, schools and educational services, hospitals and health care services, and the many other public facilities and services of local, state, and federal agencies.

Of the five parishes discussed in this report, the specified median value of housing units reported by home-owners ranged from $85,200 in St. Bernard Parish to as high as $110,100 in Plaquemines Parish. The "future conditions" paragraph below indicate the latest and most detailed census information specifying the value of residential property in related census tracts, although all of the sites proposed are currently on vacant property.

Discussion of Impacts

No Action

With implementation of this alternative, Federal HPS projects would be built to authorized or 100-year levels using Contractor Furnished or other borrow areas. No action at the proposed project sites would require material from alternative sites. No incremental effects on property values relative to the proposed action are anticipated.

Proposed Action

Planning for the proposed alternative has attempted to balance the cost and the need for recovery as soon as possible, with consideration of property values, public facilities and services, and the concerns of the local tax base. The proposed sites are located within existing or authorized hurricane protection systems, adding value for various purposes ranging from industrial, commercial, residential, institutional, and public purposes in the New Orleans MSA, including valuable flood control and hurricane protection purposes. The impacts of Hurricane Katrina have included damage to property values that have not yet been fully evaluated. None of the proposed sites are property used for commercial or residential property.

With the exception of the 10.6 acre site along Florissant Highway near Shell Beach, the proposed borrow areas in St. Bernard Parish covered approximately 151 acres along four sites within the LPV, adding value prior to the destruction of Hurricane Katrina. As mentioned above, about a 107-acre site at Dockville along LA Highway 39 is undeveloped. The five proposed borrow areas were identified on four census tracts with specified owner-occupied housing units with median values ranging from $66,700 to $76,000. Much of the census tracts were damaged by Hurricane Katrina.

The proposed borrow areas in Jefferson Parish include 110 acres of the Churchill Farms Pit A south of U.S. Highway 90, 43 acres of it pasture and 67 acres forest; and another 82 acre in the Westbank G site is located along the south side of U.S. 90 in the vicinity of Westwego, Louisiana immediately adjacent to existing residential development. As in the case of many areas throughout the Metropolitan New Orleans area, Westbank Site G is in close proximity to existing residential developments, with low elevations subject to frequent storm flooding. The extraction of material immediately adjacent to existing urban developments would require appropriate protection to avoid future impacts to adjacent areas and maintain property values. The two proposed borrow areas were identified on census tracts 276.01and 276.02 with specified owner-occupied housing units of median values $58,800 and $60,300 respectively.

The two proposed borrow areas in Orleans Parish total 226 acres, and are in the vicinity of the Almonaster-Michoud Industrial District and a nearby industrial site, both within the LPV. The property is within census tracts 17.30 and 17.33; the 2000 census reported that specified owner-occupied housing units had median values $54,500 and $ $87,700. Current planning indicates that the value of this property would be of greater value if used to improved flood and hurricane protection. Much of the property at the two census tracts were severely damaged by Hurricane Katrina.

Proposed borrow areas in Plaquemines Parish include 2.6 acres along the west bank of the river in the community of Triumph, Louisiana (in census tract 507); and about 8.4 acres near the Belle Chasse Naval Air Base (in census in tract 503). The 2000 census indicated that the median value of specified residential units in census 501 was $132,400; the median value of specified units of census tract 503 an estimated $107,900; and the median value of specified units in tract 507 approximately $61,500. Many of the housing units along the east bank of Plaquemines Parish were destroyed by Hurricane Katrina and have not been restored. Similar to the other proposed borrow areas, one of the functions of the plan is to improve future protection of property values, maintain public facilities and services, and sustain the tax base of communities threatened by flood damage and hurricanes.

The 680 acres at the proposed borrow area in the Bonnet Carré Spillway in St. Charles Parish has been used for divert potential flood damage caused by high river stages along the Mississippi River. The sediment created by spillway operations has been trucked to other areas for fill material. Most of census tract 601 includes the vacant spillway for its value in maintaining flood protection in urban developments downstream. It includes a small adjacent area used for including residential, commercial, and industrial purposes. The 2000 census estimated the median value of specified housing units at $85,900. As in the case of plans for the other sites, the proposed dredged material from the spillway sites could help maintain a level of protection of property values, public facilities and services, and other developments and services subject to storm damage.

3.3.6 Community and Regional Growth

Existing Conditions

Generally, desirable community and regional growth is considered growth that provides a net increase in benefits to local or regional economy, social conditions, and the human environment, including water resource development. Similarly to other references to social and economic conditions, community and regional growth has been possible due to

the unique flood and hurricane protection systems which are dependent on borrow areas. The proposed project sites planned are to improve flood and hurricane protection.

Discussion of Impacts

No Action

With implementation of this alternative, Federal HPS projects would be built to authorized or 100-year levels using Contractor Furnished or other borrow areas. The no action alternative would require finding of alternative borrow sites in different areas. No incremental impacts on community and regional growth are anticipated.

Proposed Action

The preferred alternative would support community and regional growth by advancing the HPS, providing protection from storm surges during storm events.

3.3.7 Health and Safety

Existing Conditions

The immediate project sites do not include health and safety facilities providing related services.

Discussion of Impacts

No Action

With implementation of this alternative, Federal HPS projects would be built to authorized or 100-year levels using Contractor Furnished or other borrow areas. The no action alternative would require finding of alternative borrow sites in different areas. The no action scenario would require alternative borrow locations, which possibly would raise construction costs. However, no incremental impacts on health and safety are anticipated.

Proposed Action

While the proposed borrow areas would be used for improvements in the larger community, including facilities for health and safety, none of the sites are immediately adjacent to such facilities. Implementation of the sites would be subject to Federal, State, and Local safety and health regulations.

If the borrow sites are not backfilled and are instead converted into large ponds, there may be an increased presence of mosquitoes in the area. While the proposed borrow areas have the potential to become mosquito breeding areas, the amount of surface acres of water is considered to be small compared to surrounding wetlands. Mosquito control would be taken care of by the parish as part of the parish-wide mosquito control program.

CEMVN is investigating the feasibility of fencing Government Furnished borrow sites used for HPS projects.

3.3.8 Community Cohesion

Existing Conditions

The proposed project sites are unpopulated, but some are located adjacent to residential development. There is some public concern about the effect that digging borrow pits will have on surrounding neighborhoods. However, the proposed project is designed to benefit areas beyond the immediate project sites, and also benefit community cohesion of the larger community of the Metropolitan New Orleans area, and the nation at large.

Conditions brought about by water resource development can impact community cohesion in different ways. The basic objectives of water resource development have essentially been to provide addition protection through flood control and hurricane protection, improved navigation, environmental restoration, and recreation through civil works as needed by the local, region, and nation. Public involvement with the community is part of this process.

Discussion of Impacts

No Action

With implementation of this alternative, Federal HPS projects would be built to authorized or 100-year levels using Contractor Furnished or other borrow areas. The no action alternative would require finding of alternative borrow sites in different areas. No incremental impacts relative to the proposed action are expected.

Proposed Action

The proposed action would support community cohesion by advancing the HPS, which provides protection from storm surges.

Some landowners in the vicinities of the borrow sites, in St. Bernard Parish specifically, have expressed concern about the effects of digging borrow pits on their communities. These landowners feel that the removal of borrow material from their neighborhoods would have a detrimental impact on community cohesion.

The proposed borrow areas discussed in IER #18 would be acquired by the Government at a fair market value based upon best and future use of the property. This action would be necessary to provide a safer place for the public to live and do business. The action would be taken for the greater good of the people of the New Orleans Metropolitan area.

3.4 Hazardous, Toxic, and Radioactive Waste

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

An ASTM E 1527-05 Phase I Environmental Site Assessment (ESA) was completed for the proposed borrow areas. The Phase I ESA documented the Recognized Environmental Conditions (REC) for the proposed project areas. If a REC cannot be avoided, due to the

necessity of construction requirements, the CEMVN may further investigate the REC to confirm presence or absence of contaminants, actions to avoid possible contaminants. Federal, State, or Local coordination may be required. Because CEMVN plans to avoid RECs the probability of encountering HTRW in the project area is low.

A copy of the Phase I ESA referenced below will be maintained on file at CEMVN and are incorporated herein by reference. Copies of these reports are available by requesting them from CEMVN, or accessing them at www.nolaenvironemtal.gov.

HTRW Land Use Histories and Phase I HTRW ESAs have been completed for all of the proposed borrow areas:

- The Phase I ESA for 1418/1420 Bayou Road was completed on 13 October 2006. No RECs were identified.

- The Phase I ESA for 1572 Bayou Road was completed on 13 October 2006. No RECs were identified.

- The Phase I ESA for 910 Bayou Road was completed on 4 April 2007. The former agricultural use of the property may have left residues of pesticides or herbicides in the soil.

- The Phase I ESA for 4001 Florissant was completed on 8 November 2007. No RECs were identified.

- The Phase I ESA for Dockville was completed on 21 May 2007. There was evidence of past oil drilling operations on the site. Soil and groundwater sampling was recommended. The locations of the abandoned drill sites were mapped, and the area would be avoided during construction activities.

- The Phase I ESA for Belle Chasse was completed on 18 June 2007. The following three possible RECs were found near the study site:

    1. Historical concerns were noted related to the likely use of herbicides and insecticides on a golf course adjoining the property. Soil and groundwater sampling was recommended. The REC area would be avoided.

    2. On-site concerns were noted concerning former oil drilling operations on the southeastern and western portions of the site. Soil and groundwater sampling was recommended. The RECs would be avoided.

    3. Off-site concerns were noted concerning numerous gas and oil wells located in the Stella Oil and Gas Field, east and southeast of the subject site. Soil and groundwater sampling was recommended. Sampling will not be conducted because the RECs are off-site and would not be impacted by construction.

- The Phase I ESA for Triumph was completed on 4 November 2005. No RECs were identified.

- The Phase I ESA for Maynard was completed on 4 June 2007. Soil and groundwater sampling was recommended on the western portion of the site because of concerns regarding the Fletrich Transportation Systems facility that

was formerly located near the site. Sampling will not be conducted because the RECs are off-site and would not be impacted by construction.

- The Phase I ESA for Cummings North was completed on 4 April 2007. There were potential onsite concerns from illegal solid waste dumping on the western portion of the subject site. There were also potential offsite concerns because of the current and historical use of the Recovery Waste Management facility, which is located southeast of the subject site, across Chef Menteur Highway. The facility is reportedly utilized as a Type II landfill. Additional assessment of the property was recommended. The REC area would be avoided.

- The Phase I ESA for Churchill Farms Pit A was completed on 22 June 2007. Three RECs were found: a stockpile of nitromethane, above-ground storage tanks for diesel fuel, and an old oil well site. The location of the RECs were mapped and the areas would be avoided.

- The Phase I ESA for Westbank Site G was completed on 21 July 2007. Two abandoned oil/ gas wells were identified. No other RECs were found. The locations of the RECs were mapped and the areas would be avoided.

- The Phase I ESA for Bonnet Carré North was completed on 23 July 2007. The following three possible RECs were found near the study site:

    1. There are at least seven pressurized pipelines in the area that transfer petroleum, butadiene, ethylene, propane, propylene, and butane. As long as the borrow activity does not impact the pipelines no problems should be anticipated from this source.

    2. There are several plugged and abandoned oil wells on the Spillway property. The locations of these areas were mapped and would be avoided during borrow activities.

    3. Some concern was noted regarding the possible presence of contaminants in the soil within the floodway because water from the Mississippi River flows over the site during spillway openings. The river water has some contamination, mainly metals. Sand haulers remove the topsoil within the top four to five feet daily during borrow excavation and provide the sand to local parishes.

4. Cumulative Impacts

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. Cumulative impact is defined as the "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR §1508.7)." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Borrow material has been obtained in the past by CEMVN for HPS and other projects in southeast Louisiana. CEMVN has been working at an accelerated schedule to rehabilitate the HPS system after Hurricanes Katrina and Rita, and to build the system to 100-year level of protection by June 2011. Over 100,000,000 cubic yards of borrow material is estimated to be needed to complete the 100-year level of protection. Borrow

material will also be needed to perform levee lifts and maintenance for at least 50 years after construction is completed. CEMVN is in the process of implementing construction projects to raise the hurricane protection levees associated with the federal LPV, WBV, and NOV Hurricane Protection projects to authorized elevations. This includes modifications to flood protection projects not covered by this IER. Levee improvements throughout the LPV and WBV projects would require substantial amounts of borrow material, and some of the borrow pits needed have been identified in this document to provide adequate material in proximity to proposed flood protection projects. In addition to modifying and raising existing structures, three new outfall canal closure structures are proposed at the 17th Street, Orleans Avenue, and London Avenue Outfall Canals in the Orleans East Bank Basin, and a new closure structure is proposed for within the IHNC area. All of these flood protection projects are currently in the planning and design stages and impacts from these component projects will be addressed in separate IERs.

Other CEMVN projects such as Morganza to the Gulf, Donaldsonville to the Gulf, Larose to Golden Meadows, Grand Isle non-Federal levees, Plaquemines West Bank non-Federal levees, and other ongoing civil works investigations will require suitable borrow material. State and Local levee and floodwall construction efforts will require borrow material as well. Pre-Approved Contractor Furnished borrow areas are also being investigated and utilized to supply large quantities of material for levee and floodwall projects.

The construction of the proposed borrow areas would have short-term cumulative affects on transportation. It is anticipated that over 100,000,000 cubic yards of material would be needed to raise levee elevations regionally to meet the needs of the HPS. It is unknown the total number of truck trips required or haul routes for the movement of this quantity of material, but cumulative short-term impacts to transportation are expected to occur. Additional information related to transportation impacts is being collected and will be discussed in future IERs.

Even though minimal in size when compared to the extent of forested and pasture areas directly and indirectly affected by previous development activities, the excavation and use of the proposed borrow material for HPS construction would contribute cumulatively to land alteration and loss within the New Orleans Metropolitan area. After borrow area excavation, the land may be converted to ponds and small lakes, making it unsuitable for farming, forestry, or urban development in the reasonably foreseeable future. Habitat would be changed to favor aquatic and semi-aquatic species over the terrestrial ones that now occupy the areas. Borrow areas that do not retain water would be colonized by vegetation and woody plants, which would favor terrestrial species. This would attract the same species that are currently found in the areas.

Based on historical human activities and land use trends in this region, it is reasonable to anticipate that future activities would further contribute to cumulative degradation of land resources. It is anticipated that through efforts taken to avoid and minimize adverse effects of this Federal action and the mandatory implementation of a mitigation plan that functionally compensates unavoidable remaining impacts the proposed borrow areas would not result in substantial direct, secondary or cumulative adverse impact on the environment. The mitigation plan is discussed in Section 7.

5. Selection Rationale

The proposed action consists of excavating Government Furnished borrow areas in the New Orleans Metropolitan area. CEMVN determined that the proposed work would have no impact upon jurisdictional wetlands, fisheries, T&E species, cultural resources,

recreational resources, water quality, and aesthetics, and no significant impact on BLH, non-wetland/ upland resources, wildlife, prime and unique farmland, noise quality, air quality, transportation, and socioeconomics. There is an identified need for over 100,000,000 cubic yards of borrow material, and the proposed action meets approximately 18% of this demand. The estimated amounts of borrow material are projected quantities, and subject to change based on geotechnical analysis. Because of this need, CEMVN will need to investigate acquiring all potentially viable areas for the next few years. Contractor Furnished borrow is an option that will be explored in IER 19. Barging or utilizing railroad to transport clay material from a remote area will also be discussed as an alternative in IER 19.

6. Coordination and Consultation

6.1 Public Involvement

Extensive public involvement has been sought in preparing this IER. The projects analyzed in this IER were publicly disclosed and described in the Federal Register on 13 March 2007 and on the website www.nolaenvironmental.gov. Scoping for this project was initiated on 12 March 2007 through placing advertisements and public notices in USA Today and The New Orleans Times-Picayune. Nine public scoping meetings were held throughout the New Orleans Metropolitan area to explain scope and process of the Alternative Arrangements for implementing NEPA between 27 March and 12 April 2007, after which a 30 day scoping period was open for public comment submission. Additionally, CEMVN is hosting monthly public meetings to keep the stakeholders advised of project status. The public is able to provide verbal comments during the meetings and written comments after each meeting in person, by mail, and via www.nolaenvironmental.gov (Appendix B).

The public comment period for this IER began on 28 October 2007, and ended on 4 December 2007. In addition to being discussed at various public meetings starting in July 2007, borrow related-issues were specifically addressed at a public meeting on 10 December 2007. Public comments received during the comment period and at the 10 December 2007 public meeting can be found in Appendix B. Additional borrow IERs will be discussed at future public meetings.

6.2 Agency Coordination

Preparation of this IER has been coordinated with appropriate Congressional, Federal, State, and Local interests, as well as environmental groups and other interested parties. An interagency environmental team was established for this project in which Federal and State agency staff played an integral part in the project planning and alternative analysis phases of the project. Members of this team are listed in Appendix C, and correspondence between governmental agencies and CEMVN are found in Appendix D. This interagency environmental team was integrated with the CEMVN PDT to assist in the planning of this project and to complete a mitigation determination of the potential direct and indirect impacts of the proposed action. Monthly meetings with resource agencies were also held concerning this and other CEMVN IER projects. The following agencies, as well as other interested parties, are receiving copies of this draft IER:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Department of the Interior, National Park Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service
Louisiana Advisory Council on Historic Preservation

Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer

LDNR reviewed the proposed action for consistency with the Louisiana Coastal Resource Program (LCRP). All proposed borrow activities discussed in this document were found by LDNR to be consistent with the LCRP (Table 6).

Table 6: LDNR Coastal Zone Consistency Determination Concurrence

Proposed Borrow Area	LDNR LCRP Consistency Determination
1418/1420 Bayou Road	12 March, 2007
1572 Bayou Road	12 March, 2007
910 Bayou Road	12 March, 2007
4001 Florissant	12 March, 2007
Dockville	12 March, 2007
Belle Chasse	25 September, 2007
Triumph	July, 2006
Maynard	25 September, 2007
Cummings North	25 September, 2007
Churchill Farms Pit A	25 September, 2007
Westbank Site G	22 July, 2007
Bonnet Carré North	22 July, 2007

CEMVN received a draft Coordination Act Report from the USFWS on 25 October 2007 (Appendix D). Recommendations of the USFWS, in accordance with the Fish and Wildlife Coordination Act, include:

Recommendation 1: "[CEMVN] and local sponsor shall provide 197.84 AAHUs to compensate for the unavoidable, project-related loss of forested lands. The Service, National Marine Fisheries Service, Louisiana Department of Wildlife and Fisheries, and Louisiana Department of Natural Resources should be consulted regarding the adequacy of any proposed alternative mitigation sites."

CEMVN Response 1: CEMVN will work with USFWS, NMFS, LWLF, and LDNR to address mitigation issues.

Recommendation 2: "The protocol to identify and prioritize borrow sources provided in our August 7, 2006 Planning-aid letter [Appendix D]… should continue to be utilized as a guide in locating future borrow-sites."

CEMVN Response 2: Concur.

Recommendation 3: "Any proposed change in borrow site features, locations, or plans shall be coordinated in advance with the Service, NMFS, LDWLF, and LDNR."

CEMVN Response 3: CEMVN will work with USFWS NMFS, LWLF, and LDNR if there are any proposed changes.

Recommendation 4: "The project's first Project Cooperation Agreement (or similar document) shall include language that includes the responsibility of the local-cost sharer to provide operational monitoring, and maintenance funds for mitigation features."

CEMVN Response 4: Concur.

Recommendation 5: "Forest clearing associated with borrow site preparation should be conducted during the fall or winter to minimize impacts to nesting migratory birs, when practicable."

CEMVN Response 5: Concur.

Recommendation 6: "If a proposed borrow site is changed significantly or excavation is not implemented within one year, we recommend that [CEMVN] notify the contractor to reinitiate coordination with this office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat."

CEMVN Response 6: Concur.

7. Mitigation

All non-jurisdictional BLH forest impacts were assessed by the USFWS and CEMVN under NEPA, Fish and Wildlife Coordination Act, and WRDA 1986 requirements, and mitigation for those impacts would be obtained.

All non-jurisdictional BLH forest impacts were assessed by the USFWS and CEMVN under the NEPA, Fish and Wildlife Coordination Act, and under Section 906 (b) WRDA 1986 requirements and mitigation for those impacts would be completed. Field data were collected by CEMVN and USFWS Biologists at the following proposed forested borrow areas: 1418/1420 Bayou Road, 1572 Bayou Road, Dockville, Maynard, Cummings North, Westbank Site G, and existing data from adjacent land was used for the Churchill Farms Pit A and Belle Chasse. Quantitative analysis, utilizing existing methodologies for water resource planning, has identified the acreages and habitat type for the direct or indirect impacts of implementing the proposed action. A Habitat Assessment Model (HAM) was run for each area identified as having unavoidable impacts. The model provides the AAHUs needed to mitigate for the proposed impacts (Table 7).

Under the NEPA Alternative Arrangements process, mitigation planning and implementation for unavoidable impacts will be completed under a separate investigation and discussed in future IERs currently being written.

Table 7: BLH AAHUs of Mitigation Needed

Proposed Borrow Area	Parish	BLH impacted (acres)	AAHUs Needed
1418/1420 Bayou Rd.	St. Bernard	13.0	6.20
1572 Bayou Rd.	St. Bernard	3.7	1.79
Dockville	St. Bernard	16.0 young BLH	6.72
		57.8 BLH	37.06
		24.9 BLH w/ cypress	17.46
Belle Chasse	Plaquemines	8.0	3.68
Maynard	Orleans	44.0	14.65
Cummings North	Orleans	182.0	54.14
Churchill Farms Pit A	Jefferson	29.9	10.62
Westbank Site G	Jefferson	82.0	45.52
Total		461.3	197.84

Mitigation IERs will be prepared documenting and compiling the unavoidable impacts discussed in each IER. The mitigation IERs will implement compensatory mitigation as early as possible. All mitigation activities will be consistent with standards and policies established in the Clean Water Act Section 404 and the appropriate USACE policies and regulations governing this activity.

A draft CED will be prepared once the IERs are completed documenting and compiling these unavoidable impacts and those for all other proposed actions within the LPV and WBV which are being analyzed through other IERs. Mitigation planning is being carried out for groups of IERs, rather than within each IER, so that large mitigation efforts could be taken rather than several smaller efforts, increasing the relative economic and ecological benefits of the mitigation effort. The mitigation IER and draft CED will be made available for public review and comment.

8. Compliance with Environmental Laws and Regulations

Construction of the proposed action would not commence until the proposed action achieves environmental compliance with all applicable laws and regulations, as described below.

Environmental compliance for the proposed action will be achieved upon coordination of this IER with appropriate agencies, organizations, and individuals for their review and comments; USFWS and NOAA National Marine Fisheries Service (NMFS) confirmation that the proposed action would not adversely affect any T&E species, or completion of Endangered Species Act Section 7 consultation (Table 4); Louisiana Department of Natural Resources (LDNR) concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LCRP (Table 6); coordination with the LASHPO (Table 7); receipt and acceptance or resolution of all Fish and Wildlife Coordination Act recommendations; and receipt and acceptance or resolution of all Louisiana Department of Environmental Quality comments on the air quality impact analysis documented in the IER.

