FINAL DETERMINATION OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S ASSISTANT ADMINISTRATOR FOR EXTERNAL AFFAIRS CONCERNING THE BAYOU AUX CARPES SITE IN JEFFERSON PARISH, LOUISIANA PURSUANT TO SECTION 404(C) OF THE CLEAN WATER ACT

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I. Introduction

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

This determination concerns the Bayou aux Carpes site shown in Attachment A. This site, which includes approximately 3000 acres of wetlands, is the location of a proposed Corps of Engineers' flood control project. This project has been partially completed; a ring levee has been constructed around the entire site except at the confluence of the Southern Natural Gas Pipeline canal and Bayou Barataria. Completion of this project would involve the discharge of fill material into the canal at its confluence with Bayou Barataria to close the only tidal connecton to the site and into the Bayou aux Carpes (a tidal waterbody within the site) to facilitate the installation of a pumping station to drain the wetlands. The project is designed to provide flood control and land reclamation, which would be accomplished by draining the wetlands. Completing the flood control project might lead to additional proposals involving the discharge of fill material into the Bayou aux Carpes site by private property owners.

I have carefully considered the record in this case, including public comments, the public hearing record, site specific evaluations, coordination with affected property owners, and information provided by other agencies and knowledgeable individuals. I have determined that the discharge of dredged or fill material in the Bayou aux Carpes site, except as provided below, will have unacceptable adverse effects on shellfish beds, fishery areas, (including spawning and breeding areas), wildlife and recreational areas, as described more fully below, and I am, therefore, exercising my authority to restrict the site accordingly.

The restricted discharges include any for the purpose of completing the original Harvey Canal-Bayou Barataria Levee Project as well as any other discharges within the site not listed below that are subject to Section 404 of the Clean Water Act. However, this restriction does not include: (1) discharges necessary for completion of the modified Harvey Canal-Bayou Barataria Levee Project, as described in the Wilson Order of November 16, 1976 (replacement of the closure at the confluence of Bayou aux Carpes and Bayou Barataria with floodgates is a necessary element of such completion); (2) discharges associated with routine operation and maintenance of the Southern Natural Gas Pipeline Company pipeline as long as dredged or fill material is placed in piles with breaks in between to allow inundation of adjacent wetlands and as long as pre-maintenance contours are restored and; (3) discharges associated with projects with the sole purpose of habitat enhancement specifically approved by EPA. Discharges associated with these three classes of activities may take place, provided they are authorized by a Corps of Engineers' Section 404 permit. My findings and reasons for this determination are also set out below. This 404(c) action does not affect the legality of material previously discharged within the site under Section 404, or require its removal, nor does it affect discharges exempt from regulation under Section 404(f).

II. Background and History

A. The Project

In 1964, the Corps of Engineers (Corps) approved a flood control project called the Harvey Canal - Bayou Barataria Levee Project (Levee Project) for the West Bank of Jefferson Parish. The project was to be constructed in two phases: Phase I involved the construction of levees; Phase II was to involve primarily the closure of Bayou aux Carpes, which tidally connected the Bayou aux Carpes site with Bayou Barataria, as well as the installation of a pumping station at the mouth of Bayou aux Carpes waterway (refer to Attachment A). It was initially contemplated that the Levee Project would provide flood protection and land reclamation benefits in the area; land reclamation would be achieved through drainage, by the pumping station of the 3000 acres of wetlands enclosed by the levees.

The Corps New Orleans District prepared an Environmental Impact Statement (EIS) in 1970 on its proposed Civil Works project recommending that the project be constructed. Construction of initial levees for the "federal project" (Phase I) was begun in 1971 and was completed by the Corps of Engineers in November, 1973. Upon completion of Phase I, the project was 80% complete and all federal funds were exhausted. Phase I serves to provide some flood protection, but did not result in, or allow, drainage and land reclamation. In addition, gaps in the levee were left at Bayou aux Carpes, the Southern Natural Gas Pipeline Canal and a partial opening at Bayou des Familles. Because Federal funds were exhausted, all remaining work had to be financed locally (assurances of such funding are referred to as local assurances). The second lift levee work, which involves depositing additional material to raise the levee elevation, was never completed. As part of Phase II, local interests completed the closure of the Bayou aux Carpes opening using clam shell fill. This closure exists in good condition today. The Bayou des Familles opening was also closed at one point, using an earthen fill, however, this closure has deteriorated to a point which currently allows tidal exchange. Neither Bayou closure was specifically authorized pursuant to the Clean Water Act. A contract was let by the Parish for the construction of the pumping station and construction materials were moved to the site. Construction, however, was halted in November 1974 when the Corps initiated a Section 404 review of the project.[1/]

1/ Section 404 was not considered when the project was originally approved in 1964 since Section 404 of the Clean Water Act was authorized by Congress in 1972. The Clean Water Act has no grandfather provision exempting from regulation those discharges which were planned prior to but which did not occur until after its enactment.