9. Conclusions

9.1 Interim Decision

The proposed action consists of excavating twelve borrow areas that are located in non-jurisdictional wetland areas that would have no significant effect on cultural resources or threatened and endangered species. CEMVN has assessed the environmental impacts of the proposed action and has determined that the proposed action would have unavoidable impacts to a total of 461.3 acres and 197.84 AAHUs of non-jurisdictional BLH. Mitigation for unavoidable impacts to non-jurisdictional BLH will be described under a separate IER. CEMVN determined that the proposed work would have no impact upon jurisdictional wetlands, fisheries, T&E species, cultural resources, recreational resources, water quality, and aesthetics, and no significant impact on BLH, non-wetland/ upland resources, wildlife, prime and unique farmland, noise quality, air quality, transportation, and socioeconomics.

9.2 Prepared By

IER # 18 was prepared by Michael Brown, Biologist, NEPA Compliance, with relevant sections prepared by Danielle Tommaso - Environmental Resources Specialist; Dr. Chris Brown - HTRW; Dr. Valerie McCormack - Cultural Resources; Hope Pollmann - Recreational Resources; Richard Radford - Aesthetics; Robert Lacy - Socioeconomics; Gib Owen - Environmental Team Leader; and Soheila Holley - Senior Project Manager.

The address of the preparers is: U.S. Army Corps of Engineers, New Orleans District; Planning, Programs, and Project Management Division, CEMVN-PM; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

9.3 Literature Cited

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Tables

Figures

Appendices

Appendix A: List of Acronyms and Definitions of Common Terms

AAHUs: Average Annualized Habitat Units
ASTM: American Society of Testing and Materials
ATV: All-terrain vehicles
BCB: Belle Chasse Naval Air Base
BMP: Best Management Practices
BLH: Bottomland Hardwood
CEQ: Council on Environmental Quality
Clay Classifications: CH: Fat clay/ CL: lean clay/ ML: Silt
CRM: Cultural Resource Management
CZM: Coastal Zone Management
CED: Draft Comprehensive Environmental Document
EA: Environmental Assessment
EIS: Environmental Impact Statement
FONSI: Finding of No Significant Impact
HAM: Habitat Assessment Model
HPS: Hurricane Protection System (aka, Hurricane and Storm Damage Reduction System)
HTRW: Hazardous, Toxic, and Radioactive Waste
IER: Individual Environmental Report
IHNC: Inner Harbor Navigation Canal
IPET: Interagency Performance Evaluation Team
LDNR: Louisiana Department of Natural Resources
LDWF: Louisiana Department of Wildlife and Fisheries
LOS: Level of service
LPV: Lake Pontchartrain and Vicinity Hurricane Protection Project
MSA: Metropolitan Statistical Area
NAAQS: National Ambient Air Quality Standards
NEPA: National Environmental Policy Act
NMFS: NOAA National Marine Fisheries Service
NOV: New Orleans to Venice Hurricane Protection Project
PDT: Project Delivery Team
PI: Plasticity index
R/C: Remote controlled
ROD: Record of Decision
SIR: Supplemental Information Report
SPH: Standard Project Hurricane
T&E: Threatened or Endangered Species
UNOP: Unified New Orleans Plan
USACE: U.S. Army Corps of Engineers
    CEMVN: Mississippi Valley Division, New Orleans District
USDA: U.S. Department of Agriculture
    NRCS: Natural Resources Conservation Service
USFWS: U.S. Fish and Wildlife Service
WBV: West Bank and Vicinity Hurricane Protection Project
WRDA: Water Resources Development Acts (various years)

Appendix B: Public Comments and Summary of Responses

Letter # 1: Louis Barrett, 26 November 2007

Page 1 of 4

Louis Barrett
2533 Bayou Rd.
St. Bernard, La. 70085

November 26, 2007

Mr. Gib Owen
U.S. Army Corps of Engineers
PM-RS
PO Box 60267
New Orleans, LA 70160-0267

Re: Individual Environmental Report #18

Dear Mr Owen:

Please accept my following comments and concerns regarding the U.S. Army Corps of Engineers Individual Environmental Report #18. As a St. Bernard Parish resident, my comments are primarily constrained to its effects on St. Bernard Parish.

While recognizing that hurricane protection for the region is vital and urgent; I am also seriously concerned of the impact on the community by several parts of IER#18 as currently stated.

General Comments

First and foremost, the logic of cannibalizing the area within the levees by excavating large borrows pits in this protected area is seriously flawed. Four of the five sites in St. Bernard listed in IER#18 are within the levee protection area. Digging large borrow pits in the eastern part of St. Bernard Parish only accelerates the destruction of this coastal parish instead of preserving, restoring, and rebuilding it. The Corps of Engineers should be taking the position of being a premier guardian of the coastal parishes, instead of a participant in their destruction. LB 1

The public participation for this and other related projects is inadequate. Information about this IER and the Corps of Engineers related projects has not reached the majority of the people in the community. Notification of public meetings has also been inadequate. These notices should be much more than a small ad in newspapers. Information on these projects is difficult to find on the Corps of Engineers websites and especially so for anyone with less than proficient computer skills. Also, many concerned people in the community are preoccupied with rebuilding their lives and property and do not have the time to devote to searching for information on these projects. The COE and local government should reach out to the people in the community to inform them of the impact of these projects. The public comment period should be extended bearing these facts plus given the fact that the comment period is over the Thanksgiving holidays. LB 2 LB 3

1

LB 1: CEMVN's mission is to ensure the safety of the people of southern Louisiana and protect the infrastructure. In order to do this, large quantities of borrow material are needed. CEMVN is investigating borrow sources from all over the New Orleans Metropolitan area and from other states. Additionally, three avenues to obtain borrow material are being pursued: Government Furnished (GF) (Government acquires rights to property), Pre-Approved Contractor Furnished (CF) (landowner and construction contractor work in partnership to provide borrow material), and Supply Contract (SC) (corporation delivers borrow material to a designated location for use by construction contractor). See LAC 27 – LAC 29. A companion effort is underway via the Louisiana Coastal Protection and Restoration (LaCPR) study to determine reasonable and effective ways to restore the wetlands of south Louisiana.

LB 2: The public has had the opportunity to give input about proposed HPS work throughout the planning process through the mail or www.nolaenvironmental.gov, as well as at public meetings. CEMVN has completed 37 public meetings to discuss the proposed HPS since starting the planning process in March 2007. CEMVN sends out public notices in local and national newspapers, news releases (routinely picked up by television and newspapers in stories and scrolls), and mail notifications to stakeholders for each public meeting. In addition, www.nolaenvironmental.gov was set up to provide information to the public regarding proposed Hurricane Protection System (HPS) work. CEMVN has recently started sending out e-mail notifications of the meetings to approximately 300 stakeholders who requested to be notified by this method. Public meetings will continue throughout the planning process. Additionally, IER 19 was made available for a 30-day public comment period and a public meeting (on 10 December 2007) regarding borrow issues was held at the request of the public.

LB 3: This addendum provides stakeholders with another 30-day period to provide comments on the proposed action.

● Page 2

IER #18 does not consider the cumulative effects of the total "borrow pit" impact on the area. It does not address the future sites being considered through future IER's or local permitting procedures. The impact of this IER cannot be judged without addressing the cumulative effect of all existing and planned borrow pits. LB 4

The practice and procedures by the COE of using the Government Furnished Borrow Material vs. the Pre-Approved Contractor Furnished Borrow Material procurement methods tend to promote and encourage landowners to sell their property for higher returns through contractors. This practice has opened the door for the "mud brokers" who are searching for landowners willing to sell their property. Many of the landowners participating in the pre-approved contractor supplied material are former residents who have not returned to live in St. Bernard and no longer have a vested interest in the community. LB 5

Specific Comments by Section

1.5 Public Concerns: The few public concerns listed in this section are not addressed in the rest of the report. The public concerns of not excavating in the coastal parishes and backfilling borrow pits is not addressed elsewhere in this report. LB 6

1.6 Data Gaps and Uncertainties: This is a huge gap that has not been determined. Transportation routes will affect traffic congestion, the cost of the borrow material, damage to roadways, and the aesthetics in the community. Many of these borrow areas are on Bayou Rd., which is a state sub-standard highway and has been blocked by the La. Dept. of Transportation in two locations to confine the traffic to local traffic only. This highway is also listed as part of the San Bernardo Scenic Byway by the tourism commission. LB 7

2.1 Alternatives Development and Preliminary Screening Criteria: In IER#19 mention is made that borrow pits would be backfilled in parishes that have ordinances requiring backfilling. Why isn't this considered in IER#18? LB 8

It is stated that Part V (Appendix D) of the Environmental Design Considerations for Main Stem Levee Borrow Areas Along the Lower Mississippi River Report 4: will be referred to when designing the borrow areas. This report states that the maximum depths of 7 to 10 feet are recommended. However, the drawings of the sites indicate design depths of 20 feet. This is quite a discrepancy. LB 9

3.1 Environmental Setting: The soil data, especially the information in Table 1, is not meaningful unless one is technically familiar with this area of expertise. What significance does the shrink-swell potential have? What is the difference between Shriever clay and Cancienne silt loam? LB 10

3.2 Significant Resources: Information referenced in this section is very inaccessible to most people. The information should be explained instead of referenced to a website digital library. Also, some of these areas are within historical sites and communities, how can the recreational resources and aesthetics not be impacted? LB 11 11A

LB 4: See LAC 19. Cumulative impacts analysis is an on-going effort. Future IERs and the Comprehensive Environmental Document (CED) will provide additional information on the cumulative impacts as information is obtained.

LB 5: Because of the large quantity of borrow material needed, CEMVN is investigating obtaining borrow from all reasonable and practicable methods (see LAC 7). Any properties acquired by the USACE or its non-Federal sponsor for use as a government furnished borrow site would be done at fair market value based upon highest and best use of the property.

LB 6: CEMVN does not intend to use existing wetlands for borrow at this time, but will re-evaluate this practice if non-wetland sites become more difficult to obtain. CEMVN is currently considering the feasibility of backfilling borrow sites.

LB 7: A task order was issued to David Miller & Associates on 5 December 2007 to complete a comprehensive transportation study of the HPS study area. This is an acknowledged data gap in the current documents which will be corrected in future documents.

LB 8: The feasibility of backfilling borrow areas for Government Furnished sites is currently being investigated by CEMVN.

LB 9: CEMVN is using Report 4 for designing borrow pits and will incorporate Environmental considerations where feasible. For example, 10 feet is the recommended depth for borrow pits, but this depth requires a trade-off that there will be more acres of land excavated for borrow if pits do not maximize available clay materials below the 10-foot depth. See http://www.mvn.usace.army.mil/ED/edsp/index.htm for more information.

LB 10: See LAC 2, LAC 30, and LAC 37-LAC 40. The information presented in this table was determined to be not relevant to the IER and was removed from the document.

LB 11: Documents are referenced in an effort to keep each IER as concise as possible. Many of the referenced documents will be pertinent to several IERs, so it is reasonable to have these references kept in a common location. Hard copies of individual reports can be provided upon request.

LB 11A: Excavation of any of the proposed borrow areas would not alter the characteristics of historic properties nor change their inclusion in the National Register of Historic Places, if applicable. While the addition of borrow areas would alter the existing viewscape at particular points along the byway, several borrow pits already exist along this byway in the vicinity of the proposed borrow areas. The proposed borrow areas located at 1418/1420 and 1572 Bayou Road are set at least 100 yards from the road and lie behind houses or vegetation. The public has been informed of the proposed project by news releases in local and national newspapers.

● Page 3

Also, without on site investigation by properly trained professionals, how can threatened and endangered species not be possibly impacted? LB 12

3.2.2 Non-Jurisdictional Bottomland Hardwood Forest: This section implies that if forced drainage features are in place that wetlands can be converted to non-jurisdictional areas. Is this true? LB 13

3.2.8 Cultural Resources: Contrary to the statement that there are no properties listed on the National Register of Historic Places or sites eligible for listing, there are numerous historical sites on Bayou Road within close proximity of the borrow sites. These historical sites as listed by the St. Bernard Tourist Commission and are listed on their brochure at the following link:

http://www.visitstbernard.com/pdf/St.%20Bernard%20Brochure%20For%20Website.pdf

The 1922 Crevasse, Sebastopol Plantation, The Old Courthouse, Ducros Museum, Los Isleños Museum & Village, Creedmoor Plantation, Magnolia Plantation, St. Bernard Cemetery & Church, and Kenilworth Plantation are all sites of historical significance within this area. While all may not be on the National Register of Historical Places, they have been documented by the St. Bernard Tourist Commission, researched by the parish historian, and are considered historically significant. LB 14

3.2.10 Noise Quality: It is stated that these are in semi-residential areas. What constitutes semi-residential? Three sites on Bayou Rd. are also adjacent to developed housing communities as seen in the aerial photos. (just zoom in) The pits in these areas would be an attractive nuisance to a neighborhood. Some of these sites are alongside the backyard of many residences for the length of the street and one in particular is between two residential streets. Have the people living close to these sites been informed that there would be high noise levels? LB 15

3.2.11 Air Quality: Same comment as above; have the people living in the communities been notified? LB 16

3.2.13 Transportation: This area of St. Bernard Parish on Bayou Road has essentially been cleaned with little debris hauling activity remaining. Also, a large majority of the residents in this area of Bayou Road have returned and rebuilt. Numerous dump trucks in this area will be an impact on this local sub-standard roadway. LB 17

3.2.14 Aesthetics: I feel that the proposed borrow pits in St. Bernard Parish will have significant visual impact, as they are all located adjacent to local highways or roadways and some in close proximity to residential housing. An example is the TFG site at Creedmoor on Hwy 46 where one can see an unsightly fenced borrow site. LB 18

3.3.1 Land, Water, Minerals, Fisheries, and Agriculture: Under the Proposed Action section, it is stated that a relatively small amount of land is used for agricultural LB19

LB 12: Onsite investigations were made by professionals (biologist, recreation planner, and archeologist) for each site. USFWS was consulted for each proposed borrow site and concurred with CEMVN staff determination that no significant impacts would occur to any threatened or endangered (T&E) species or areas designated as critical habitat for a T&E species.

LB 13: Historic drainage patterns in this area have resulted in the existing bottomland hardwood forest (BLH) to be considered as non-jurisdictional wetland by the CEMVN Regulatory Branch. Impacts to the BLH will be mitigated for as required by the Water Resources Development Act (WRDA) of 1986, which requires all BLH to be mitigated for regardless of its wetland status.

LB 14: Based upon CEMVN archaeological investigation, no known cultural resources were identified that would be impacted by the proposed action. The Louisiana State Preservation Officer (LaSHPO) concurred with this determination.

LB 15: Semi-residential refers to the frequency of vacant land mixed in with the developed land in the vicinity. Existing borrow pits in the area are already located adjacent to pre-Katrina mobile home parks and residential subdivisions. The proposed borrow pits are not expected to cause any attractive nuisance issues not already experienced within the area. Noise impacts are expected to be temporary in nature. The public has been informed of the proposed project by news releases in local and national newspapers.

LB 16: Public notification has occurred as part of the public involvement phase of this project.

LB 17: CEMVN recognizes that there will be a temporary transportation impact during construction of the proposed action. A task order was issued to David Miller & Associates on 5 December 2007 to complete a comprehensive transportation study of HPS activities.

LB 18: Planting vegetation to screen the borrow pits could help reduce the visibility of the borrow pits from the road and adjacent residences.

LB 19: The statement that "a relatively small amount of land is used for agricultural purposes" applies to both pre and post-Katrina conditions. As it stands, agricultural endeavors are a small part of the economy of the New Orleans Metropolitan Statistical Area (MSA), relative to other industries.

● Page 4

purposes. Farming operations are not instantaneous endeavors and many of these operations were destroyed by Katrina. Many of these people have not resumed the agricultural operations for various reasons at this time, but will resume as they return and rebuild. LB 19

3.3.3 Business, Industry, Employment, and Income: I question the statement that none of the sites have been identified as impacting businesses. These sites should be considered for future development and businesses in the parish, especially at this time so soon after Katrina. Many businesses haven't reopened. Also, agricultural activities should be considered as businesses. LB 20

3.3.4 Population and Housing: Under proposed action it is stated that the smaller proposed borrow site areas of St. Bernard Parish were previously used for housing, but vacant prior to Hurricane Katrina. This is untrue. These areas were occupied prior to Katrina and are either occupied now or are being rebuilt. LB 21

3.3.7 Health and Safety: There is a health impact. Especially since the sites in St. Bernard Parish that are close to residential areas. The pits would increase the area for mosquito breeding and thus a health concern. St. Bernard already has concerns and problems with mosquito control which would be exacerbated with more ponds close to residential areas. LB 22

The pits in these areas would also be an attractive nuisance to a neighborhood and dangerous to children. LB 23

3.3.8 Community Cohesion: The statement that the proposed sites are located in unpopulated areas is false. All the sites in St. Bernard Parish, except the Florissant site, are located adjacent to people's property and houses. LB 24

It is also stated that public involvement with the community is part of this process. Have the residents of these neighborhoods been notified that a borrow pit is planned next to their houses? Each resident in close proximity of these sites should be personally notified of what is planned for their neighborhood. LB 25

7. Mitigation: It is stated that mitigation planning and implementation will be done under a separate investigation and discussed in additional IER's. Will this be completed before excavation is begun? LB 26

Thank you for the opportunity to comment on this IER#18. I look forward to your reply.

Respectfully,

Louis Barrett
2533 Bayou Rd.
St. Bernard, La. 70085

LB 20: As a part of the analysis, CEMVN identified and evaluated the impacts on the current land use.

LB 21: Each potential borrow area site has been investigated. No residences or businesses currently exist on any of the proposed borrow areas.

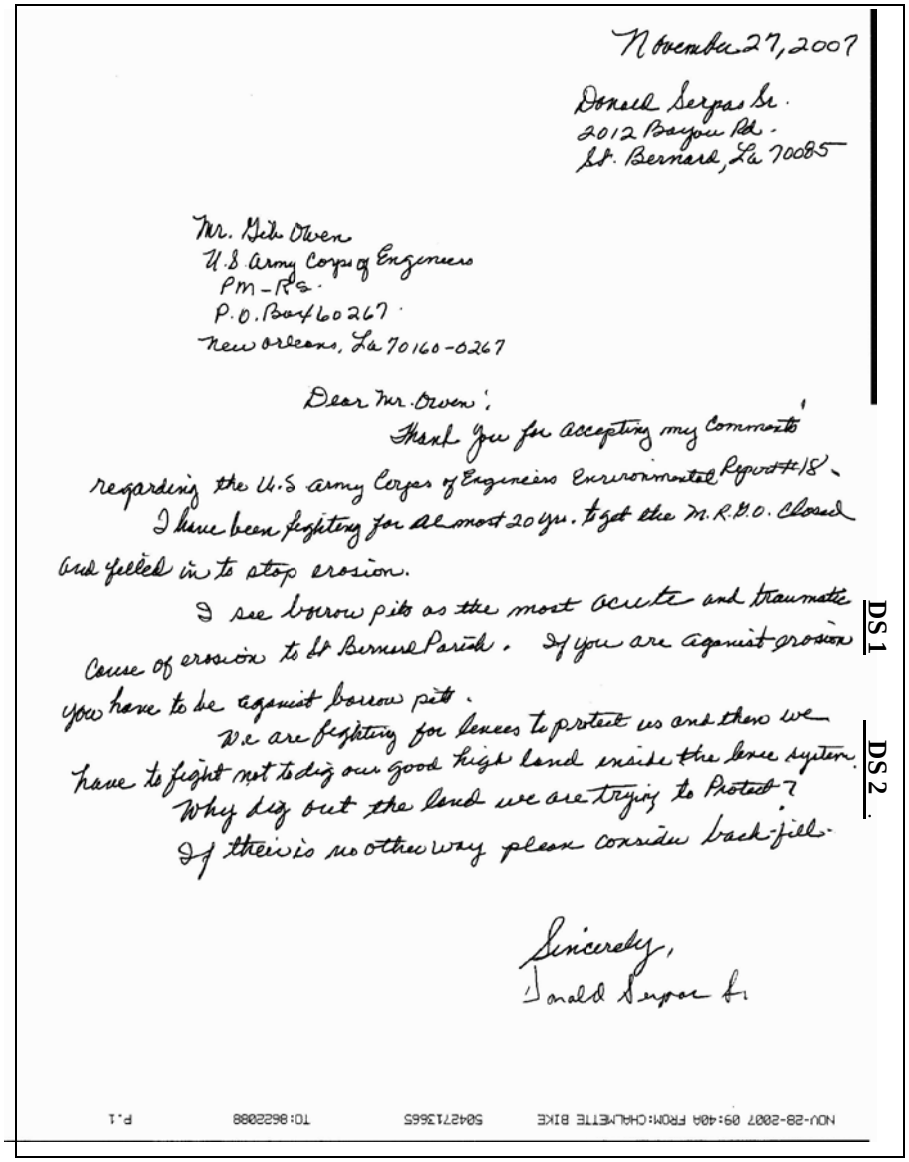
LB 22: A discussion about mosquitoes has been added to IER #18. While the proposed borrow areas have the potential to become mosquito breeding areas, the amount of surface acres of water is considered to be small compared to surrounding wetlands. Mosquito control would be taken care of by the parish as part of the parish-wide mosquito control program.

LB 23: See LB 15.

LB 24: The language in IER #18 has been adjusted to reflect that several of the proposed St. Bernard borrow areas are located near residential housing.

LB 25: CEMVN is currently looking at borrow options around the New Orleans Metropolitan area, as well as outside the state of Louisiana. It is not feasible to contact each resident individually. Notification is available through CEMVN websites and notices published in local and national newspapers. Additionally, notifications about meetings and the availability of project documents such as this one are mailed and e-mailed to interested stakeholders.

LB 26: Mitigation would not occur prior to implementation of the proposed actions of IER #18. Mitigation for all HPS project impacts is moving forward as a separate effort and mitigation IERs are currently being completed. It is expected that mitigation will be implemented on a large enough scale that mitigation pools are in place as many of the impacts occur.



November 27, 2007

Donald Serpas Sr.
2012 Bayou Rd.
St. Bernard, La 70085

Mr. Gib Owen
U.S Army Corps of Engineers
PM-RS.
P.O. Box 60267
New Orleans, La 70160-0267

Dear Mr. Owen;

Thank You for accepting my Comments regarding the U.S army Corps of Engineers Environmental Report #18.

I have been fighting for almost 20 yrs. to get the M.R.G.O. Closed and felled in to stop erosion.

I see borrow pits as the most acute and traumatic cause of erosion to St Bernard Parish. If you are against erosion you have to be against borrow pits.

We are fighting for levees to protect us and then we have to fight not to dig our good high land inside the levee system.

Why dig out the land we are trying to Protect?

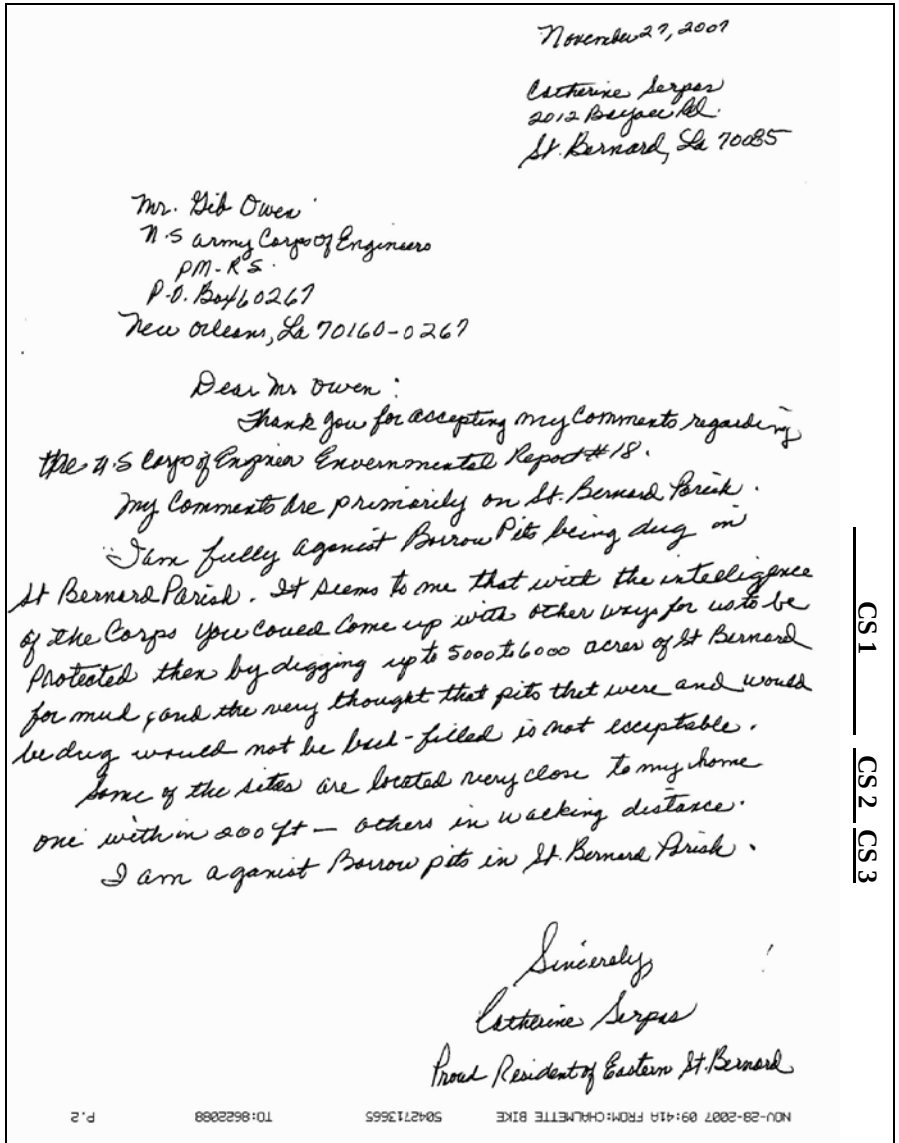
If there is no other way please consider back-fill.

Sincerely,
Donald Serpas Sr.

NOV-28-2007 09:40A FROM:CHALMETTE BIKE 5042713665 TO:8622088 P.1

DS 1: An extraordinary quantity of borrow material is needed to construct the hurricane protection system to the levels required to provide protection for the people of the Greater New Orleans area. CEMVN's priority in the New Orleans area is public safety and it is working hard to balance out the impacts of providing protection against the impacts on the people and land in the area. The CEMVN is considering several alternatives to earthen levees that would change the quantity of borrow material required. Alternatives such as T-walls and hollow core levees are being evaluated on a project by project basis under IERs that are specific to the levees projects. The Corps is charged with being a good steward of the land and the tax payers' dollars, as such we are analyzing what alternatives will have the least impacts to the land and the people while still meeting the best and wisest use of tax payers' dollars. For example, in areas where both T-walls and earthen levees are equally effective protection measures, the earthen levee is selected based on cost criteria.

DS 2: The feasibility of backfilling Government Furnished borrow areas is currently being investigated by CEMVN.



November 27, 2007

Catherine Serpas
2012 Beyer Rd.
St. Bernard, La 70085

Mr. Bib Owen
U.S army Corps of Engineers
PM-RS
P.O. Box 60267
New Orleans, La 70160-0267

Dear Mr Owen:

Thank you for accepting my Comments regarding the U.S Corps of Engineer Environmental Report #18.

My Comments are primarily on St. Bernard Parish.

I am fully against Borrow Pits being dug in St Bernard Parish. It seems to me that with the intelligence of the Corps you could come up with other ways for us to be protected then by digging up to 5000 to 6000 acres of St Bernard for mud, and the very thought that pits that were and would be dug would not be back-filled is not acceptable.

Some of the sites are located very close to my home one within 200 ft — others in walking distance.

I am against Borrow pits in St. Bernard Parish.

Sincerely
Catherine Serpas
Proud Resident of Eastern St. Bernard

NOV-28-2007 09:41A FROM:CHALMETTE BIKE 5042713655 TO:8622088 P.2

CS 1 CS 2 CS 3

CS 1: IERs #1 through #17 will evaluate alternative designs of levee and floodwall projects, some of which could require less borrow material to accomplish. The feasibility of backfilling borrow areas is currently being investigated by CEMVN.

CS 2: It is recognized that some of the proposed borrow sites are located near homes. The language in IER 19 will be revised to reflect that some of the proposed St. Bernard borrow areas are adjacent to residential properties. CEMVN is committed to working with the owners of Contractor Furnished pits to ensure that they implement required safety and Occupational Safety and Health Administration (OSHA) regulations as well as follow required Best Management Practices for pit design, location, storm water runoff.

CS 3: CEMVN is investigating borrow areas both inside and outside the levee system throughout the New Orleans Metropolitan area and in other areas of the state and Mississippi. Visit http://www.mvn.usace.army.mil/hps/borrow_pits_home.htm for more information.

Letter # 4: Louisiana Audubon Council, 30 November 2007

Page 1 of 7

Louisiana Audubon Council

1522 Lowerline St., New Orleans, LA 70118

November 30, 2007

Mr. Gib Owen, CEMVN-PM-RS
USACE, Planning, Programs Mgt. Div.
Environ. Planning and Compliance Branch
P.O. Box 60267
New Orleans, LA 70160-0267

Re: IER #18, Government Furnished Borrow Material

Dear Mr. Owen,

We have reviewed the Individual Environmental Report (IER #18) and we request that these comments be included in the public record for this IER. The application of NEPA requires the Corps to explain its rationale which leads to the selection or rejection of borrow sites. This course of action is missing in IER #18 and 19. The borrow standards are more restrictive post-Katrina and therefore the IER should address the logic of the decision making process leading to the selection or rejection of entire or portions of borrow sites under consideration.

Thus a major NEPA deficiency in both IER #18 and #19, is the omission of the Corps' new sediment criteria for borrow used in post-Katrina levees. We therefore consider both IERs grossly inadequate. We insist that these two IERs be expanded to discuss, thoroughly, the implications of using borrow under the old and new sediment criteria.

The failures of many levees protecting the greater New Orleans area can be attributed to the use of soils which did not meet the engineering criteria needed for a hurricane worthy levee system. Hence, the Corps' change (improvement) in its sediment criteria.

Criteria for selection of soils for borrow (pre and post-Katrina)?

A USACE (2007a) memo outlines the changes in the selection of borrow for use in post-Katrina levee building and the new criteria which were provided by the CEMVN Geotech Branch. We assume this is an admission that the pre-Katrina standards were inadequate. We want to be sure that these new standards are going to be used for the selection of soils for the rebuilding of the New Orleans levee system.

These new standards must be included in the borrow documents (IER #18, 19), since the new standards have a bearing on the success of the new levee structure and environmental consequences. If there have been any additional changes to the standards since the 8/28/07 memo, we request that they be included in the revised IER #18 and 19. We also request that documentation of soil analyses for each borrow site be included in the revised IERs. These analyses should be matched to the new criteria to be sure that the borrow passes the new soil tests. We also ask that the references to the changes in soil standards be included in the revised IERs.

According to the USACE (2007a) memo, (see reference section) the following are the differences in embankment material prior and post Katrina used by the USACE.

"In all levee embankment specifications, allowable soil materials are more stringent than prior to Hurricane Katrina. In particular:
Bold is the present requirements; (Before is prior to Hurricane Katrina)

• Soils after placement with organic contents greater than 9% are not allowed
(Before -not tested -prior specs stated free from masses of peat and humus)

LAC, 11/30/07 1

LAC 1 LAC 2 LAC 3 LAC 4 LAC 5

LAC 1: The intent of NEPA is to investigate the impacts of the Government's proposed action on the natural and human environment. There are a number of reasons that a proposed borrow site would be removed from consideration, such as the presence of wetlands, potential unavoidable impacts to a known cultural resource or a T&E species, or the presence of a hazardous, toxic, and/or radioactive waste (HTRW) material that could not be avoided. Additionally, CEMVN has established specific soil standards that all borrow material must meet in order to be used for constructing the HPS. CEMVN Engineering staff evaluate the geotechnical information for each site and are make a determination as to the acceptability of the material. Soils either meet the standard or do not meet the standard which is the basis for accepting or rejecting a site based on geotechnical evaluations.

LAC 2: The soil standards are:

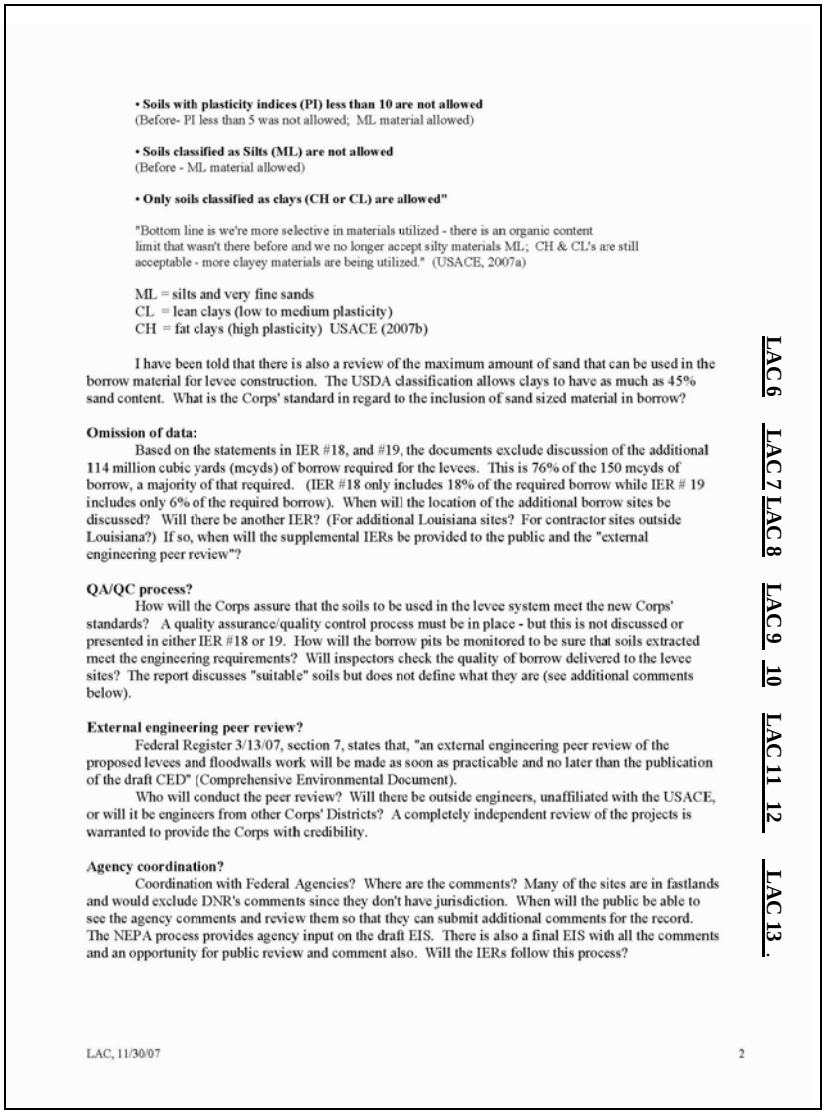
- Soils classified as clays (CH or CL) are allowed as per the Unified Soils Classification System;
- Soils with organic contents greater than 9% are not allowed;
- Soils with plasticity indices (PI) less than 10 are not allowed;
- Soils classified as Silts (ML) are not allowed;
- Clays will not have more than 35% sand content.

IER #18 has been updated to include the soil standards listed above. References to soil standards discussed in this report are referring to the standards described above. A discussion of past soil standards is not considered relevant to the decision being made on the proposed Federal action and as such is not being discussed in this document. Visit http://www.mvn.usace.army.mil/hps/soil_boring_factsheet.htm for more information.

LAC 3: Soils of all existing levees that are part of the HPS have been evaluated or are under-going evaluation to determine if they conform to current Corps soil standards. Any levees found not to meet these standards are being rebuilt to those standards. Much of this rebuilding work has already occurred (i.e., under Task Force Guardian). The process is constantly being looked at and improved on so that the Corps provides the best and safest system possible. Visit http://www.mvn.usace.army.mil/hps/soil_boring_factsheet.htm for more information.

LAC 4: All CEMVN design standards are revaluated on occasion and are updated when necessary in response to new data and technologies. Soil standards have be revaluated and will be adhered to when selecting soils to be used for construction of the HPS.

LAC 5: CEMVN soil standards are listed in LAC 2 and have been included in IER #18. A discussion of the soil analysis performed for each site under investigation is not considered relevant to the decision being made for the proposed Federal action. The soils at the sites either meet CEMVN soil standards or they don't. If a potential borrow area does not meet all of the CEMVN standards as discussed in LAC 1 and LAC 2, then the site is declined for use as a Federal borrow source.



• **Soils with plasticity indices (PI) less than 10 are not allowed**
(Before- PI less than 5 was not allowed; ML material allowed)

• **Soils classified as Silts (ML) are not allowed**
(Before - ML material allowed)

• **Only soils classified as clays (CH or CL) are allowed"**

"Bottom line is we're more selective in materials utilized - there is an organic content limit that wasn't there before and we no longer accept silty materials ML; CH & CL's are still acceptable - more clayey materials are being utilized." (USACE, 2007a)

ML = silts and very fine sands
CL = lean clays (low to medium plasticity)
CH = fat clays (high plasticity) USACE (2007b)

I have been told that there is also a review of the maximum amount of sand that can be used in the borrow material for levee construction. The USDA classification allows clays to have as much as 45% sand content. What is the Corps' standard in regard to the inclusion of sand sized material in borrow?

Omission of data:
Based on the statements in IER #18, and #19, the documents exclude discussion of the additional 114 million cubic yards (mcyds) of borrow required for the levees. This is 76% of the 150 mcyds of borrow, a majority of that required. (IER #18 only includes 18% of the required borrow while IER # 19 includes only 6% of the required borrow). When will the location of the additional borrow sites be discussed? Will there be another IER? (For additional Louisiana sites? For contractor sites outside Louisiana?) If so, when will the supplemental IERs be provided to the public and the "external engineering peer review"?

QA/QC process?
How will the Corps assure that the soils to be used in the levee system meet the new Corps' standards? A quality assurance/quality control process must be in place - but this is not discussed or presented in either IER #18 or 19. How will the borrow pits be monitored to be sure that soils extracted meet the engineering requirements? Will inspectors check the quality of borrow delivered to the levee sites? The report discusses "suitable" soils but does not define what they are (see additional comments below).

External engineering peer review?
Federal Register 3/13/07, section 7, states that, "an external engineering peer review of the proposed levees and floodwalls work will be made as soon as practicable and no later than the publication of the draft CED" (Comprehensive Environmental Document).
Who will conduct the peer review? Will there be outside engineers, unaffiliated with the USACE, or will it be engineers from other Corps' Districts? A completely independent review of the projects is warranted to provide the Corps with credibility.

Agency coordination?
Coordination with Federal Agencies? Where are the comments? Many of the sites are in fastlands and would exclude DNR's comments since they don't have jurisdiction. When will the public be able to see the agency comments and review them so that they can submit additional comments for the record. The NEPA process provides agency input on the draft EIS. There is also a final EIS with all the comments and an opportunity for public review and comment also. Will the IERs follow this process?

LAC, 11/30/07 2

LAC 6 LAC 7 LAC 8 LAC 9 10 LAC 11 12 LAC 13

LAC 6: CEMVN soil standards allow no more than 35% sand content in levee soil.

LAC 7: IERs #18 and #19 discuss the specific borrow locations and quantities of borrow available at those sites that have been identified to date. CEMVN recognizes that these potential borrow areas will not provide all borrow currently estimated required for the proposed HPS. CEMVN is pursuing all avenues for locating borrow and as such there are no limitation (in state or out of state) for potential borrow sites other than that the soils must meet all criteria discussed in LAC 1 and reasonably priced. Currently, three avenues are being pursued by CEMVN to obtain borrow material: Government Furnished (GF) (Government acquires rights to property), Pre-Approved Contractor Furnished (CF) (landowner and construction constractor work in partnership to provide borrow), and Supply Contract (SC) (corporation delivers borrow material to a designated location for use by construction contractor).

LAC 8: As additional possible borrow areas are located and investigated, CEMVN will complete additional borrow IERs. Future IERs addressing borrow needs include IER #22, entitled Government Furnished Borrow Material #2, and IER #23, entitled Pre-Approved Contractor Furnished Borrow Matieral #2. These IERs are expected to be ready for public review in March or April 2008. Other IERs will be prepared as additional potential borrow sites are identified. A borrow handout has been available at public meetings since July 2007 and is updated often to show all investigated sites, approved sites, and declined sites. The handouts are available at www.nolaenvironmental.gov.

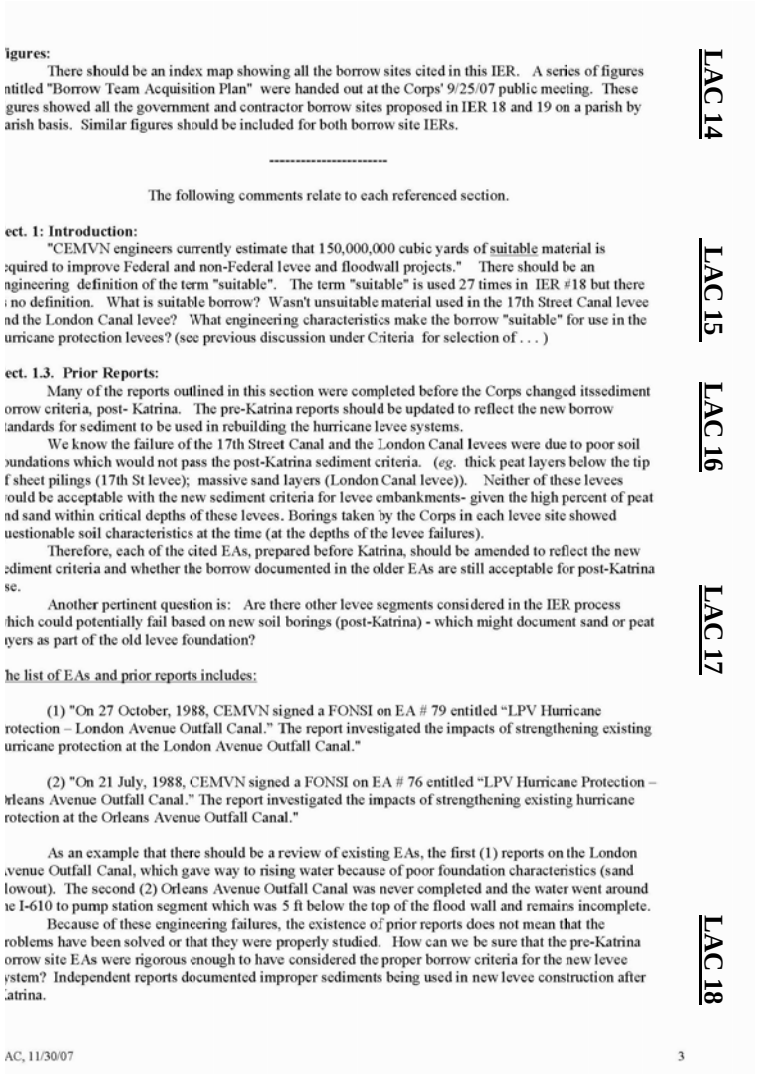
The USACE Hurricane and Storm Damage Reduction System Design Guidelines, of which the soil standards previously discussed are a part, are reviewed and updated as necessary to ensure that the Corps is constructing the safest levees possible. Changes to the guidelines are reviewed and approved by USACE experts at the local, regional and headquarters level; additional reviews are completed by academia and private individuals who are recognized experts in their fields. Additionally, the guidelines being utilized by CEMVN have been reviewed by members of the Interagency Performance Evaluation Team (IPET). The design guidelines may be updated from time to time to respond to new engineering analysis of improved technology, innovative processes, or new data. An implementation plan for an external review should be finalized in February 2008.

LAC 9: Approval of a potential borrow site requires a positive determination that the soil located at the site meets CEMVN suitability criteria. The contractor excavating the soil will have a geologist on site to ensure that objectionable (unsuitable) material is cast aside as per USACE design specifications. Additionally, quality control of the material placed on the levees also is performed. The levee contractor is required to test soil classification, moisture content, organic content, sand content, plasticity, and density at a minimum of every 1,500 cubic yards of placed material, or each 500 linear feet of placed material per 12-inch lift. Quality assurance of the entire project is provided by USACE Quality Assurance Representatives who would oversee the operation at the borrow site as well as the levee construction site. See LAC 2 for a list of the soil standards.

LAC 10: See LAC 2.

LAC 11 – LAC 12: The USACE Hurricane and Storm Damage Reduction System Design Guidelines, of which the soil standards previously discussed are a part, are reviewed and updated as necessary to ensure that the Corps is constructing the safest levees possible. Changes to the guidelines are reviewed and approved by USACE experts at the local, regional and headquarters level; additional reviews are completed by academia and private individuals who are recognized experts in their fields. Additionally, the guidelines being utilized by CEMVN have been reviewed by members of the Interagency Performance Evaluation Team (IPET). The design guidelines may be updated from time to time to respond to new engineering analysis of improved technology, innovative processes, or new data. An implementation plan for an external review should be finalized in February 2008.