The Corps New Orleans District held a public hearing in January 1975 to receive comments on the proposed project. In March 1975 Colonel Heiberg, the New Orleans, District Engineer, completed his review and issued a Statement of Findings and recommended that the pumping station be installed and that the project proceed to completion. In a letter dated April 25, 1975 EPA Region VI objected to the Statement of Findings and concluded that "the permanent blocking of Bayou des Familles and Bayou aux Carpes and the subsequent draining of the area enclosed by the ring levee would result in the irretrievable loss of valuable wetlands, have an unacceptable adverse impact on wildlife and recreational areas, and not be in the public interest." Following the review of EPA Region VI's position, Brigadier General Drake Wilson, the Deputy Director of Civil Works, recommended completion of the project as originally approved and authorized. In March 1976, while further discussions with the Corps ensued, a team of EPA scientists completed a field study that supported Regions VI's April 25, 1975 position.

Another Corps review then culminated in a Revised Statement of Findings issued in July 1976, by Colonel Rush, New Orleans District Engineer. Once again, the Corps recommended that the project be completed as originally approved and authorized. Brigadier General Drake Wilson, Deputy Director of Civil Works, concurred with that recommendation by letter to EPA on August 27, 1976. He also advised EPA that the project would proceed unless EPA initiated a 404(c) action within 15 days. EPA continued to press its objections although it did not formally initiate a 404(c) action at that time. General Wilson visited the site in October, 1976, along with representatives of Jefferson Parish, EPA, property owners, representatives of environmental organizations and members of the concerned public.

Then on November 16, 1976 General Wilson reversed his previous decision and directed that the dams at Bayou aux Carpes and Bayou des Familles be removed, that flood gates be installed to be used only during flood conditions, and that the plans to construct the pumping station at Bayou aux Carpes be abandoned. These changes constituted the modified Harvey Canal-Bayou Barataria Levee Project.

B. Litigation

General Wilson's November 16, 1976 decision can be described as an attempt to retain the flood control benefits of the project without the adverse environmental consequences which would result from completion of the levees and subsequent pumping of the site. This was agreeable to the EPA and to the officials of Jefferson Parish. However, this decision directly and/or indirectly precipitated substantial litigation in both state and federal courts by the involved property owners.

In 1977, litigation was initiated in State Court in the matter of Jacques J. Creppel, et al. v. the Parish of Jefferson, et al., resulting in a final judgement enjoining and prohibiting Jefferson Parish from abandoning the project as originally planned. The Court further ordered the Parish to proceed with immediate construction of the pumping station at Bayou aux Carpes as provided in the original Corps project. That judgement was affirmed by the Louisiana 4th Circuit Court of Appeals on May 15, 1980.

In a separate proceeding, also in 1977, the property owners brought an action in federal court against the Corps in an attempt to set aside General Wilson's order of November 16, 1976. Judge Lansing Mitchell upheld General Wilson's order. His ruling in Creppel, et al. v. Corps of Engineers, 500 F. Supp. 1108 (E.D. La. 1980) was appealed to the U.S. Court of Appeals for the Fifth Circuit.

The Fifth Circuit, in a decision dated March 17, 1982, also concluded that General Wilson's November 16, 1976 modification of the project was not arbitrary, Creppel v. U.S. Army Corps of Engineers, 670 F.2d 564 (5th Cir. 1982). However, the Fifth Circuit identified two issues which it felt were unresolved and needed further consideration. Those issues were: (1) whether or not the required local assurances would be available with respect to the modified project; [2]/ and (2) whether or not Section 404 of the Clean Water Act might prevent completion of the original project. The Fifth Circuit remanded the case to Judge Mitchell for resolution of those issues.

In the subsequent proceedings, it developed that (1) Jefferson Parish would not provide local assurances as to the modified project, because it felt it was prohibited from doing so by the state court order referred to above, and (2) that EPA Region VI would not invoke its Section 404(c) procedures with respect to the modified project but, under the same circumstances that existed in 1976, would do so as to the original project.

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[2]/ Local assurances would be required to finance the installation of the flood gates which Brigadier General Wilson had directed be installed.