LAC 13: USFWS, Louisiana Department of Wildlife and Fisheries (LaWLF), and NOAA National Marine Fisheries Service (NMFS) provided comments to CEMVN regarding the proposed work discussed in IER #18 during the 30-day public comment period. Governmental agency correspondence has been added, with copies of letters from the various agencies provided in IER #18 and in this Addendum. A copy of the updated IER is available at www.nolaenvironmental.gov or by contacting CEMVN. CEMVN implemented Alternative Arrangements under the provisions of the Council on Environmental Quality (CEQ) Regulations for Implementing NEMPA. The normal NEPA procedures focus on substantive comments (see the CEQ regulations provisions on commenting at 40 CFR part 1503). It would be inconsistent with the purpose of emergency Alternative Arrangements to require additional time and process to address favorable or supportive comments, or comments that do not raise substantive issues with regard to the environmental analysis. Consequently, the Alternative Arrangements provide discretion in determining whether comments on an IER are substantive and merit a response in an IER Addendum.



igures:
There should be an index map showing all the borrow sites cited in this IER. A series of figures ntitled "Borrow Team Acquisition Plan" were handed out at the Corps' 9/25/07 public meeting. These gures showed all the government and contractor borrow sites proposed in IER 18 and 19 on a parish by arish basis. Similar figures should be included for both borrow site IERs.

The following comments relate to each referenced section.

ect. 1: Introduction:
"CEMVN engineers currently estimate that 150,000,000 cubic yards of suitable material is equired to improve Federal and non-Federal levee and floodwall projects." There should be an ngineering definition of the term "suitable". The term "suitable" is used 27 times in IER #18 but there no definition. What is suitable borrow? Wasn't unsuitable material used in the 17th Street Canal levee nd the London Canal levee? What engineering characteristics make the borrow "suitable" for use in the urricane protection levees? (see previous discussion under Criteria for selection of . . .)

ect. 1.3. Prior Reports:
Many of the reports outlined in this section were completed before the Corps changed itssediment orrow criteria, post- Katrina. The pre-Katrina reports should be updated to reflect the new borrow tandards for sediment to be used in rebuilding the hurricane levee systems.
We know the failure of the 17th Street Canal and the London Canal levees were due to poor soil oundations which would not pass the post-Katrina sediment criteria. (*eg.* thick peat layers below the tip f sheet pilings (17th St levee); massive sand layers (London Canal levee)). Neither of these levees ould be acceptable with the new sediment criteria for levee embankments- given the high percent of peat nd sand within critical depths of these levees. Borings taken by the Corps in each levee site showed uestionable soil characteristics at the time (at the depths of the levee failures).
Therefore, each of the cited EAs, prepared before Katrina, should be amended to reflect the new ediment criteria and whether the borrow documented in the older EAs are still acceptable for post-Katrina se.
Another pertinent question is: Are there other levee segments considered in the IER process hich could potentially fail based on new soil borings (post-Katrina) - which might document sand or peat yers as part of the old levee foundation?

he list of EAs and prior reports includes:

(1) "On 27 October, 1988, CEMVN signed a FONSI on EA # 79 entitled "LPV Hurricane rotection – London Avenue Outfall Canal." The report investigated the impacts of strengthening existing urricane protection at the London Avenue Outfall Canal."

(2) "On 21 July, 1988, CEMVN signed a FONSI on EA # 76 entitled "LPV Hurricane Protection – rleans Avenue Outfall Canal." The report investigated the impacts of strengthening existing hurricane rotection at the Orleans Avenue Outfall Canal."

As an example that there should be a review of existing EAs, the first (1) reports on the London venue Outfall Canal, which gave way to rising water because of poor foundation characteristics (sand lowout). The second (2) Orleans Avenue Outfall Canal was never completed and the water went around e I-610 to pump station segment which was 5 ft below the top of the flood wall and remairs incomplete.
Because of these engineering failures, the existence of prior reports does not mean that the roblems have been solved or that they were properly studied. How can we be sure that the pre-Katrina orrow site EAs were rigorous enough to have considered the proper borrow criteria for the new levee ystem? Independent reports documented improper sediments being used in new levee construction after atrina.

AC, 11/30/07 3

LAC 14

LAC 15

LAC 16

LAC 17

LAC 18

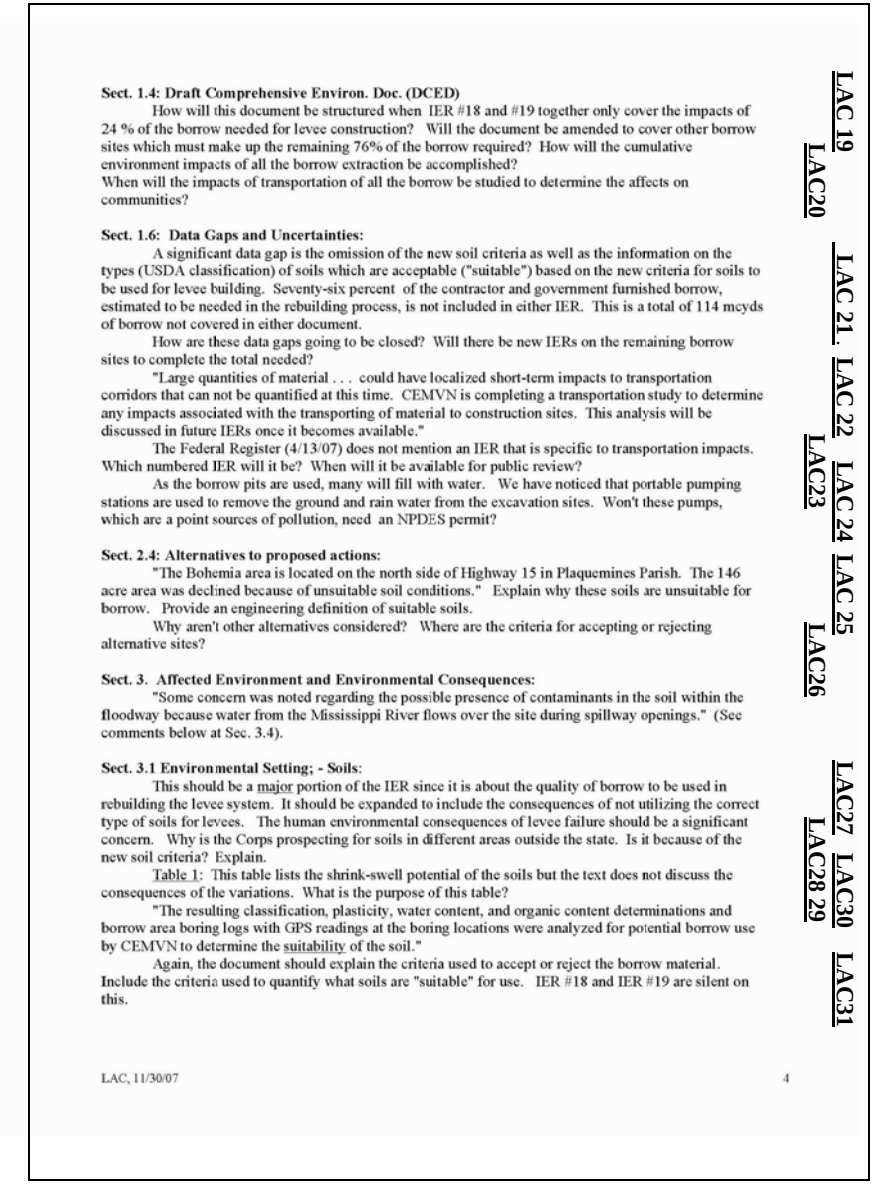
LAC 14: IER #18 has been updated to include an index map that shows the location of all proposed borrow areas investigated under this IER (Figure 1 in IER #18). A copy of the IER is available at www.nolaenvironmental.gov or by contacting CEMVN.

LAC 15: See LAC 2.

LAC 16: The updated soil standards caused no new impacts that were not addressed in pre-Katrina documents, so a re-evaluation of past Federal decisions is not warranted. All borrow areas, as well as potential future borrow areas, are evaluated and only soils that meet the soils standards will be utilized.

LAC 17: Soils of all existing levees that are part of the HPS have been evaluated or are under-going evaluation to determine if they conform to current CEMVN standards. Any levees found not to meet these standards are being rebuilt to meet the standards. Much of this rebuilding work has already occurred (i.e., under Task Force Guardian). The process is constantly being looked at and improved so that the USACE provides the best and safest system possible.

LAC 18: Approval of a potential borrow site requires a determination that the soil located at the site meets CEMVN suitability criteria as discussed in LAC 2. The contractor excavating the soil will have a geologist on site to ensure that objectionable (unsuitable) material is cast aside as per USACE specifications. Additionally, quality control of the material placed on the levees is performed. The levee contractor is required to test soil classification, moisture content, organic content, sand content, plasticity, and density at a minimum of every 1,500 cubic yards of placed material, or each 500 linear feet of placed material per 12-inch lift. Quality assurance of the entire project is provided by USACE Quality Assurance Representatives who would oversee the operation at the borrow site as well as the levee construction site. See LAC 2 for a list of the soil standards.



Sect. 1.4: Draft Comprehensive Environ. Doc. (DCED)

How will this document be structured when IER #18 and #19 together only cover the impacts of 24 % of the borrow needed for levee construction? Will the document be amended to cover other borrow sites which must make up the remaining 76% of the borrow required? How will the cumulative environment impacts of all the borrow extraction be accomplished?
When will the impacts of transportation of all the borrow be studied to determine the affects on communities?

Sect. 1.6: Data Gaps and Uncertainties:

A significant data gap is the omission of the new soil criteria as well as the information on the types (USDA classification) of soils which are acceptable ("suitable") based on the new criteria for soils to be used for levee building. Seventy-six percent of the contractor and government furnished borrow, estimated to be needed in the rebuilding process, is not included in either IER. This is a total of 114 mcyds of borrow not covered in either document.

How are these data gaps going to be closed? Will there be new IERs on the remaining borrow sites to complete the total needed?

"Large quantities of material . . . could have localized short-term impacts to transportation corridors that can not be quantified at this time. CEMVN is completing a transportation study to determine any impacts associated with the transporting of material to construction sites. This analysis will be discussed in future IERs once it becomes available."

The Federal Register (4/13/07) does not mention an IER that is specific to transportation impacts. Which numbered IER will it be? When will it be available for public review?

As the borrow pits are used, many will fill with water. We have noticed that portable pumping stations are used to remove the ground and rain water from the excavation sites. Won't these pumps, which are a point sources of pollution, need an NPDES permit?

Sect. 2.4: Alternatives to proposed actions:

"The Bohemia area is located on the north side of Highway 15 in Plaquemines Parish. The 146 acre area was declined because of unsuitable soil conditions." Explain why these soils are unsuitable for borrow. Provide an engineering definition of suitable soils.

Why aren't other alternatives considered? Where are the criteria for accepting or rejecting alternative sites?

Sect. 3. Affected Environment and Environmental Consequences:

"Some concern was noted regarding the possible presence of contaminants in the soil within the floodway because water from the Mississippi River flows over the site during spillway openings." (See comments below at Sec. 3.4).

Sect. 3.1 Environmental Setting; - Soils:

This should be a major portion of the IER since it is about the quality of borrow to be used in rebuilding the levee system. It should be expanded to include the consequences of not utilizing the correct type of soils for levees. The human environmental consequences of levee failure should be a significant concern. Why is the Corps prospecting for soils in different areas outside the state. Is it because of the new soil criteria? Explain.

Table 1: This table lists the shrink-swell potential of the soils but the text does not discuss the consequences of the variations. What is the purpose of this table?

"The resulting classification, plasticity, water content, and organic content determinations and borrow area boring logs with GPS readings at the boring locations were analyzed for potential borrow use by CEMVN to determine the suitability of the soil."

Again, the document should explain the criteria used to accept or reject the borrow material. Include the criteria used to quantify what soils are "suitable" for use. IER #18 and IER #19 are silent on this.

LAC, 11/30/07 4

LAC 19 LAC20 LAC 21. LAC 22 LAC23 LAC 24 LAC 25 LAC26 LAC27 LAC28 29 LAC30 LAC31

LAC 19: See LAC 7 and 8. Cumulative impacts of borrow activities is an acknowledged data gap that will be addressed in future IERs as more information becomes available. Also a CED will be written to discuss the cumulative impacts of all the HPS activities.

LAC 20: Transportation is an acknowledged data gap that will be addressed in future IERs as information becomes available. A task order was issued to David Miller & Associates on 5 December 2007 to complete a comprehensive transportation study for the proposed HPS projects. Information from this study will be incorporated into future IERs and the CED where appropriate.

LAC 21: See LAC 2 and LAC 8.

LAC 22: See LAC 20.

LAC 23: See LAC 20.

LAC 24: Borrow contractors will implement Best Management Practices (BMPs) including standard USACE storm water prevention requirements at all borrow area locations. It is the intent of the CEMVN to not discharge any waters off site from a borrow pit during mining operations. Should this become necessary a National Pollutant Discharge Elimination System (NPDES) permit would be obtained, if required.

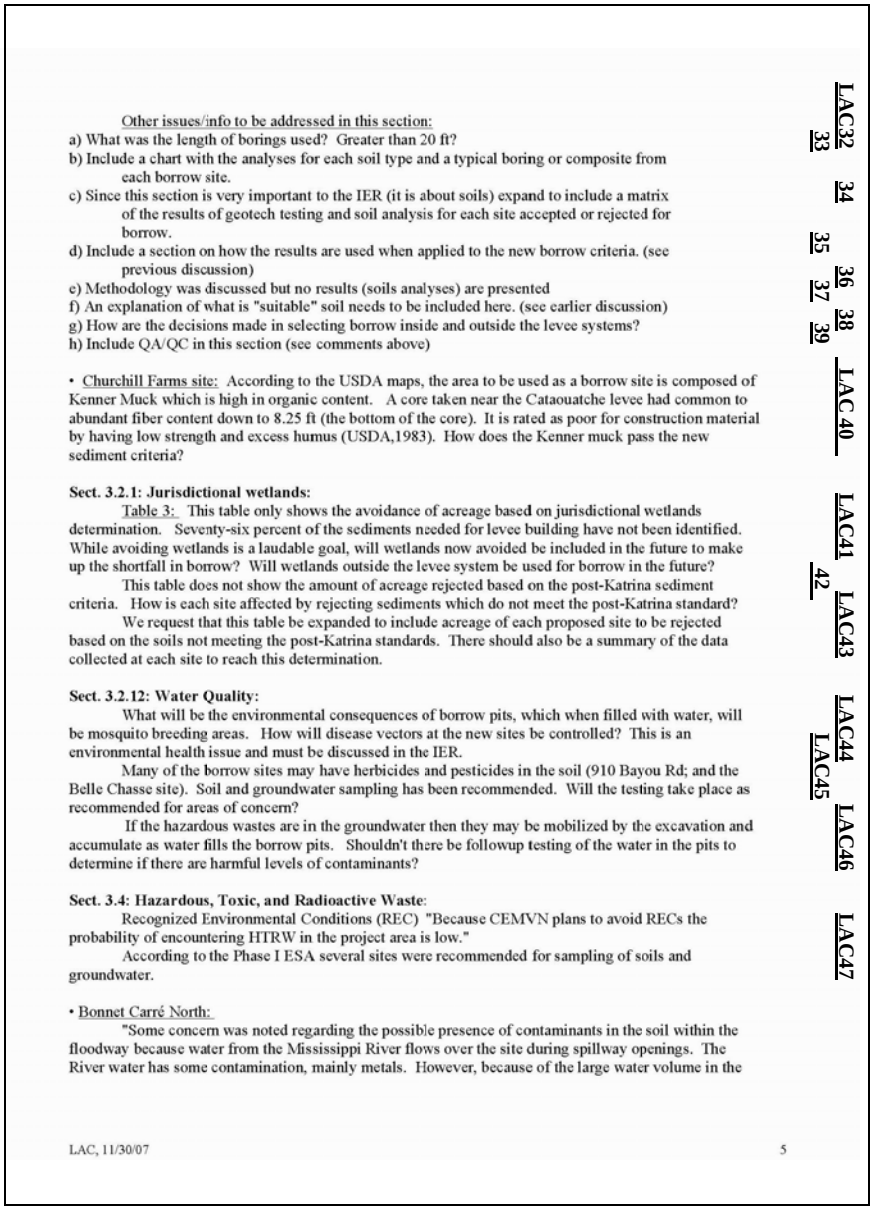
LAC 25: Soils analyzed from the proposed Bohemia site do not meet CEMVN standards and the site has been eliminated from further consideration. See LAC 2 for a definition of suitable soil standards. Additional potential borrow areas are being investigated and will be discussed in future IERs. Approval of sites is determined based on the criteria laid out in LAC 1 and LAC 2.

LAC 26: This concern was reported by the contractor completing the Environmental Site Assessment (ESA) Phase 1 study. The CEMVN subject matter expert reviewed the ESA Phase 1 Study and determined that the soils at Bonnet Carré met CEMVN standards and were acceptable for use in the HPS levees.

LAC 27 – LAC 29: See LAC 2 and LAC 7. CEMVN is pursuing three avenues of obtaining the estimated 100 million cubic yards of borrow material needed for HPS construction. The three avenues that are being pursued by CEMVN to obtain borrow material are Government Furnished (Government acquires rights to property), Pre-Approved Contractor Furnished (landowner and construction contractor work in partnership to provide borrow material), and Supply Contract (corporation delivers borrow material to a designated location for use by construction contractor). Two of the avenues being pursued (Pre-Approved Contractor Furnished and Supply Contract) allow a private individual or corporation to propose a site where borrow material could come from. It is possible that some of the CF and CS sources of borrow material may come from outside of the state of Louisiana. Currently, CEMVN is not investigating any potential borrow sources outside of the state of Louisiana under the Government Furnished alternative. However, if it should become in the Government's best interest to look at a potential borrow area outside the state, the Government could do so.

LAC 30: The shrink-swell potential of the soils as presented in Table 1 is not considered to be a valuable assessment of the soils. This table presents data from the US Department of Agriculture (USDA) National Resource Conservation Service (NRCS) Web Soil Surveys, and are a general description of the condition of the type of soil, not necessarily that of the soil present at a proposed borrow area. The USDA typically classifies only the surface layer (the first 80 inches) of the soil present at any given location and does not provide any information for the underlying soil. Additionally, information provided by the USDA, such as the shrink-swell potential, describes only the virgin condition of the soil, not the compacted condition of the soil. Expansion of the table to provide more documentation of the types of soil that may be used, as documented by the USDA, and the consequences of using these soils is not considered relevant to the IERs, and as such, these tables have been removed from both IERs. The USDA classification of soils is not used to determine the suitability of the material for use in the levees. Soil suitability is determined as per the standards discussed in LAC 2.

LAC 31: See LAC 2.



Other issues/info to be addressed in this section:

a) What was the length of borings used? Greater than 20 ft? LAC32
b) Include a chart with the analyses for each soil type and a typical boring or composite from each borrow site. 33
c) Since this section is very important to the IER (it is about soils) expand to include a matrix of the results of geotech testing and soil analysis for each site accepted or rejected for borrow. 34
d) Include a section on how the results are used when applied to the new borrow criteria. (see previous discussion) 35
e) Methodology was discussed but no results (soils analyses) are presented 36
f) An explanation of what is "suitable" soil needs to be included here. (see earlier discussion) 37
g) How are the decisions made in selecting borrow inside and outside the levee systems? 38
h) Include QA/QC in this section (see comments above) 39

• Churchill Farms site: According to the USDA maps, the area to be used as a borrow site is composed of Kenner Muck which is high in organic content. A core taken near the Cataouatche levee had common to abundant fiber content down to 8.25 ft (the bottom of the core). It is rated as poor for construction material by having low strength and excess humus (USDA,1983). How does the Kenner muck pass the new sediment criteria? LAC 40

Sect. 3.2.1: Jurisdictional wetlands:

Table 3: This table only shows the avoidance of acreage based on jurisdictional wetlands determination. Seventy-six percent of the sediments needed for levee building have not been identified. While avoiding wetlands is a laudable goal, will wetlands now avoided be included in the future to make up the shortfall in borrow? Will wetlands outside the levee system be used for borrow in the future? LAC41

This table does not show the amount of acreage rejected based on the post-Katrina sediment criteria. How is each site affected by rejecting sediments which do not meet the post-Katrina standard? 42

We request that this table be expanded to include acreage of each proposed site to be rejected based on the soils not meeting the post-Katrina standards. There should also be a summary of the data collected at each site to reach this determination. LAC43

Sect. 3.2.12: Water Quality:

What will be the environmental consequences of borrow pits, which when filled with water, will be mosquito breeding areas. How will disease vectors at the new sites be controlled? This is an environmental health issue and must be discussed in the IER. LAC44

Many of the borrow sites may have herbicides and pesticides in the soil (910 Bayou Rd; and the Belle Chasse site). Soil and groundwater sampling has been recommended. Will the testing take place as recommended for areas of concern? LAC45

If the hazardous wastes are in the groundwater then they may be mobilized by the excavation and accumulate as water fills the borrow pits. Shouldn't there be followup testing of the water in the pits to determine if there are harmful levels of contaminants? LAC46

Sect. 3.4: Hazardous, Toxic, and Radioactive Waste:

Recognized Environmental Conditions (REC) "Because CEMVN plans to avoid RECs the probability of encountering HTRW in the project area is low."

According to the Phase I ESA several sites were recommended for sampling of soils and groundwater. LAC47

• Bonnet Carré North:

"Some concern was noted regarding the possible presence of contaminants in the soil within the floodway because water from the Mississippi River flows over the site during spillway openings. The River water has some contamination, mainly metals. However, because of the large water volume in the

LAC, 11/30/07 5

LAC 31 – LAC 36: Soil boring depths vary and are determined on a site-specific basis. The depth of the boring is typically 5 ft deeper than the planned excavation. The inclusion of the following information is not considered relevant to the environmental impact analysis process and was not included in the IER: analysis of each soil type; typical boring logs from each borrow site; results matrix; and the application of borrow criteria. CEMVN is investigating all reasonable and practicable sites via the three avenues discussed in LAC 27-29. Whether the area is inside or outside of a levied system has no bearing on a decision to utilize a potential borrow site.

LAC 37 – LAC 40: See LAC 30. USDA classifications of soils were not used to determine soil suitability for potential borrow material. Comprehensive soil suitability is determined by the CEMVN by analyzing borings taken on 500 ft spacings over the entire proposed site. Samples from these borings are then taken to an approved geotechnical laboratory where detailed soils tests are performed to assess the material as to its ability to meet the soil standards discussed in LAC 2. All potential borrow areas have the potential for the presence of some material that will be considered objectionable (unsuitable), such as buried logs, stumps, and wood fragments. See LAC 2.

LAC 41 – LAC 43: CEMVN is working diligently to avoid impacts to jurisdictional wetlands associated with providing borrow material for HPS projects. CEMVN selection prioritization of potential borrow areas (Section 2.1 in IER 18), as well as USFWS guidance (letter dated 7 August 2006 in Appendix D of IER #18), relating to impacts to jurisdictional wetlands are and will continue to be followed. It is possible that once CEMVN has determined that due diligence of reasonable and practicable alternatives for avoiding wetland sites has been completed, wetland sites could be investigated for use as potential borrow sources. At that time, the CEMVN Regulatory Branch could re-examine the purpose and need (related solely to the proposed HPS projects) of any permit applications involving wetland areas. CEMVN will coordinate with governmental agencies and the public if jurisdictional wetlands may be impacted during future proposed borrow activities. CEMVN will mitigate impacts to jurisdictional wetlands, as required by law.

LAC 44: A discussion on the impacts of mosquitoes has been included in IER 18. While the proposed borrow areas, if constructed, have the potential for becoming mosquito breeding areas, the amount of surface acres of water is considered to be small compared to surrounding wetlands. Mosquito control would be implemented by the parish and would conform to its existing plan for controlling mosquitoes.

LAC 45 – LAC 46: The issue of the possible existence of herbicides or pesticides at the site relates to past use of the land. Nothing in the ESA Phase 1 study indicated that there has ever been any contamination issues. Furthermore, historically residual herbicides and pesticides reside just below the surface. Typically, when a site is used for borrow material, the top foot or so is not used and is stockpiled on site because it has higher levels of organics than is acceptable for use in levee construction. CEMVN has determined that the proposed borrow sites do not need additional testing.

LAC 47: REC sites are being avoided.

river any contaminants would be diluted." Who noted this concern? Identify the agency and give additional information in the IER.

This statement about transportation of heavy metals is incorrect. Heavy metal adsorb onto silts, clays and organic material and are transported as suspended material during turbid flow. If any concentrations of heavy metals in the fine fractions are mobilized during high water, the material will be transported into Lake Pontchartrain and likely be deposited in the lake sediments. LAC48

• Other sites have had active oil and gas operations. For the older fields, there may have been mercury manometers used for regulating natural gas production. Before any nearby soils are used they should be analyzed for elevated levels of mercury. LAC49

Sect. 4: Cumulative Impacts:

"An estimated 150,000,000 cubic yards of borrow material will be needed to complete the 100-year level of protection. Borrow material will also be needed to perform levee lifts and maintenance for at least 50 years after construction is completed." LAC50

Does this mean that additional material in excess of 150 mcyds estimated will be needed for levee maintenance? If so, what will be the impacts and how much additional borrow will be needed in the future based on subsidence and compaction? LAC51

Sect. 5: Selection Rationale

There is no discussion of the borrow criteria to be used in rejecting soils which would not meet the post-Katrina criteria. LAC52

Sect. 6.1: Public Involvement

There were no formal discussions of the Borrow sites at any of the public meetings I attended. The handout which was provided at the Sept 25, 07 meeting did not include discussion of the new sediment criteria. LAC53

Sect. 6.2: Agency Coordination

"Preparation of this IER has been coordinated with appropriate Congressional, Federal, State, and Local interests, as well as environmental groups and other interested parties."

Where are the comments from federal agencies, especially the USF&WS and EPA? If they were part of the coordination, their comments would have been included wouldn't they? As part of the coordination act? At meetings which we attended, there was very little discussion of this IER. They were not formally on the program for discussion or input by stakeholders. LAC54

Conclusion:

Based on the Corps' estimate, IER #18, and 19 address only 24% of borrow required to rebuild the levee system. Therefore, is a net deficit of 114 mcyds (or 76 %) of the total required by Corps which is not included. The Federal Register (US Congress, 2007) does not mention additional IERs for the remainder of the borrow needed for the levee system. Will there be additional revisions of IER #18 and 19 which includes additional borrow sites not included in the draft IERs? If so, when will they be prepared and will the public be able to comment? LAC55

The Corps must lay out the criteria used in the selection or rejection of borrow sites. This information is basic to this IER. These new criteria are not addressed in IER #18 or 19 as required by NEPA. The Corps' rationale must be explained as part of the decision making process. LAC56

Section 7 of the Federal Register (3/13/07) requires "an external engineering peer review of the proposed levees and floodwalls" Will this also include an analysis of the borrow material used for the levees? Will this peer review be done with Corps personnel or outside engineers and geologists paid by the Corps? LAC57

We request a public meeting to discuss both IER #18 and 19 as required in section 6 of the Federal Register (3/13/07). Please inform us when the public meetings will be scheduled on the borrow IERs and if revised IERs will be prepared. LAC58

LAC, 11/30/07 6

LAC 48: This concern was reported by the contractor completing the ESA Phase 1 study. The USACE subject matter expert determined that this issue did not need to be investigated further.

LAC 49: IER #18 contains a corrected statement.

LAC 50: Phase 1 ESA Studies have been performed for each potential borrow area. REC sites are being avoided.

LAC 51: Additional borrow material may be needed by the local non-Federal sponsor to perform operation and maintenance of the HPS over the life of the project. CEMVN expects that additional borrow material needed for this purpose would be identified as the need becomes evident, and any required environmental compliance, analysis and testing would be completed at that time.

LAC 52: See LAC 2.

LAC 53: IERs #18 and #19 were discussed at four public meetings in July 2007 (in Belle Chasse, Avondale, New Orleans East, and St. Charles Parish). Borrow handouts detailing the HPS need and the potential borrow sources have been made available at public meetings since July 2007 and are available at www.nolaenvironmental.gov. Discussions concerning borrow at some of the public meeting in response to questions asked by the public. Borrow issues in St. Bernard Parish were discussed at length at a public meeting in St. Bernard on 24 October 2007.

LAC 54: Copies of comments from other Agencies have been included in the IER #18 Addendum as Section 2 and will be included as an appendix in the IER. Copies of the updated IERs are available at www.nolaenvironmental.gov or by contacting CEMVN. See LAC 53.

LAC 55: See LAC 8.

LAC 56: The soils at proposed borrow areas discussed in IER 18, as well as all other proposed borrow areas, must meet current CEMVN soil standards as discussed in LAC 2 in order to be considered suitable for HPS construction. The selection rationale as discussed in IER #18 is that a site has to meet all of the CEMVN criteria discussed in LAC 1 and LAC 2 for it to be considered as a potential borrow site where material could be taken for use ont the HPS levees.

LAC 57: The USACE Hurricane and Storm Damage Reduction System Design Guidelines, of which the soil standards previously discussed are a part, are reviewed and updated as necessary to ensure that the Corps is constructing the safest levees possible. Changes to the guidelines are reviewed and approved by USACE experts at the local, regional and headquarters level; additional reviews are completed by academia and private individuals who are recognized experts in their fields. Additionally, the guidelines being utilized by CEMVN have been reviewed by members of the Interagency Performance Evaluation Team (IPET). The design guidelines may be updated from time to time to respond to new engineering analysis of improved technology, innovative processes, or new data. An implementation plan for an external review should be finalized in February 2008.

LAC 58: The requested public meeting was held on 10 December 2007.

Sincerely,

Barry Kohl

Barry Kohl, Ph.D., Geologist
President, LAC

cc: Horst Greczmiel, CEQ
Gulf Restoration Network (GRN)
Lake Pontchartrain Basin Found (LPBF)
National Audubon Society (NAS)
Sierra Club, Delta Chapter
EPA
USF&WS

References:

USACE, 2007a. Memo outlining sediment criteria used pre-Katrina and post-Katrina for use in embankment material (hurricane protection levees). Gib Owen, USACE to Barry Kohl dated, August 28, 2007.

USACE 2007b, Hurricane and Storm Damage Reduction System Design Guidelines. New Orleans District Engineering Division, Oct. 23, 2007.

U.S. Congress, 2007. Department of the Army; Corps of Engineers: Adoption of Alternative Arrangements under the National Environmental Policy Act for New Orleans Hurricane and Storm Damage Reduction System. Federal Register, vol. 72, n. 48, p. 11337-11340.

USDA, 1983. Soil Survey of Jefferson Parish, Louisiana. Soil Conservation Service, 95 pp., 43 maps.

Letter # 5: Charles Leon, 4 December 2007

Page 1 of 1

From: charlesleon@cox.net [mailto:charlesleon@cox.net]
Sent: Tuesday, December 04, 2007 8:00 AM
To: MVN Environmental
Subject: NOLA Environmental Comment - General Comment

Good Morning:
The barrow pits are my concern. The massive amount of pits would further deterioate the quality of life and future economic growth of the region. It would scar the region.
Hopefully an alternative such as concret T-Walls would be an alternative.

Thank you and we appreciate the work which the Corps of Engineers is doing.

Sincerely,
Charles Leon

CL 1

CL 1: IERs #1 through #17 will evaluate alternative designs of levee and floodwall projects so that the best engineering solution can be achieved. CEMVN is considering the alternative of using T-walls in all levee and floodwall projects; however, the first priority is creating the most safe and effective hurricane protection system possible.

GULF RESTORATION NETWORK

UNITED FOR A HEALTHY GULF

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December 4, 2007

Mr. Gib Owen
U.S. Army Corps of Engineers
Planning, Programs, and Project Management Division
Environmental Planning and Compliance Branch
CEMVN-PM-RS
PO Box 60267
New Orleans, LA 70160-0267

Sent electronically and via US POST

RE: INDIVIDUAL ENVIRONMENTAL REPORT #18

Dear Mr. Owen:

We are writing on behalf of the Gulf Restoration Network (GRN)[1], Lake Pontchartrain Basin Foundation (LPBF), Sierra Club—Delta Chapter (Sierra Club) Benroe Housing Initiatives, Advocates for Environmental Human Rights, Louisiana Environmental Action Network, William A. Fontenot, Unitarian Universalist Service Committee, M-W & Associates, Coalition to Restore Coastal Louisiana, Louisiana Bayoukeeper, Association of Family Fishermen, and Holy Cross Neighborhood Association. Please accept the following comments regarding the Army Corps of Engineers' *Individual Environmental Report, Government Furnished Borrow Material, Jefferson, Orleans, Plaquemines, St. Charles, and St. Bernard Parishes, Louisiana (IER #18).*

While we recognize that the protection of our coastal resources is urgent, we are concerned about several aspects of IER #18 as it is currently written. These concerns are outlined below:

A. General Comments

Public Participation: So far, the public participation for the expedited NEPA process and specifically IER #18 and #19 has not been adequate for the following reasons:

GRN 1a

[1] The Gulf Restoration Network is a diverse coalition of individual citizens and local, regional, and national organizations committed to uniting and empowering people to protect and restore the resources of the Gulf of Mexico.

GRN 1a: Adequate public notification has been completed by CEMVN. CEMVN has no control over the level of public response or participation.

1. It is very difficult to find these projects online. They are not on the Corps' New Orleans District's website nor is there any indication on the website or a link from the homepage to direct viewers to find the reports at www.nolaenvironmental.gov. Further, these projects, along with the nolaenvironmental.gov website should be much more prominent. The Corps must rectify this immediately to stop making it exceedingly difficult for the public to access and review and comment on these important projects. GRN 1
2. The public comment period for all IER's should be longer than 30 days. Specifically IER 18 and 19 comment periods occur over the Thanksgiving holiday. Given the fact that the public cannot be expected to devote adequate time to these proposals during a very busy time of year, the comment period is inadequate and should be extended to accommodate the disruption. GRN 2
3. The Corps must outreach to impacted communities. Specifically, the Corps should actively visit all of the adjacent and neighboring communities, and distribute fliers and talk to them about the potential impacts to their neighborhoods. We request the Corps pursue this course of action immediately. GRN 3
4. The public comment periods for both IER #18 and #19 end before the "Environmental Justice" meetings even take place. At the very least, people attending these meetings should have an opportunity to comment on IER #18 and #19, and as such we request the comment periods for both be extended to accommodate this. GRN 4
5. We are concerned that the borrow pits are being proposed in a piece-mealed manner and it is difficult to adequately assess their cumulative impact on the region without a single map that combines all of the borrow areas from each IER. We ask that the Corps furnish us with such a map. GRN 5

Therefore, we request a public hearing on IER #18 and #19. The Federal Register announcement published on Tuesday, March 13, 2007 states that "Public meetings to discuss a specific IER *will* be held if requested by the stakeholders involved" (emphasis added). The public has not had adequate opportunities to express their concerns about these projects, and we feel that the public would able to supply additional information that is not included in written comments. GRN 6

Total Fill Necessary Not Addressed: According to IER #18 and #19, 150,000,000 cubic yards of appropriate fill are necessary to make the Metro New Orleans levees meet a "100-year" protection. However, IER #18 and #19 only address approximately 35,000,000 cubic yards of fill. This amounts to only 23% of the necessary fill. It is extremely short-sighted and disingenuous to the public to state that a level of protection will be offered, without the resources to fulfill that promise. For this reason, we recommend that the Corps look at alternative options, like raising houses, to give the public adequate protection. Given this issue, we question the wisdom of taking some of the few areas of "high ground" in the coastal parishes and digging massive pits, thus causing even more loss of land in the coastal area and, in many cases, destroying critical storm surge protection,. GRN 7

2

GRN 1: The CEMVN homepage has been updated. A link at the top of the page directs viewers to www.nolaenvironmental.gov. The www.nolaenvironmental.gov website includes links to borrow handouts, public meeting calendar, and a variety of reports. Each public notice, e-mail distribution, mailing, and news release includes reference to the www.nolaenviornmental.gov website. During the comment period for IER 18, a link directly to the document was posted prominently on the www.nolaenvironmental.gov home page.

GRN 2: The NEPA Alternative Arrangements state that the public review period will be 30 days for each IER. Alternative Arrangements are an expedited process adopted to allow the Federal government to make the best decision possible in a time frame that meets the emergency conditions that it is operating in. A completion goal of June 2011 for HPS projects has been set and CEMVN is working diligently to meet that goal.

GRN 3: CEMVN is currently looking at borrow options around the New Orleans Metropolitan area, as well as outside of the state of Louisiana. It is not feasible to contact each resident individually. Notification is available through the CEMVN websites and notices in local and national newspapers. Notices are also sent out by mail and email to interested stakeholders.

GRN 4: Environmental Justice outreach efforts are being pursued for the entire New Orleans Metropolitan area. Environmental Justice is an important part of the overall outreach effort being pursued by CEMVN, with more than 30 community group meetings planned over the next 12 months. This Addendum provides interested stakeholders with another 30-day opportunity to voice their concerns on the proposed Federal action discussed in IER 18.

GRN 5: An index map has been added to IERs #18 and #19. Copies of the updated IERs are available at www.nolaenvironmental.gov or by contacting CEMVN. Cumulative impacts are an acknowledged data gap that will be addressed in future IERs as more information becomes available on the potential impacts of the HPS projects.

GRN 6: The requested public meeting was held on 10 December 2007.

GRN 7: Public safety is CEMVN's highest priority and, as part of that effort, IERs #1 through #17 are evaluating alternative designs so that the best engineering and safest solution can be achieved. These IERs will provide an analysis of alternatives such as: no action, non-structural, floodwall, and levee. CEMVN is working to identify additional sources of borrow material, and additional potential borrow areas will be addressed in subsequent IERs. CEMVN is investigating borrow sources through the New Orleans Metropolitan area as well as other parts of Louisiana and Mississippi. CEMVN must balance the feasibility of providing borrow material economically in an environmentally acceptable manner that meets the engineering standards established to provide the lowest risk of future disasters to the citizens of the New Orleans area.

Important Information Not Included: There are several necessary items in IER #18 and #19 that are not addressed. For example, IER #18 states that "IER #19 will also discuss barging or utilizing railroad to transport clay material from a remote site(s) as an alternative," and yet IER #19 states that "barge or rail transport of material from areas outside of the New Orleans Metropolitan Area…have not been selected, and are not discussed." If this alternative is not discussed, how are the public and the Corps supposed to make an informed decision? GRN 8

Alternatives Analysis Not Adequate: In both IER #18 and #19, the Corps has failed to adequately perform an alternatives analysis to demonstrate how sites were and were not selected, or why material barged or shipped in from outside sources is or is not adequate or appropriate. Additionally different levee material (ex. hollow-core levees) alternatives must be addressed, especially given the obvious lack of clay material. GRN 9

New Standards for Borrow Not Addressed: Both IER #18 and #19 fail to include the new standards for borrow. These standards should be included to ensure proper selection of soils for the state's levee rebuilding efforts. GRN 10

B. Specific Comments

1.5 Public Concerns: It is concerning that this section is so short and is never re-addressed throughout the rest of the report. It is stated that "the public…feels that the remaining land left in coastal parishes should not be excavated," and that "the public feel(s) that the borrow areas should be backfilled." These aspects are not directly addressed anywhere in the document and require further explanation by the Corps. We would like to echo the public concern regarding digging massive "borrow" pits, which would remove some of the scarce high-ground in coastal parishes, especially with no plans of backfilling these areas and re-establishing the original habitat type (i.e. replanting) as well as invasive species management. GRN 11

1.6 Data Gaps and Uncertainties: It is extremely difficult to look at these projects cumulatively or holistically without outlining the transportation routes for the delivery of the proposed borrow. This is a major concern that impacts traffic congestion, cost of borrow used, air quality, and aesthetics. There is not enough information from which to adequately assess those selected borrow areas and make an informed decision. As such, we request the Corps provide this information. GRN 12

2.2 Description of the Alternatives: In IER #19, the alterative of transportation of fill from remote locations by barge or rail is mentioned. Why it is not explored in IER #18? We assume that it is feasible to have government furnished borrow from regions outside of the coastal parishes. Please address this. GRN 13

2.3 Proposed Action: (1) Dockville Area – 107 acres of bottomland hardwood forest are to be impacted, rather, 100% of the site, for 1 million cubic yards of spoil. This GRN 14

3

GRN 8: Only two sites discussed in IER #19 will utilize barging if approved (Pearlington and St. Gabriel) and the route from the sites would be via the Gulf Intra Waterway (GIWW). No impacts are expected to occur as a result of the use of this site. All other sites discussed will be transported via truck.

GRN 9: IERs #1 through #17 will evaluate alternative designs of levee and floodwall projects, including hollow-core levees. Selection of sites was determined based on the criteria discussed in LAC 1. Proposed borrow areas discussed in the IER meet these criteria. Sites shown as declined failed to meet one or more of the criteria. Barging would be necessary for two Pre-Approved Contractor furnished sites considered under IER #19. This transportation method may become more important as the CEMVN expands its study area through the use of a Supply Contract. A task order was issued to David Miller &Associates on 5 December 2007 to complete a comprehensive transportation study of the HPS study area. This is an acknowledged data gap in the current documents which will be addressed in future documents as information is obtained.

GRN 10: CEMVN soil standards have been included in IER #18 and are discussed in LAC 2. Only soils meeting current standards will be used for construction of HPS projects.

GRN 11: CEMVN is currently considering the feasibility of backfilling Government Furnished borrow sites.

GRN 12: This is an acknowledged data gap in the current documents that will be addressed in future documents as information becomes available. We concur that there will be unavoidable impacts associated with the transport of borrow material to the HPS project sites, but these impacts will occur regardless of the sites selected. In an effort to address this issue, a task order was issued to David Miller & Associates on 5 December 2007 to complete a comprehensive transportation study of the HPS study area.

GRN 13: None of the sites investigated in IER #18 would include barge or rail as available means of transporting material; therefore, these modes of transportation were not addressed in this IER. CEMVN is exploring the feasibility of obtaining borrow from regions outside of the coastal parishes. If any sites outside of the coastal region are investigated, they will be addressed in future IERs.

GRN 14: The BLH located on the Dockville site have been determined by CEMVN Regulatory staff to not be jurisdictional wetlands. The CEMVN is avoiding all jurisdictional wetlands currently as other reasonable alternatives are being investigated. If the Dockville site is used, the impacts to the BLH will be mitigated for as required by WRDA 86, which requires all BLH to be mitigated for regardless of its wetland status. The CEMVN recognizes the critical importance of the Louisiana coastal wetlands for their roles as storm protection buffers and as critical habitat for fish and wildlife and takes these issues into account as potential borrow areas are investigated.

appears totally inappropriate as these wetlands serve important ecologic and storm surge protection features. Such a site begs calls into question the inadequacy of the alternatives analysis that was used to identify borrow sites. An explanation of this site is requested.

(2) Bonnet Carre North - The groups assert that the borrow removal to occur in the Bonnet Carre North must be designed carefully due to its proximity to Lake Pontchartrain and potential and/or real exposure to tidal exchange. The groups request that the Corps furnish more specific information about this borrow area, particularly as the maps fail to illustrate particulars. GRN 15

3.1 Environmental Setting: The information in this section is not very accessible to the public because it contains technical terminology. Specifically, the headings in Table 1 must be explained and/or defined in layman's terms: For example, what is shrink-swell potential? And what is its effect on the decision-making process? GRN 16

3.2.1 Jurisdictional Wetlands: The IER claims that "no direct or indirect impact to jurisdictional wetlands at the proposed borrow areas would occur" with the proposed action. However, the groups assert that indirect impacts to wetlands on and adjacent to the borrow sites would be expected to occur due to hydrologic changes from the excavation and stockpiling of the materials. The indirect impacts of this activity are expected to be long-term especially because the Corps has no plans to restore the borrow areas; such an issue must be addressed as well as acknowledged in the mitigation that will be developed for these projects. GRN 17

3.2.2 Non-Jurisdictional Bottomland Hardwood Forest: This area is of particular interest to the groups listed on this letter. IER 18 does not adequately specify what makes a bottomland hardwood forest non-jurisdictional beyond stating that these forests "do not meet the hydrology criteria for wetlands due to forced drainage features (e.g., manmade ditches, canals, pumping stations)" (p. 35). We feel that even if these areas are artificially drained they still can perform important wetland functions. Also, we request evidence that these areas are not wetlands that are protected under Section 404 or the Clean Water Act. GRN 18

3.2.5 Fisheries: The IER notes, "the existing Bonnet Carre North borrow ponds would be pumped into adjacent ponds, and some fish mortality may occur." The groups question whether the activity will impact Essential Fish Habitat, and request the Corps to provide data on such. GRN19 GRN20

3.2.10 Noise Quality: First, we question how effects on noise quality can be deemed "minimal" when it is stated that "there is not data available regarding the existing conditions." If there is no base-line, how can a judgment be made? Also, this determination contradicts itself, stating both that the effects would be "minimal" but also have short term "high" sound levels. Many of these areas have residents nearby. Have these residents been directly contacted to inform them of the noise pollution that is expected to occur? GRN 21

4

GRN 15: The proposed borrow areas are located at great enough distances from Lake Pontchartrain. No tidal exchange issues are anticipated if these proposed borrow areas are utilized.

GRN 16: The information presented in this table was determined to be not relevant to the IER and was removed from the document.

GRN 17: At this time, CEMVN is avoiding impacts to jurisdictional wetlands. Each borrow area will be designed according to BMPs to avoid impacts to wetlands. Excavation site plans would factor in appropriate setbacks, retention dike construction, etc. to avoid causing secondary impacts such as altered hydrology on any wetlands located in the vicinity of a borrow site.

GRN 18: **BLH** can be present in both wetland and non-wetland hydrologic regimes. CEMVN Regulatory Branch has determined this area to be non-wetland. Non-wetland BLH will be mitigated for as required by WRDA 86, which requires all BLH to be mitigated for regardless of its wetland status.

GRN 19: Jurisdictional determinations have been made for each proposed borrow area by the CEMVN Regulatory Branch.

GRN 20: The proposed Bonnet Carré borrow pits are not classified as Essential Fish Habitat.

GRN 21: Excavation of material from the sites will be completed relatively quickly. As a result, noise impacts are determined to be minimal and temporary in nature. Public notification has occurred as part of the public involvement phase of this project.

3.2.11 Air Quality: Again it is stated that the impacts would be "minimal." but there is no evidence of how air emissions will not "significantly impact air quality in the region." Often, these projects are referred to as "short duration," but there is no statement of how long these projects would be polluting the air in the local regions. Again we also ask if the local residents have been directly contacted to inform them of the air pollution from heavy machinery that in some cases will be operating in close proximity to their homes and families. Some of these families might have health problems that could be exacerbated by the pollution and particulates that will be emitted from these projects. The Corps must address this public information issue. GRN 22

3.2.12 Water Quality: First, we question how effects on water quality can be deemed acceptable when it is stated that "there is not data available regarding the existing conditions." If there is no base-line, how can a judgment be made? We also question the effectiveness of implementing best management practices (BMPs). In fact, we have visited potential borrow sites that do not have adequate BMPs in place (see Figures 1-4). While these figures show projects are technically part of IER #19, given the fact that existing BMPs are not being implemented correctly on these projects, how can the Corps assure that they will be properly implemented and managed in new projects? GRN 23

In addition, the IER indicates that some borrow areas may be drained by sump pump, however no further information or references are made in the document. The groups request information on this, especially as to where the water is to be pumped and if water quality problems such as turbidity as of concern. GRN24

3.3.1 Land, Water, Minerals, Fisheries, and Agriculture: Under "Proposed Action," it is stated that "a relatively small amount of land is used for agricultural purposes." We question this and request evidence. Many areas in the Coastal Parishes are used for crops, forage, and cattle grazing, including some of the proposed areas in IER #18 and #19. GRN25

3.3.3 Business, Industry, Employment, and Income: Similar to the above comment, farming and cattle grazing are not adequately addressed in this section, even though agriculture obviously fits into this category as well. In fact, IER #18 goes so far as to say that "none of the proposed project sites have been identified as impacting business, industries or related employment." We question this assertion and request evidence supporting it. GRN 26

3.3.4 Population and Housing: We feel that the proposed borrow pits will have significant impacts on the population and housing. The IER states that "while adjacent areas include urban and suburban developments, the engineering design and environmental analysis indicate no adverse impacts to housing units." We question how the excavation of 20 foot deep pits with heavy machinery will not at least indirectly impact adjacent housing and neighborhoods. GRN 27

GRN 22: Equipment used to remove and transport borrow material would have temporary impacts on air quality in the borrow pit area. Public notification has occurred as part of the public involvement phase of this project.

GRN 23: CEMVN has determined that Figures 1 and 2 are not related to any planned USACE project in the area. Figures 3 and 4 appear to have been taken of the DK Aggregates site discussed in IER 19 as a possible Pre-Approved Contractor Furnished site. CEMVN does not have any projects currently taking place at this location. If you believe there is an activity going on that is not being properly implemented, we suggest that you talk to the local government officials who may have jurisdiction over the activities in question. All borrow sites utilized by USACE would employ appropriate BMPs and would have a QA/QC program in place to ensure that the BMPs are followed.

GRN 24: CEMVN's intent is to manage waters found on any authorized borrow areas. If it is determined that water cannot be contained on-site, then any National Pollutant Discharge Elimination System (NPDES) permits required would be obtained. Storm water permits would be obtained as per standard operating procedures.

GRN 25: The statement that "a relatively small amount of land is used for agricultural purposes" applies to both pre- and post-Katrina conditions. As it stands, agricultural endeavors are a small part of the economy of the New Orleans MSA, relative to other industries.

GRN 26: Only current land uses are considered relevant to the NEPA process and are compensable if acquired by the Government. See GRN 25.

GRN 27: There would be potential temporary impacts during construction. These include noise and air quality impacts and traffic congestion in or near the borrow areas. There would be no lasting adverse impacts to housing units in the area.

3.3.5 Property Values, Tax Revenues, Public Facilities, and Services: What census information was used? Was it pre- or post-Katrina data? GRN28

3.3.7 Health and Safety: It is evident that there is no intention to back-fill all of the borrow pits, thus large deep ponds will be left behind. Mosquitoes are already problematic in the coastal parishes, and large expanses of open fresh water will only exacerbate this problem. Especially with the possibility of increased tropical diseases in the region, this is a major concern and must be included in the Corp's analysis of all borrow projects. GRN29

3.3.8 Community Cohesion: This IER erroneously states that "the proposed project sites are located in unpopulated areas." This is false. In fact, many of these proposed projects are located adjacent to homeowner's property and neighborhoods. This section also states that "public involvement with the community is part of this process." The public participation process for this entire expedited NEPA process has not been adequate. Each residence adjacent or within half a mile of these projects should be personally notified in writing of the massive dirt removal that will occur nearby and public meetings should be held as well. GRN 30

6.6.1 Public Involvement: See general comments.

7. Mitigation: Mitigation must be considered in conjunction with these projects, since each of these areas is unique, with unique functions, mitigation must be considered at the same time as the proposed environmental destruction. At minimum, the mitigation plans must be finalized and underway before these areas are excavated. GRN31

Appendix D: Part V of The Environmental Design Considerations for Main Stem Levee Borrow Areas Along the Lower Mississippi River Report 4: Under Part 25 of this appendix, it is stated that "maximum depths of 7 feet to 10 feet are recommended, as they are optimal for fish and fishing and overlap the cptima for wildlife." However the depths in the drawings of the different borrow sites are listed as 20 feet deep. This discrepancy must be addressed. GRN32

Thank you for the opportunity to comment on IER #18. We expect that you will take all of the above comments seriously, as they would enhance the project. We look forward to a timely written response. Further, we would welcome the opportunity to meet with the agency to discuss our concerns.

Sincerely,

Matt Rota
Gulf Restoration Network

Jill Mastrototaro
Lake Pontchartrain Basin Foundation

6

GRN 28: The data used is from the 2000 US Census. Relevant data is not yet available to reflect post-Katrina conditions.

GRN 29: See LB 22.

GRN 30: The language in IER #18 has been adjusted to reflect that several of the proposed St. Bernard borrow areas are located near residential housing. CEMVN disagrees with this statement and believes that actions taken to notify the citizens of the New Orleans Metropolitan area have been more than adequate. CEMVN will continue to explore reasonable methods to engage interested stakeholders in the NEPA process for proposed HPS projects. CEMVN is open to forming partnerships with any community groups or NGOs that would increase the level of public awareness of the proposed HPS projects.

GRN 31: Mitigation would not occur prior to implementation of the proposed actions of IER #18. Mitigation for all HPS project impacts is moving forward as a separate effort and mitigation IERs are currently being completed. It is expected that mitigation will be implemented on a large enough scale that mitigation pools are in place as many of the impacts occur.

GRN 32: See LB 9.

Leslie March
Sierra Club, Delta Chapter

Eugene Ben A.I.A
Benroe Housing Initiatives P.C

Monique Harden and Nathalie Walker
Advocates for Environmental Human Rights

Marylee M. Orr
Louisiana Environmental Action Network/Lower Mississippi Riverkeeper

William A. Fontenot

Bev Hoffman
Unitarian Universalist Service Committee

Darryl Malek-Wiley
M-W & Associates

Mark Ford
Coalition to Restore Coastal Louisiana

Tracy Kuhns
Louisiana Bayoukeeper

Michael Roberts
Association of Family Fishermen

Pam Dashiell
Holy Cross Neighborhood Association

Sandy Rosenthal
Levees.org

Attachment

CC: Horst Greczmiel, CEQ [via e-mail]
Dinah Bear, CEQ [via e-mail]
Michael Brown, US Army Corps of Engineers, New Orleans District
Barry Kohl, Louisiana Audubon Council [via e-mail]
Tulane Environmental Law Clinic [via e-mail]
Mark Davis, Tulane University via e-mail]
Jeff Dauzat, Louisiana Department of Environmental Quality [via e-mail]

7

Figure 1. Cleared area for borrow extraction on Bayou Rd. and Jerose Dr. Note lack of BMPs and clearing all the way up to the water body.

Figure 2. Cleared area for borrow extraction on Bayou Rd. and Jerose Dr. Note lack of BMPs and clearing all the way up to the water body.

8

GRN Figures 1 and 2. The site identified in the picture is not a part of the proposed Federal action described in IER 19.

Figure 3. DK Aggregates Proposed Borrow Area. Appears to potentially be wetland. Also note lack of BMPs and clearing all the way up to the water body.

Figure 4. DK Aggregates Proposed Borrow Area. Appears to potentially be wetland. Also note lack of BMPs and clearing all the way up to the water body.

9

GRN Figures 3 and 4. The site identified in the pictures appears to be the same site identified in IER 19 as the proposed Pre-Approved Contractor Furnished borrow site. Any activities that have occurred on this site are the result of the landowner and/or his agents and are not associated with the CEMVN's proposed action. The DK Aggregates site identified in IER 19 for possible use has been determined to not contain any waters subject to Corps Clean Water Act Section 404 jurisdiction.

Appendix C: Members of Interagency Environmental Team

Kyle Balkum	Louisiana Dept. of Wildlife and Fisheries
Agaha Brass	Louisiana Department of Natural Resources
Catherine Breaux	U.S. Fish and Wildlife Service
David Castellanos	U.S. Fish and Wildlife Service
Frank Cole	Louisiana Department of Natural Resources
John Ettinger	U.S. Environmental Protection Agency
Jeffrey Harris	Louisiana Department of Natural Resources
Richard Hartman	NOAA National Marine Fisheries Service
Jeffrey Hill	NOAA National Marine Fisheries Service
Christina Hunnicutt	U.S. Geologic Survey
Barbara Keeler	U.S. Environmental Protection Agency
Kirk Kilgen	Louisiana Department of Natural Resources
Tim Killeen	Louisiana Department of Natural Resources
Brian Lezina	Louisiana Dept. of Wildlife and Fisheries
David Muth	U.S. National Park Service
Clint Padgett	U.S. Geologic Survey
Jamie Phillippe	Louisiana Dept. of Environmental Quality
Manuel Ruiz	Louisiana Dept. of Wildlife and Fisheries
Angela Trahan	U.S. Fish and Wildlife Service
David Walther	U.S. Fish and Wildlife Service
Patrick Williams	NOAA National Marine Fisheries Service

Appendix D: Agency Correspondence

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506
August 7, 2006

Colonel Richard P. Wagenaar
District Commander
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Wagenaar:

As you know, the U.S. Fish and Wildlife Service (Service) is assisting the U.S. Army Corps of Engineers (Corps) in assessing impacts of, and mitigation requirements for, borrow sites which are needed to complete authorized improvements, and to construct Federal and non-Federal hurricane/flood protection levees in southern Louisiana. Those improvements to hurricane and flood control projects are authorized by the Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico (Public Laws 109-148, PL 84-99 and PL 109 234 (4th supplemental)). This letter is provided in accordance with the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), Fish and Wildlife Coordination Act (FWCA, 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), and the Migratory Bird Treaty Act (40 Stat. 755, as amended; 16 U.S.C. 703 et seq.), but it does not constitute the final report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act.

Through the efforts of Task Force Guardian, the Corps has restored Hurricane Katrina-damaged hurricane/flood protection projects to their authorized or previously permitted/constructed protection levels. Identification of borrow areas needed to complete those repairs utilized a protocol that prioritized selection of those sites in the following order: existing commercial pits, upland sources, previously disturbed/manipulated wetlands within a levee system, and low-quality wetlands outside a levee system. The Service supports the use of such protocols to avoid and minimize impacts to wetlands and bottomland hardwoods within project areas. Avoidance and minimization of those impacts helps to provide consistency with restoration strategies and compliments the authorized hurricane protection efforts. Such consistency is also required by Section 303(d)(1) of the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA).

Accordingly, the Service recommends that prior to utilizing borrow sites every effort should be made to reduce impacts by using sheetpile and/or floodwalls to increase levee heights wherever feasible. In addition, the Service recommends that the following protocol be adopted and utilized to identify borrow sources in descending order of priority:

1. Permitted commercial sources, authorized borrow sources for which environmental clearance and mitigation have been completed, or non-functional levees after newly constructed adjacent levees are providing equal protection.

2. Areas under forced drainage that are protected from flooding by levees, and that are:

   a) non-forested (e.g., pastures, fallow fields, abandoned orchards, former urban areas) and non-wetlands;

   b) wetland forests dominated by exotic tree species (i.e., Chinese tallow-trees) or non-forested wetlands(e.g., wet pastures), excluding marshes;

   c) disturbed wetlands (e.g., hydrologically altered, artificially impounded).

3. Sites that are outside a forced drainage system and levees, and that are:

   a) non-forested (e.g., pastures fallow fields, abandoned orchards, former urban areas) and non-wetlands;

   b) wetland forests dominated by exotic tree species (i.e., Chinese tallow-trees) or non-forested wetlands(e.g., wet pastures), excluding marshes;

   c) disturbed wetlands (e.g., hydrologically altered, artificially impounded).

Notwithstanding this protocol, the location, size and configuration of borrow sites within the landscape is also critically important. Coastal ridges, natural levee flanks and other geographic features that provide forested/wetland habitats and/or potential barriers to hurricane surges should not be utilized as borrow sources, especially where such uses would diminish the natural functions and values of those landscape features.

To assist in expediting the identification of borrow sites, the Service recommends that immediately after the initial identification of a new borrow site the Corps should initiate informal consultation with the Service regarding potential impacts to federally listed threatened or endangered species. To aid you in complying with those proactive consultation responsibilities, the Service has enclosed a list of threatened and endangered species and their critical habitats within the coastal parishes of the New Orleans District.

The Service offers the following additional recommendations for reducing borrow site impacts on fish and wildlife resources and, where feasible, enhancing those resources. However, these additional recommendations should not be implemented if they would result in the expansion of existing borrow pits or construction of new borrow pits in wetlands or bottomland hardwoods.

1. A minimum of 30 percent of the borrow pits' edge should slope no greater than 5 horizontal (H):1 vertical (V), starting from the water line down to a depth of approximately 5 feet.

2. Most of the woody vegetation removed during clearing and grubbing should be placed into the deepest parts of the borrow pits and the remaining debris should be placed in the water along the borrow pit shorelines, excluding those areas where the 5H:1V slope, per recommendation 1, have been constructed.

3. Following construction, perimeter levees (if constructed) around each borrow pit should be gapped at 25-foot intervals with an 8-foot-wide breach, the bottom elevation of which should be level with the adjacent natural ground elevation.

When avoidance and minimization of bottomland hardwood and wetland impacts is not practicable, all unavoidable net losses of those habitats should be fully offset via compensatory mitigation. Such compensatory mitigation should sited within the watershed and/or hydrologic unit where the impact occurred, and should be completed concurrently with borrow operations, or as soon thereafter as possible.

The combined need for borrow necessary to complete authorized improvements to and construction of Federal and non-Federal hurricane/flood protection levees, and the potential construction of levees capable of withstanding a category 5 hurricane, will require substantial amounts of borrow. It is highly likely such amounts would exceed local availability. In the case of ongoing hurricane/flood protection projects (e.g., Morganza to the Gulf) the search for levee-building material has been conducted primarily on project-by-project basis. In the context of such project-by-project searches for borrow material, the least-expensive and easiest sources of borrow material are usually located within wetlands and/or bottomland hardwoods, adjacent to the proposed levee. Such on-site sources, however, often involve adverse impacts to wetlands, thus exacerbating the overall wetland loss problem in all coastal basins, especially those in the deltaic plain of southeast Louisiana. In short, while such on-site sources are relatively inexpensive, they will frequently be inconsistent with coastal restoration efforts and, to the extent that wetlands will be adversely impacted, use of those sites will be counterproductive with respect to minimizing wetland impacts and attaining the goal of increasing non-structural hurricane protection within a sustainable ecosystem.

Large-scale, off-site borrow sources could have the potential to reduce environmental impacts from levees and expedite project-by-project environmental review. Such potential "programmatic" borrow sources could include uplands along the Mississippi River, beneficial use of sediments dredged for navigation purposes (including the mining of disposal sites), the Mississippi River, and offshore deposits (e.g., Ship Shoal). As part of the planning process, we recommend that the Corps begin investigating the practicability of various large-scale, off-site borrow sources and actively involve all resource agencies with the Protection and Restoration Office's Borrow Team efforts.

Programmatic planning would be essential to identify borrow sites of acceptable quantity and quality, while avoiding and/or minimizing adverse environmental impacts. We therefore recommend that a plan be developed that integrates borrow resources, uses, and needs for various programs and activities. Guiding principles should be developed to identify borrow resources, borrow-site designs, and prioritize uses to avoid competing for resources, maximize benefits with those resources, and avoid adverse environmental impacts.

We appreciate the opportunity to provide this planning-aid letter and would be pleased to assist your agency in further identification of potential borrow sources. Should you or your staff have any questions regarding this letter, please contact David Walther (337/291-3122) of this office.

Sincerely,

Russell C. Watson
Supervisor
Louisiana Field Office

Enclosure

cc: National Marine Fisheries Service, Baton Rouge, LA
EPA, Dallas, TX
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources, CMD, Baton Rouge, LA
LA Dept. of Natural Resources, CRD, Baton Rouge, LA

Threatened and Endangered Species in Coastal Louisiana – FWS Responsibility

		GENERAL DISTRIBUTION IN LOUISIANA
MAMMALS		
Bear, Louisiana* (*Ursus americanus luteolus*)	T	Entire state
Manatee, West Indian (*Trichechus manatus*)	E	Lake Pontchartrain & tributaries on North shore; rare along Gulf coast
BIRDS		
Eagle, bald (*Haliaeetus leucocephalus*)	T	Entire state
Pelican, brown (*Pelecanus occidentalis*)	E	Coast
Plover, piping** (*Charadrius melodus*)	T	Coast
Woodpecker, red-cockaded (*Campephilus principalis*)	E	Entire state except Delta
REPTILES		
Tortoise, gopher (*Gopherus polyphemus*)	T	Washington, St. Tammany, and Tangipahoa Parishes
Turtle, ringed map (=sawback) (*Graptemys oculifera*)	T	Pearl and Bogue Chitto Rivers
Turtle, loggerhead sea (*Caretta caretta*)	T	Potential Nesting on Chandeleuer Is.
FISH		
Sturgeon, Gulf** (*Acipenser oxyrhynchus desotoi*)	T	Pearl River & Lake Pontchartrain tributaries
Sturgeon, pallid (*Scaphirhynchus albus*)	E	Mississippi River & tributaries
INVERTEBRATES		
Mussel, inflated heelsplitter (*Potamilus inflatus*)	T	Amite River
PLANTS		
Louisiana quillwort (*Isoetes louisianensis*)	E	Washington and St. Tammany Parishes

*Indicates proposed critical habitat
**Indicates designated critical habitat

Enclosure

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506
October 25, 2007

Colonel Alvin B. Lee
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

Please reference the Individual Environmental Report (IER) 18, that addresses impacts resulting from the excavation of government-furnished borrow sites. Excavated material will be used to increase hurricane protection within the Greater New Orleans area located in southeast Louisiana. Work associated with that IER is being conducted in response to Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4). That law authorized the Corps of Engineers (Corps) to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area to provide protection against a 100-year hurricane event. This draft report contains an analysis of the impacts on fish and wildlife resources that would result from excavation of those borrow sites and provides recommendations to minimize and/or mitigate project impacts on those resources.

The proposed project was authorized by Supplemental 4 which directed the Corps to proceed with engineering, design, and modification (and construction where necessary) of the Lake Pontchartrain and Vicinity and the West Bank and Vicinity Hurricane Protection Projects so those projects would provide 100-year hurricane protection. Procedurally, project construction has been authorized in the absence of the report of the Secretary of the Interior that is required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). In this case, the authorization process has prevented our agencies from following the normal procedures for fully complying with the FWCA. The FWCA requires that our Section 2(b) report be made an integral part of any report supporting further project authorization or administrative approval. Therefore, to fulfill the coordination and reporting requirements of the FWCA, the Service will be providing post-authorization 2(b) reports for individual IERs.

This draft report incorporates and supplements our Fish and Wildlife Coordination Act Reports that addressed impacts and mitigation features for the Westbank and Vicinity of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the Lake Pontchartrain and Vicinity Hurricane (dated July 25, 1984, and January 17, 1992) Protection projects. However, this report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. This report has been provided to the Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service; their comments will be incorporated into our final

report.

DESCRIPTION OF THE STUDY AREA

The study area is located within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Portions or all of Jefferson, Orleans, St. Charles, St. Bernard and Plaquemines Parishes are included in the study area. Higher elevations occur on the natural levees of the Mississippi River and its distributaries. Developed lands are primarily associated with natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development. Federal, State, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. Navigation channels such as the Gulf Intracoastal Waterway and the Mississippi River – Gulf Outlet are also prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals. Extensive wetlands and associated shallow open waters dominate the landscape outside the flood control levees. Major waterbodies include Lake Pontchartrain located north of the project area, the Mississippi River which bisects the project area and Lake Borgne which is located on the eastern edge of the project area.

FISH AND WILDLIFE RESOURCES

Description of Habitats

Habitat types in the study area include forested wetlands (i.e., bottomland hardwoods and/or swamps), non-wet bottomland hardwoods, marsh, open water, and developed areas. Due to urban development and a forced-drainage system, the hydrology of much of the forested habitat has been altered. The forced-drainage system has been in operation for many years, and subsidence is evident throughout the area. Because no marshes will be impacted by borrow areas addressed in this report, that habitat type will not be described in detail.

Wetlands (forested, marsh, and scrub-shrub) within the study area provide plant detritus to adjacent coastal waters and thereby contribute to the production of commercially and recreationally important fishes and shellfishes. Wetlands in the project area also provide valuable water quality functions such as reduction of excessive dissolved nutrient levels, filtering of waterborne contaminants, and removal of suspended sediment. In addition, coastal wetlands buffer storm surges reducing their damaging effect to man-made infrastructure within the coastal area.

Factors that will strongly influence future fish and wildlife resource conditions outside of the protection levees include freshwater input and loss of coastal wetlands. Depending upon the deterioration rate of marshes, the frequency of occasional short-term saltwater events may increase. Under that scenario, tidal action in the project area may increase gradually as the buffering effect of marshes is lost, and use of that area by estuarine-dependent fishes and shellfish tolerant of saltwater conditions would likely increase. Regardless of which of the above factors ultimately has the greatest influence, freshwater wetlands within and adjacent to the project area will probably experience losses due to development, subsidence, and erosion.

Non-wet bottomland hardwoods within the project area also provide habitat for wildlife resources. Between 1932 and 1984, the acreage of bottomland hardwoods in Louisiana declined by 45 percent (Rudis and Birdsey 1986). By 1970, Jefferson Parish was classified as entirely urban or nonforested in the U.S. Forest Service's forest inventory with most of this loss resulting from development within non-wet areas inside the hurricane protection levees. A large percentage of the original bottomland hardwoods within the Mississippi River floodplain acreage in the Deltaic Plain are located within a levee system, especially those at higher elevations. However, losses of that habitat type are not regulated or mitigated with the exception of impacts resulting from Corps projects as required by Section 906(b) of the Water Resources Development Act of 1986.

As previously mentioned, the Service has provided previous FWCA Reports for the two subject hurricane protection projects. Those reports contain a discussion of the significant fish and wildlife resources including habitats that occur within the study area. For brevity, that discussion is incorporated by reference herein, but the following brief descriptions are provided to update the previously mentioned information.

Forested Habitats

Forested habitats in the study area were divided into two major types; bottomland hardwood forests and cypress-tupelo swamps. Bottomland hardwood forests found in the project area occur primarily on the natural levees of the Mississippi River or former distributary channels. Dominant vegetation may include sugarberry, water oak, live oak, bitter pecan, black willow, American elm, Drummond red maple, Chinese tallow-tree, boxelder, green ash, bald cypress, and elderberry. Most bottomland hardwoods that are located within the constructed hurricane protection projects have been degraded by forced drainage and resultant subsidence. Those areas are also often fragmented by development. Conversely, those bottomland hardwoods located outside the protection levees, or in areas where structures through the levees maintain a hydrologic connection, still retain many wetland functions and values.

Cypress-tupelo swamps are located along the flanks of larger distributary ridges as a transition zone between bottomland hardwoods and lower-elevation marsh or scrub-shrub habitats. Cypress-tupelo swamps exist where there is little or no salinity, usually minimal daily tidal action and are usually flooded throughout most of the growing season. Bald cypress-tupelo gum are the dominant vegetation within this habitat type, however, Drummond red maple, green ash, and black willow are also common. Cypress swamps that are within the levee system and under forced drainage are often dominated by bald cypress, but vegetative species more typical of bottomland hardwoods will dominate the under- and mid-story vegetation. These sites will often have ecological functions closer to those of a bottomland hardwood. Because of their altered hydrology, these areas can potentially convert to sites dominated by bottomland hardwood species.

Scrub-Shrub Habitats

Scrub-shrub habitat is often found along the flanks of distributary ridges and in marshes altered by spoil deposition or drainage projects. Typically it is bordered by marsh at lower elevations and by

developed areas, cypress-tupelo swamp, or bottomland hardwoods at higher elevations. Typical scrub-shrub vegetation includes elderberry, wax myrtle, buttonbush, black willow, Drummond red maple, Chinese tallow-tree, and groundselbush.

Open-Water Habitats

Open-water habitat within the project area consists of ponds, lakes, canals, and bayous. Natural marsh ponds and lakes are typically shallow, ranging in depth from 6 inches to over 2 feet. Typically, the smaller ponds are shallow and the larger lakes are deeper. In fresh and low-salinity areas, ponds and lakes may support varying amounts of submerged and/or floating-leaved aquatic vegetation.

Dead-end canals and small bayous are typically shallow and their bottoms may be filled in to varying degrees with semi-fluid organic material. Erosion due to wave action and boat wakes, together with shading from overhanging woody vegetation, tends to retard the amount of intertidal marsh vegetation growing along the edges of those waterways.

Drainage canals enclosed within the hurricane protection project are stagnant except when pumps are operating to remove water. Runoff from developed areas has likely reduced the habitat value of that aquatic habitat by introducing various urban pollutants, such as oil, grease, and excessive nutrients. Clearing and development has eliminated much of the riparian habitat that would normally provide shade and structure for many aquatic species.

Developed Areas

Developed habitats in the study area include residential and commercial areas, as well as roads and existing levees. Those habitats do not support significant wildlife use. Most of the development is located on higher elevations of the Mississippi River natural levees and former distributary channels; however, vast acreages of swamp and marsh have been placed under forced drainage systems and developed. Limited amounts of agricultural lands occur through out the area; agriculture includes sugarcane farming, cattle production, and haying. Some development is also occurring as wetlands are filled to accommodate growth

Fishery/Aquatic Resources

Drainage canals in the study area do not support significant fishery resources because of dense vegetation, poor water quality, and inadequate depth. Freshwater sport fishes present in the project area, but outside of the levees, include largemouth bass, crappie, bluegill, redear sunfish, warmouth, channel catfish, and blue catfish. Other fishes likely to be present include yellow bullhead, freshwater drum, bowfin, carp, buffalo, and gar.

Some of the waterbodies in the project area meet criteria for primary and secondary contact recreation and partially meet criteria for fish and wildlife propagation; while others do not meet the latter criteria. Causes for not fully meeting fish and wildlife propagation criteria include excessive nutrients, organic enrichment, low dissolved oxygen levels, flow and habitat alteration, pathogens and noxious aquatic

plants. Sources of those problems include hydromodification, habitat modification, recreational activities, and unspecified upstream inputs. Municipal point sources, urban runoff, storm sewers, and onsite wastewater treatment systems are also known contributors to poor water quality in the area.

Wildlife Resources

Mammals known to occur in the project-area bottomland hardwoods and marshes include mink, raccoon, swamp rabbit, nutria, river otter, and muskrat. Those habitats also support a variety of birds including herons, egrets, ibises, least bittern, rails, gallinules, olivaceous cormorant, white pelican, pied-billed grebe, black-necked stilt, sandpipers, gulls, and terns. Forested and scrub-shrub habitats within the study area also provide habitat for many resident passerine birds and essential resting areas for many migratory songbirds including warblers, orioles, thrushes, vireos, tanagers, grosbeaks, buntings, flycatchers, and cuckoos.

Given the extent of development and drainage, waterfowl use within the hurricane protection system is likely minimal, while adjacent wetlands outside the levees provide high quality habitat. Swamps, fresh and intermediate marshes usually receive greater waterfowl utilization than brackish and saline marshes because they generally provide more waterfowl food. Resident species expected to occur in the project area include mottled ducks and wood ducks. The study area also supports resident hawks and owls including the red-shouldered hawk, barn owl, common screech owl, great horned owl, and barred owl. The red-tailed hawk, marsh hawk, and American kestrel are seasonal residents which utilize habitats within the study area.

Amphibians such as the pig frog, bullfrog, leopard frog, cricket frog, and Gulf coast toad are expected to occur in the fresh and low salinity wetlands of the project area. Reptiles such as the American alligator, snapping turtle, softshell turtle, red-eared turtle, and diamond backed terrapin are also expected to occur in the project-area wetlands and waterbodies.

Endangered and Threatened Species

To aid the Corps in complying with their proactive consultation responsibilities under the Endangered Species Act (ESA), the Service provided a list of threatened and endangered species and their critical habitats within the coastal parishes of the New Orleans District (see Attachment). The Corps has conducted ESA consultation on each borrow site as they were identified and no threatened or endangered species or their critical habitat were located at any borrow site. If a proposed borrow site is changed significantly or relocated, or excavation is not implemented within 1 year, we recommend that the Corps reinitiate coordination with this office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.

National Wildlife Refuges and Parks

Located within the study area are the Bayou Segnette and the St. Bernard State Parks, which are operated by the Louisiana Department of Culture, Recreation and Tourism, Office of State Parks. The Barataria Unit of Jean Lafitte National Historical Park and Preserve is located on the west bank of the

Mississippi River and managed by the National Park Service. The Service's Bayou Sauvage National Wildlife Refuge is located in the eastern portion of the project area.

Future Fish and Wildlife Resources

The combination of subsidence and sea level rise results in higher water levels, stressing most non-fresh marsh plants and forested wetlands leading to plant death and conversion to open water. Other major causes of wetland losses within the study area include altered hydrology, storms, saltwater intrusion (caused by marine processes invading fresher wetlands), shoreline erosion, herbivory, and development activities including the direct and indirect impacts of dredge and fill (Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority 1998). The continued conversion of wetlands and forested habitats to open water or developed land represents the most serious fish and wildlife-related problem in the study area. Habitat losses could be expected to cause declines in the study area's carrying capacity for migratory waterfowl, wading birds, other migratory birds, alligators, furbearers, and game mammals.

ALTERNATIVES UNDER CONSIDERATION

The proposed borrow sites have been located in areas that minimize impacts to wetlands and impacts to non-wet bottomland hardwoods have also been avoided to the extent practicable. Use of adjacent borrow, the typical construction method, has been limited because of soil conditions (i.e., insufficient clay content), thus impacts resulting from expansion of borrow sites into wetlands has been avoided in some areas. The Service provided an August 7, 2006, Planning-aid Letter to the Corps proposing a protocol to identify borrow sites thereby minimizing impacts to fish and wildlife resources. The Corps has used that protocol as a guideline in identifying potential government-furnished borrow sites.

PROJECT IMPACTS

Excavation of borrow sites will result in the conversion of terrestrial habitat into open-water areas. Because pasture habitat has a reduced value to fish and wildlife resources and is not a declining or limited habitat type, impacts associated with conversion of pasture to open-water were quantified only by acreage. Impacts to bottomland hardwood were quantified by acreage and habitat quality (i.e., average annual habitat unit or AAHUs) and are presented in Table 1.

The Service used the Habitat Assessment Methodology (HAM) to quantify the benefits of anticipated mitigation measures for forested habitats. The habitat assessment models for swamps and bottomland hardwoods within the Louisiana Coastal Zone utilized in this evaluation are modified from those developed in the Service's Habitat Evaluation Procedures (HEP). For each habitat type, those models define an assemblage of variables considered important to the suitability of an area to support a diversity of fish and wildlife species (Louisiana Department of Natural Resources 1994; U.S. Fish and Wildlife Service 1980). The HAM, however, is a community-level evaluation instead of the species-based approach used with HEP. Further explanation of how impacts/benefits are assessed with HAM and an explanation of the

Table 1: Impacts from Government Furnished Borrow Sites

Proposed Borrow Sites	Parish	BLH impacted (acres)	AAHUs lost
1418/1420 Bayou Rd.	St. Bernard	13.0	6.2
1572 Bayou Rd.	St. Bernard	3.7	1.79
Dockville	St. Bernard	16.0 young BLH	6.72
		57.8 BLH	37.06
		24.9 BLH w/ cypress	17.46
Belle Chasse	Plaquemines	8.0	3.68
Maynard	Orleans	44.0	14.65
Cummings North	Orleans	182.0	54.14
Churchill Farms Site A	Jefferson	29.9	10.62
Westbank Site G	Jefferson	82.0	45.52
Total		461.3	197.84

assumptions affecting habitat suitability (i.e., quality) index (HIS) values for each target year are available for review at Service's Lafayette, Louisiana, field office.

As indicated in Table 1, our HAM analyses indicate that project implementation would result in the direct loss of 461.3 acres and 197.84 AAHUs of bottomland hardwood forests.

FISH AND WILDLIFE CONSERVATION MEASURES

The President's Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process. Based on current and expected future without-project conditions, the planning goal of the Service is to develop a balanced project, i.e., one that is responsive to demonstrated hurricane protection needs while addressing the co-equal need for fish and wildlife resource conservation.

The Service's Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of forested wetlands and marsh for fish and wildlife and the relative scarcity of that habitat type, those wetlands are usually designated as Resource Category 2 habitats, the mitigation goal for which is no net loss of in-kind habitat value. The degraded (i.e., non-wet) bottomland hardwood forest and any wet pastures that may be impacted, however, are placed in Resource Category 3 due to their reduced value to wildlife, fisheries and lost/degraded wetland functions. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value.

To minimize wetland and bottomland hardwood impacts, the Service recommends that prior to utilizing borrow sites, every effort should be made to reduce impacts by using sheetpile and/or floodwalls to increase levee heights wherever feasible. In addition, the Service recommends that the previous protocol to identify and prioritize borrow sources provided in our August 7, 2006, Planning-aid letter (attached) should continue to be utilized as a guide in locating future borrow-sites.

SERVICE POSITION AND RECOMMENDATIONS

Excavation of borrow sites result in the loss of 461.3 acres of bottomland hardwoods for a total loss of 197.84 AAHUs. The Service does not object to the use of the proposed borrow sites provided the following fish and wildlife recommendations are implemented concurrently with project implementation:

1. The Corps and local sponsor shall provide 197.84 AAHUs to compensate for the unavoidable, project-related loss of forested lands. The Service, National Marine Fisheries Service, Louisiana Department of Wildlife and Fisheries, and Louisiana Department of Natural Resources should be consulted regarding the adequacy of any proposed alternative mitigation sites.

2. The protocol to identify and prioritize borrow sources provided in our August 7, 2006, Planning-aid letter (attached) should continue to be utilized as a guide in locating future borrow-sites.

3. Any proposed change in borrow site features, locations or plans shall be coordinated in advance with the Service, NMFS, LDWF, and LDNR.

4. The project's first Project Cooperation Agreement (or similar document) shall include language that includes the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation features.

5. Forest clearing associated with borrow site preparation should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

6. If a proposed borrow site is changed significantly or excavation is not implemented within 1 year, we recommend that the Corps reinitiate coordination with this office to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their

habitat.

Sincerely,

Nicholas A Fuller
(Acting for)

James F. Boggs
Acting Supervisor
Louisiana Field Office

Enclosures

cc: EPA, Dallas, TX
NMFS, Baton Rouge, LA
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources (CMD/CRD), Baton Rouge, LA

LITERATURE CITED

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. Coast 2050: Towards a Sustainable Coastal Louisiana. Louisianan Department of Natural Resources. Baton Rouge, LA. 161 p.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

November 7, 2007 F/SER46/RH:jk
225/389-0508

Mr. Gib Owen
Environmental Planning and Compliance Branch
Planning, Programs, and Management Division
New Orleans District, U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Mr. Owen:

NOAA's National Marine Fisheries Service (NMFS) has received the draft **Individual Environmental Report (IER) #18** provided by letter from Ms. Elizabeth Wiggins dated October 29, 2007. The draft IER evaluates and quantifies the impacts associated with the use of 12 government-furnished borrow sites to restore levees to the 100-year level of hurricane protection.

NMFS has reviewed the draft IER and agrees that none of the borrow sites are located in areas classified as essential fish habitat or supportive of marine fishery resources. As such, we have no comments to provide on the draft IER.

We appreciate the opportunity to review and comment on the draft IER.

Sincerely,

for Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, Lafayette
EPA, Dallas
LA DNR, Consistency
F/SER46, Ruebsamen
Files

KATHLEEN BABINEAUX BLANCO
GOVERNOR

State of Louisiana
DEPARTMENT OF WILDLIFE AND FISHERIES

BRYANT O. HAMMETT, JR.
SECRETARY

November 28, 2007

Mr. Gib Owen
Planning, Programs, and Project
Management Division
Environmental Planning and
Compliance Branch
United States Army Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

RE: *Application: IER #18*
Applicant: U.S. Army Corps of Engineers, New Orleans District
Public Notice Date: October 29, 2007

Dear Mr. Serio:

The professional staff of the Louisiana Department of Wildlife and Fisheries, Office of Wildlife, has reviewed the above referenced Public Notice. Based upon this review the following has been determined:

> LDWF has no objection to the activity, provided that implementation of the Proposed Action (3.2.1 Jurisdictional Wetlands) has no direct or indirect impact to jurisdictional wetlands at the proposed borrow areas.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding the proposed activity. Please do not hesitate to contact Chris Davis (225-765-2642) of our Habitat Section should you need further assistance.

Sincerely,

Venise Ortego

Venise Ortego, Permits Coordinator

cd

c: Kyle Balkum, Biologist Program Manager
Chris Davis, Biologist
EPA, Marine & Wetlands Section
USFWS Ecological Services

United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

November 29, 2007

Colonel Alvin B. Lee
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

The U.S. Fish and Wildlife Service (Service) has reviewed the draft Individual Environmental Report 18 for the Government Furnished Borrow Material, Jefferson, Orleans, Plaquemines, St. Charles, and St. Bernard Parishes, Louisiana. Those documents, transmitted via an October 28, 2007, letter from Ms. Elizabeth Wiggins, Chief of your Environmental Planning and Compliance Branch, describe the proposed work (i.e., excavation of borrow sites) needed to provide earthen material to improve levees to 100-year flood protection design grade. That IER also describes impacts to fish and wildlife resources. The following comments are provided in accordance with provisions of the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321-4347).

Based on information in the IER, approximately 482.7 acres of non-wet bottomland hardwoods would be converted to open-water areas (i.e., borrow pits). Those impacts would result in the loss of approximately 214.62 Average Annual Habitat Units (AAHUs), which represent a numerical combination of habitat quality and quantity. The Corps has indicated that those impacts would be compensated via implementation of appropriate mitigation. That mitigation will be addressed in a separate IER.

The Service recommends that the IER incorporate that information provided in the Services August 7, 2006, Planning-aid Letter regarding siting of borrow sites and potential environmental features into the document (i.e., Section 2.1, Alternatives Development and Preliminary Screening Criteria). In addition, the Service recommends that the IER indicate the Corps would implement Department of Environmental Quality non-point source guidelines/best management practices to reduce impacts to water quality (i.e., Section 3.2.12 Water Quality, page 45).

We appreciate the opportunity to review the IER for the borrow areas and are pleased with your proactive measures that your staff has taken to avoid impacting wetlands within the

project area. If your staff has any questions or comments on this letter, please have them contact David Walther (318/291-3122) of this office.

Sincerely,

James F. Boggs
Acting Supervisor
Louisiana Field Office

cc: EPA, Dallas, TX
National Marine Fisheries Service, Baton Rouge, LA
U.S. Army Corps of Engineers, CEMVN-PM-RP, New Orleans, LA
LA Dept. of Wildlife and Fisheries, Baton Rouge, LA
LA Dept. of Natural Resources, CMD, Baton Rouge, LA

Appendix E: Part V of The Environmental Design Considerations for Main Stem Levee Borrow Areas Along the Lower Mississippi River Report 4

PART V: DESIGN CONSIDERATIONS FOR FISHERIES AND WILDLIFE

Routine Considerations

24. This section describes economical environmental considerations that can be routinely implemented to benefit fisheries and wildlife. Individually, borrow sites often pose constraints which limit options of the engineer, environmental planner, and contractor. After limitations to design and excavation have been identified (Part II) and site-specific data (paragraphs 22-23) suggest that routine considerations for fish and wildlife are warranted, users may follow the guidance outlined in this section to make minor changes in borrow pit design to improve fish and wildlife resources.

Basin Morphometry

25. Depth. Whenever suitable depths of borrow materials and ground water permit, sites should be excavated to a depth adequate to permit the formation of a permanent pool of water. At a minimum, borrow pits must exceed 4-foot maximum depth and 2-foot mean depth to retain some water during dry periods. Mean depth is obtained by dividing the volume of the borrow pit by the surface area of the pit. Maximum depths of 7 to 10 feet are recommended, as they are optimal for fish and fishing and overlap the optima for wildlife (4 to 10 feet). Ideally, mean depth should exceed 3 feet.

26. Basin and shoreline shapes. Shoreline slopes should be variable but with slopes of from 3 to 4H:1V on the leveeward and riverward sides of the pit. Steep slopes at these locations increase basin concavity, which will provide a substantial area of water during dry periods and increase the productivity of benthic invertebrates and fish. A slope of 4:1 is gradual enough for wildlife and livestock to traverse and can be safely mowed, if necessary. Upstream and downstream ends of pits and traverses should have slopes of about 10:1 to provide ample shallow area for bass, bluegill, and other sunfishes to spawn and for wading birds and shoreline birds to feed. The bottom slope should be about 25:1, beginning at a depth of 3 feet

along the levee side and tapering to the maximum attainable depth near the riverward side (Figure 2).

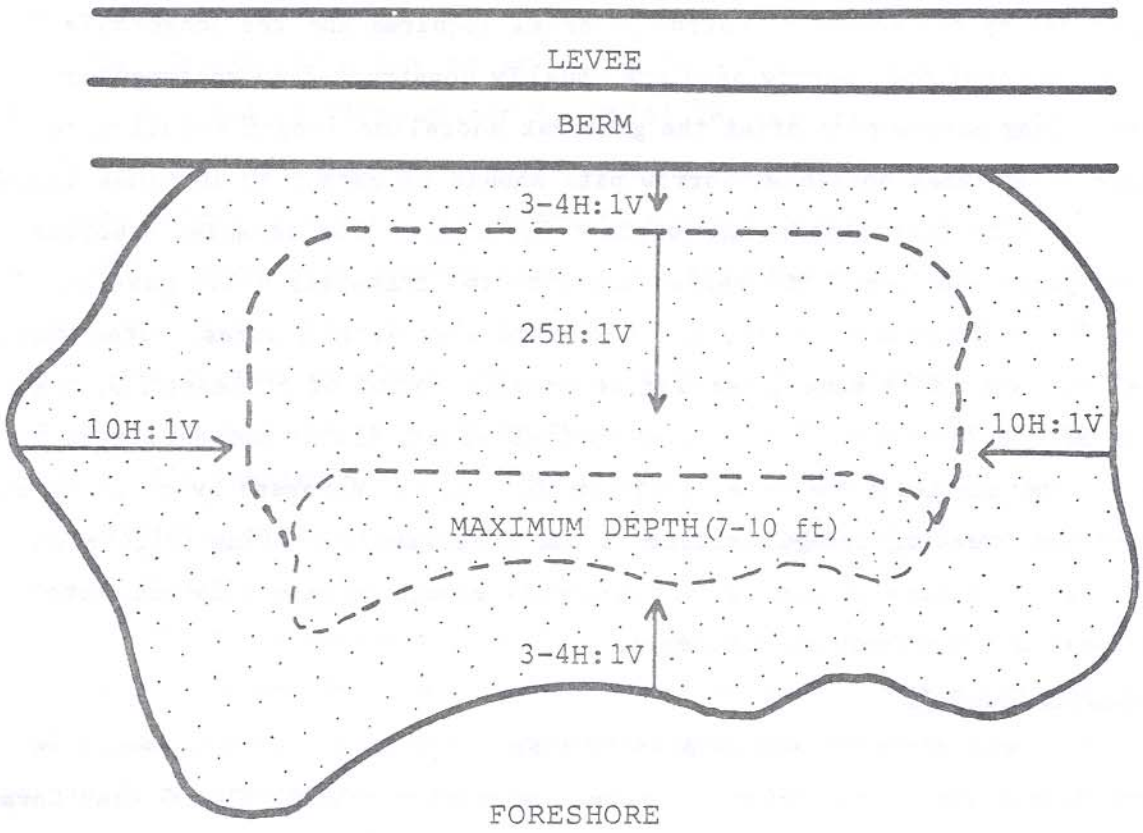

Figure 2. Diagram of a borrow pit, indicating optimal side and bottom slopes and maximum depth

27. Wildlife considerations should be emphasized at shallow borrow pits with maximum depths ≤3 feet. The basin shape should be similar to that proposed for deep borrow pits (see Figure 2), with side slopes of 4:1 along the levee and river sides but 20:1 along the ends of the pit and upstream and downstream from traverses. The goal is to increase habitat for shorebirds and wading birds. The bottom slope should be 25:1, beginning at a depth of 1.5 feet along the levee side and sloping toward the river side.

28. Design features that increase the length of shoreline relative to surface area (shoreline development index, SDI) benefit fisheries and wildlife by increasing the amount of nearshore area. Ultimately, borrow pit size will be set by the amount of borrow material required and the acceptable depth of excavation. Borrow pits are usually constructed in rectangular shapes. Long narrow pits offer the greatest shoreline length relative to surface area. When possible, borrow pits should be made 5 to 10 times longer than wide, with traverses at appropriate intervals. For example, a borrow pit 100 yards wide and 1,000 yards long with two traverses would have an SDI of 2.3, a desirable level, and a surface area of 20.6 acres. Otherwise, shorelines should be made irregular to provide an SDI of at least 2.0, the median SDI of 25 borrow pits studied by Cobb et al. (1984) and Buglewicz (1985). The aesthetic value of a borrow pit can be increased by rounding its corners and creating irregularities in the riverward shoreline (Figure 2). These irregularities should be curved gently enough to be easily excavated with available earthmoving equipment.

Cover and Structure

29. Excavation of borrow pits is disruptive to wildlife inasmuch as clearing, grubbing, and stripping remove vegetative cover. The US Army Corps of Engineers (1978) recommends minimizing impacts of construction activities on vegetation. For example, leaving existing woody and brushy vegetation in areas of shallow or poor-quality borrow material provides edge and cover that increase fish, wildlife, and aesthetic values.

30. Whenever possible, trees should be left standing along the foreshore margin and ends of a borrow pit. Natural revegetation of small herbaceous plants and shrubs occurs within 1 or 2 years. However, trees require many years to attain a size large enough to provide cover or shade and nesting, roosting, or denning sites for wildlife. Mature trees left standing along the riverward margin of the borrow pit increase habitat diversity and suitability at minimal project cost. Tall trees and mast-, berry-, or fruit-producing species should be selectively retained because of their special value for wildlife. Trees with cavities are particularly important as they

may furnish den or nest sites. Where they exist, two or three cavity trees or dead snags per acre should be retained in locations where they will not impede excavation.

31. Seeding of ground cover immediately after construction will minimize erosion and provide habitat for wildlife. Natural revegetation is rapid, but seeding mixtures of plant species with high food and cover value increases wildlife use of postconstruction plant communities (see Yoakum et al., 1980). Herbs that produce seed in a single growing season should be established as a part of normal construction activities. Flooding is a primary determinant of plant community composition, and species of plants to be seeded should be selected on the basis of their adaptability to site-specific conditions. Fredrickson and Taylor (1982) provide guidance on selecting plants based on anticipated flooding regimes of the Lower Mississippi River.

32. Most new borrow pits have relatively shallow, smooth basins that afford only limited cover or structure for fish or wildlife. Irregularities in shoreline provide some cover and structure. Islands or peninsulas formed when shallow or undesirable fill materials are encountered also are of value to fish and wildlife. These areas should not be disturbed during borrow pit excavation.

33. Brush provides an efficient way of concentrating fish and providing cover for wildlife. For fish, some trees or root balls could be saved during excavation and pushed into the deeper part of pits to provide cover. Deeper pits ($\geq$7 feet deep) are best suited for fish attractors. These may need to be anchored in areas where flood flows could float them out of the pit. Brush shelters should not exceed 0.1 percent of the borrow pit area, and brush piles could be left on nonaccess margins of pits to provide cover for wildlife. Brush piles for wildlife can be circular (15 to 25 feet in diameter) or rectangular (25 to 50 feet long by 10 to 15 feet wide). They should be placed at a density of not more than one structure per 2.5 acres. The structures should not impair access and should be constructed only in relatively open areas.

Complex Considerations

34. Complex design considerations are intended to substantially improve fish, wildlife, and recreational resources but at additional cost of levee construction. Complex design considerations that are marginally feasible or highly site-specific will be mentioned briefly with accompanying references, whereas considerations that may have broader application will be discussed in more detail.

Basin Morphometry

35. Borrow pit basin morphometry can be modified to benefit fish and wildlife more extensively than the routine considerations outlined earlier. Shaping shorelines and modifying bottom topography have more potential than do modifying basin slopes or water depth. Side and bottom slopes outlined earlier (paragraphs 26 and 27) cannot be improved upon and are also recommended as complex design considerations. Except for environmental management strategies for long sections of levees and island construction, routine guidance on depth (paragraph 25) also is recommended for complex designs.

36. In general, borrow pits with large surface areas are better for fish (>10 acres), fishing (>10 to 25 acres), and wildlife (>30 acres) than those with surface areas <10 acres, if water depths are adequate. In some cases, however, limited depths of suitable borrow materials will result in excavation of large shallow borrow pits. Excavation of wide, shallow pits and associated longer haul distances for borrow material and potential increased right-of-way needs are often required to improve control of underseepage, hydraulic performance, and environmental conditions under certain foundation conditions (US Army Corps of Engineers, 1978).

37. Depth. In areas where long reaches of the main-line levees are being raised or modified, special efforts should be made to excavate at least one deep borrow pit that will have a permanent pool (see paragraph 25) for every mile of levee, especially where construction results in most pits being shallow ($\leq$3 feet deep) due to engineering constraints. Permanent pools in borrow pits are most valuable in areas where permanent standing water is

limited. A single perennial borrow pit pool in a 1-mile section of levee will have value for most wildlife. Although costs of special efforts to obtain a single permanent pool may be high, the benefits to wildlife can be ascribed to a much larger area than the pit itself. When depths are not limited by geological features, all pits should be excavated to depths of 7 to 10 feet (the optimum range) or deeper (see paragraph 25).

38. Basin and shoreline shapes. Borrow pits with irregular shorelines tend to be of more value for recreation, fisheries, and wildlife than rectangular pits. Extremely convoluted shorelines will not necessarily increase the aquatic productivity (see Appendix A, paragraph 48) and may be detrimental in areas subjected to strong flow during floods because of the resulting erosion. Highly irregular shorelines may substantially increase excavation costs if curvatures require special maneuvers of equipment. Aesthetically, gently curving shorelines can make a typical borrow pit seem more like a pond or lake than a remnant of excavation. Fisheries benefit from an irregular shoreline (SDI = 2.0-3.4) because it improves aesthetic qualities and permits anglers to fish more of the borrow pit surface area from shore. However, it is recognized that much borrow pit fishing is from boats and that efforts to increase shoreline relative length for this purpose may not be justifiable in all instances. Wildlife benefits arise primarily from the diversity of habitat (edge) that can be created by an irregular shoreline. Edge results from the border between two different habitats (Yoakum et al., 1980), and benefits are derived from edge formed when water, land, forest, shrubs, open fields, or levees border one another.

39. The most efficient method of increasing shoreline irregularity for fisheries and wildlife, without jeopardizing shore stability, is to round otherwise square corners of pits during excavation and design peninsulas or islands (Figures 3 and 4). Traditional traverses are valuable because they are similar to peninsulas and provide visual isolation between pool segments when water levels are low. They also facilitate movement of anglers, landowners, and wildlife across long borrow pits. A single large peninsula with a bifurcate point may increase (a) the amount of shoreline of a borrow pit

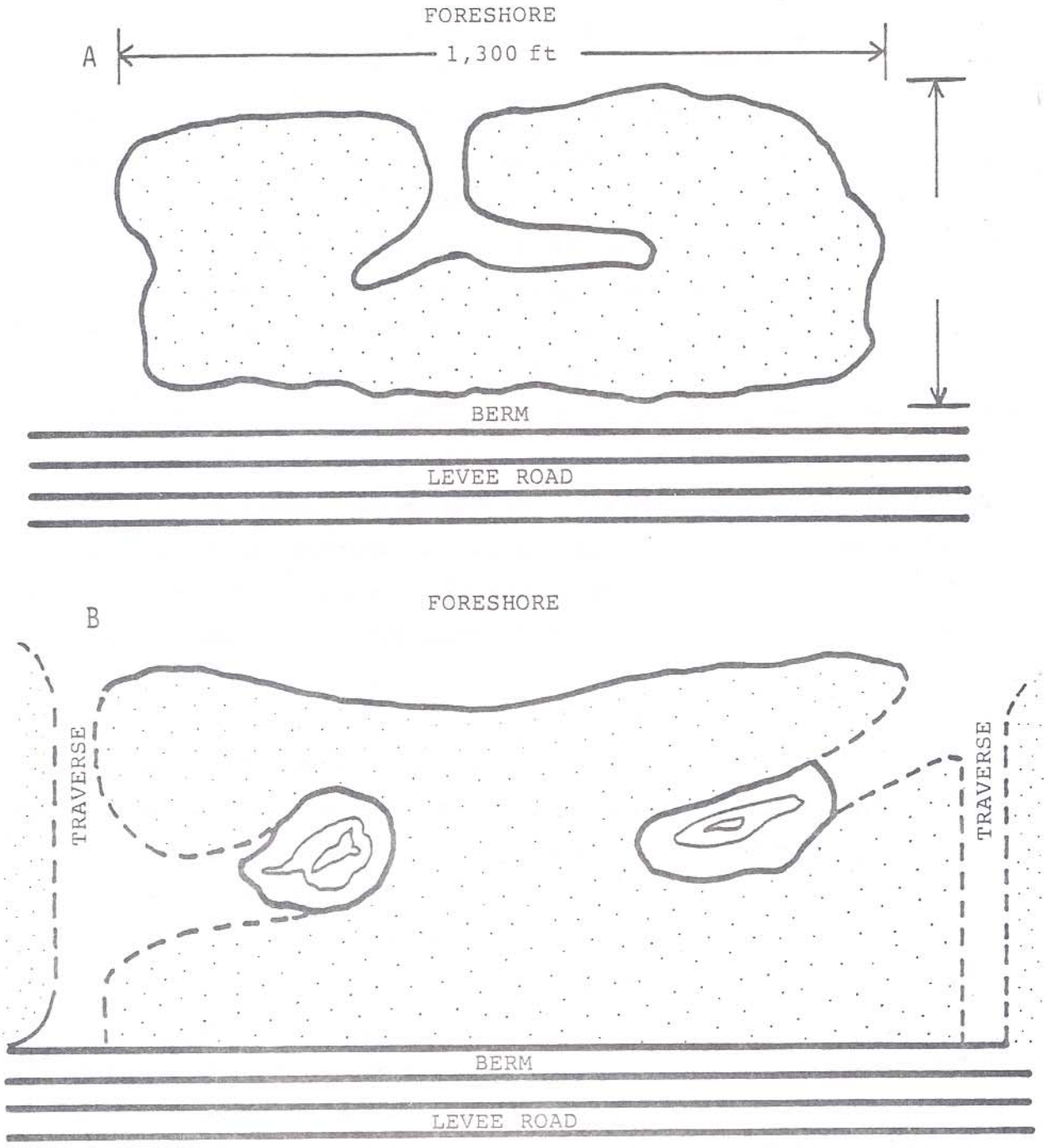

Figure 3. Plan view A illustrates a single forked peninsula that increases shoreline length by about 30 percent. Plan view B illustrates two peninsulas with elevated points that originate from traverses. This design results in peninsulas at normal water levels and islands when water levels are high. It should partially deflect floodwaters away from the levee.

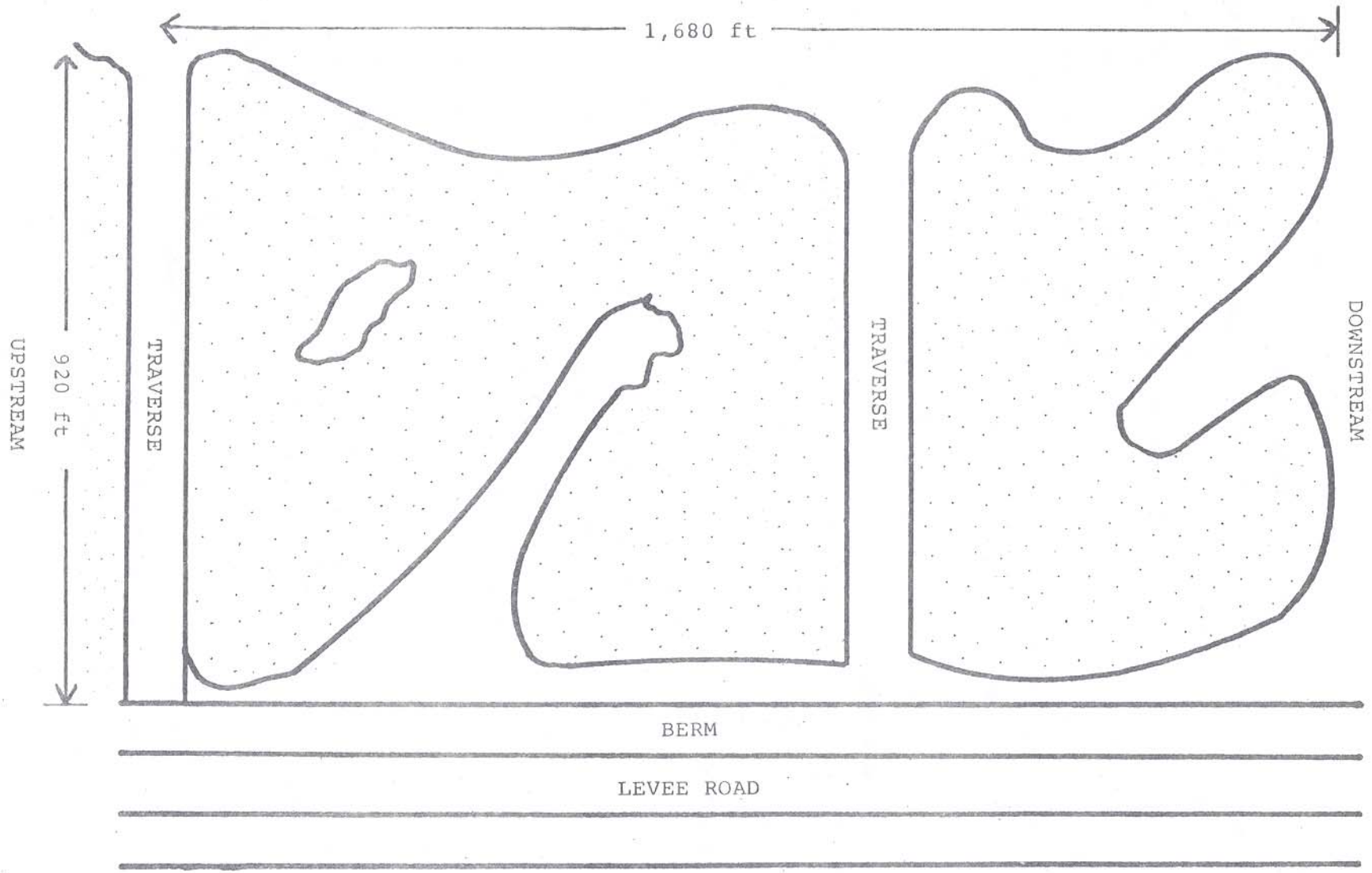

Figure 4. Orientation of islands and peninsulas to limit deflection of floodwaters into the levee and impediments to hauling borrow material to the levee during construction

by 30 percent (Figure 3A), (b) the visual segregation of parts of the pit, and (c) the ability of anglers to fish more surface area from shore. With the peninsula facing the levee side of a pit, hauling of borrow materials to the levee would not be greatly impeded.

40. Peninsulas and islands in pits located near the river where floodwaters may develop measurable flow should be oriented to deflect flowing water away from the levee (Figures 3B and 4). Less caution is needed in borrow pits 0.5 mile or more from the river, especially those with a forest buffer between them and the river. Peninsulas and islands oriented to deflect flows away from levees (Figure 4) should not impede efforts to haul borrow materials to the levee as much as peninsulas or islands oriented parallel to the levee.

41. To be stable, peninsulas and islands should have side slopes of about 4:1 and a width of at least 30 feet when the borrow pit basin is full of water. Their surfaces should be raised 2 feet above the bank-full elevation to ensure that they will not be submerged when pits are full of water. Side slopes of 4:1 will allow fishermen to fish from edges and provide wildlife with easy access to and from the water. With a width of 30 feet, these features should withstand annual flooding and afford ample room for anglers or wildlife. A peninsula originating from a traverse need only be raised above the elevation of the traverse at its point (Figure 3B). During construction, excavation equipment can move over the neck of such peninsulas to haul materials to the levee. When flooded, peninsulas originating from traverses will form islands; they will be continuous with the traverse when water levels are low. Islands and peninsulas are not expensive to construct (see Appendix A, paragraph 38); however, more rights-of-way may be required to make up for the borrow material that must be left in the pit to form these features. They have high value for aesthetics, fisheries, and wildlife and are recommended for all borrow pits, including those warranting only routine considerations, when they are at least 7 feet deep.

Cover and Structure

42. Planting and seeding. Vegetative ground cover should be established immediately following construction to control erosion. Seeding also improves habitat for wildlife and enhances aesthetic values. Natural revegetation will usually occur rapidly; however, the quality of vegetative cover at construction sites is improved for wildlife when mixtures of herbs, grasses, shrubs, and hardwoods are planted. Plantings of trees may be desired to increase visual isolation and aesthetics in areas surrounding borrow pits. Routine revegetation of areas subject to erosion can benefit wildlife at little increase in project cost if mixtures of grasses and herbaceous plants of high food value are seeded.

43. Survival of plants selected for seeding is enhanced when they are well adapted to the annual flooding cycle at a specific site. Therefore, planting recommendations should be made by a wildlife planning specialist with consideration of soils, duration of flooding, vegetative communities in the surrounding area, anticipated land use, and physical characteristics of the borrow site.

44. Shelters. Borrow pits with maximum depths $\geq$7 feet are most suitable for the addition of brush or artificial shelters to attract sport fish. These shelters can be made from natural or artificial materials cabled together and anchored to withstand flood flows. They represent a one-time project investment and should be installed after excavation is complete.

45. Shelters can be fabricated from a variety of materials, but brush and hardwood logs are easiest and least expensive to obtain. Brush or logs can often be obtained during clearing activities. These can be stacked, cabled, and anchored at selected locations to provide artificial shelters. Cabling may be necessary to prevent woody materials that dry out during drought from floating away when the area floods. Logs can also be tied together to form a variety of configurations, then weighted and anchored in designated locations. A large pole driven into the pit bottom with brush or tires attached around its base forms a permanent structure.

46. A relatively small area of shelter (about 0.1 percent of the pit area) will attract sport fish and improve fishing. This represents one structure 20 feet long, 10 feet wide, and 3 to 4 feet high for each 5 surface acres of water. Shelters should be placed in deep water near the river side of the pit so that they remain submerged during periods of low water. They should be identified with a pole driven into the bottom at the site, as described in the previous paragraph. The pole would also provide a tie-up for anglers in small boats.

47. Shelters should last many years with proper selection of materials. Hardwoods such as oak will decay more slowly than softer woods such as black willow or sycamore. Selection of larger diameter wood also results in a slower rate of decomposition. Woody materials that are permanently covered with water last much longer than those exposed to the air every year.

48. The cost of constructing brush shelters can vary significantly, depending on the type of material used and the size and location of the structure. By using woody materials obtained at the construction site, costs would arise primarily from the labor and materials required to anchor the structures. Some labor would be required to dispose of cleared vegetation if it were not used to construct brush shelters.

49. Wildlife brush shelters provide protection for a variety of small game and nongame species. However, they appear to have only limited application for borrow areas. Brush piles constructed for wildlife should be placed on the river side of borrow pits. If these areas will be exposed to high-velocity flows during flooding, shelters should be securely anchored and cabled. Their use should be restricted to areas where natural cover is limited. These structures should be of the size and density recommended in paragraph 33.

50. Vegetative cover for islands should consist of a multilayered canopy of trees, shrubs, and seed-producing plants or ground cover, because islands are well suited as habitat for nongame birds. They also are valuable for animals such as beavers and turtles. Where islands are constructed, ground cover should be established by seeding mixtures of grasses, forbs,

and shrubs. Trees with high potential wildlife value should be planted at a density of one tree per 100 square feet to augment natural seeding and accelerate the development of a tree canopy by several years. Planting should take place as soon as construction has been completed.

Recreation Development

51. Development of recreation facilities at selected levee borrow pits is a possibility along the Lower Mississippi River. Construction of recreation facilities such as boat ramps would have to be cost-shared by the local project sponsor, who would also have to acquire fee title to needed lands. Recommended recreation facilities would have to be justified and the cost-sharing agreement approved under Federal rules and regulations for such projects. Given these constraints, therefore, development of recreation facilities at levee borrow pits would be rare.

Landside Borrow Pits

52. Opportunities for managing borrow pits to improve fish and wildlife resources are sometimes better for pits on the land side than on the river side of levees because riverine flooding does occur. One major problem with landside borrow pits, however, is the influx of poor-quality water, especially in agricultural areas. Management possibilities for fisheries include eradication of undesirable species, stocking of desirable species, and water-level manipulation. Possibilities for wildlife include creating artificial marshes that can be flooded at appropriate times to attract waterfowl or shore, water, or wading birds. In addition, prevention of annual flooding can benefit populations of small ground-dwelling mammals and the nesting success of perching birds (Fredrickson, 1979; EL, 1985).

Water-Control Structures

53. Water-control structures could improve riverside borrow pit habitat for fish and wildlife by maintaining water levels during low-flow dry periods of the year. However, these structures are impractical for most sites, as few borrow pits have a dependable source of ground water or a watershed of sufficient size to maintain water levels through summer and fall or to refill a pit if it were drained for management purposes during these

seasons (Hynson et al., 1985). A dependable water source (watershed or ground water) that exceeds expected losses to evaporation and seepage is needed.

54. Unless water can be pumped from a nearby source and water levels manipulated (a common practice on wildlife refuges, see Fredrickson and Taylor, 1982), water-control structures should be considered only for borrow pits with 3 to 5 acres of watershed for every acre-foot of water capacity (Soil Conservation Service, 1971, 1973). For example, a 20-acre borrow pit with a mean depth of 4 feet (volume = ca. 80 acre-feet) should have a watershed of from 240 to 400 acres. Sites suitable for water-control structures will be few, but they might be found in a broad drainageway or at a low point in a natural depression. A site survey would be required to assess the size of the watershed relative to the volume of a proposed borrow pit. If a proposed borrow pit has a sufficient watershed and elevational gradient for drainage or a dependable ground-water source, as well as the potential for water-level management, several useful references for further information include the Soil Conservation Service (1971), Atlantic Waterfowl Council (1972), Yoakum et al. (1980), and Hynson et al. (1985).