In August, 1984, Judge Mitchell ruled that the original project should go forward. The Department of Justice filed a Motion to Reconsider this ruling, arguing among other things that it deprived EPA of an opportunity to invoke Section 404(c). At a hearing on September 19, 1984, Judge Mitchell agreed to hold the August ruling in abeyance to give EPA ninety days to consider taking action under Section 404(c) and, if it decided to do so, an additional nine months to complete the process.3/

C. 404(c) Proceedings

In response to Judge Mitchell's ruling, EPA Region VI reviewed available information on the Bayou aux Carpes site, which included a review of Region VI's historical positions on the Marrero-Lafitte Waterline and the Westbank Hurricane Protection Levee, two projects which are not related to the Levee Project but would have resulted in adverse impacts to the site. On October 12, 1984 Region VI also conducted a field trip to the Bayou aux Carpes site in conjunction with the New Orleans District Corps regulatory functions staff and a representative of EPA's Office of Federal Activities to perform investigations and preliminary surveys.

As a result of these, and other activities, and the information derived therefrom, Dick Whittington, EPA's Region VI Regional Administrator initiated the Section 404(c) process by letter of December 17, 1984 to Colonel Eugene Witherspoon, the Corps' New Orleans District Engineer. The landowners were notified of this step simultaneously. Numerous interested parties were notified, including Jefferson Parish, State of Louisiana officials, the Louisiana Congressional delegation, and federal agencies including the National Marine Fisheries Service, the U.S. Fish and Wildlife Service and the National Park Service. As part of the notification process to Jefferson Parish officials, a member of the Parish Council offered to assist in ascertaining owners of the tract in addition to those involved in the litigation. The offer was accepted and the Parish was requested, in December 1984, to identify owners of the tract based on Parish records.

3/ Certain of the landowners have contended that the use of Section 404(c) is illegal here because it would block a flood control project which allegedly the court has held as a matter of law must be completed as originally planned, and because EPA cannot order modification of the project without local assurances. I am not persuaded. First, the district court expressly modified its order to allow EPA an opportunity to exercise its Section 404(c) authority. As the Fifth Circuit has noted, federal projects are subject to the requirements of Section 404 (supra, 670 F.2d at 564), and permission to discharge under Section 404 is subject to EPA's Section 404(c) authority. Second, EPA's Section 404(c) restriction on discharge does not require the completion of the modified project; it merely allows it, assuming requirements under other laws, such as local assurances, are met.

In early January, letters were sent out to Jefferson Parish officials who were responsible for specific areas of the 404(c) tract, such as levees and other rights of way, requesting their permission to go on the tract, inasmuch as EPA was assembling a field team to do a more detailed field investigation. The identification of all of the property owners in the Bayou aux Carpes site proved difficult. However, with the help of Jefferson Parish, a mailing list was compiled including property owners, interested public officials, interested citizens groups and all other known interested groups.

On May 17, 1985, the Region VI Administrator published in the Federal Register a Proposed Determination to prohibit, deny, or restrict the specification, or the use for specification, of the Bayou aux Carpes site as a disposal site. A Proposed Determination means that the Regional Administrator believes there are issues to be explored; it does not represent a conclusion that unacceptable adverse effects will occur, see 44 Federal Register 58082 (October 9, 1979). A public hearing on the Proposed Determination was held in Gretna, Louisiana on June 18, 1985. Copes of draft reports prepared on the Bayou aux Carpes site in conjunction with EPA's 404(c) action were made available prior to the hearing; final copies were made available at the first opportunity. Public participation at the hearing and during the comment period (which ended August 19, 1985) was substantial. The EPA proposal was supported by the National Park Service, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the Louisiana Department of Wildlife and Fisheries, the Louisiana Department of Natural Resources, numerous environmental and civic groups, and many citizens with an interest in the area. Those opposing the proposal included some owners of land within the study area and several business organizations promoting the industrial development of the Gulf Intracoastal Waterway (Bayou Barataria frontage). The U.S. Army Corps of Engineers New Orleans District requested that EPA exclude from the 404(c) Final Determination an area within the Bayou aux Carpes site for the disposal of dredged material from the federal dredging of the Gulf Intracoastal Waterway (Bayou Barataria); however, they also advised that that segment of the waterway has never been dredged since the initial construction, and that the segment is not expected to require maintenance in the near future.

The public hearing comment period was extended through August 5, 1985 to allow additional time for the public, including the property owners, to review and comment on EPA's final reports on Bayou aux Carpes. On the day that the public hearing was held, an application which was jointly entered into by EPA Region VI and some of the property owners, was filed with Judge Mitchell, requesting that he extend the nine month deadline for completion of the 404(c) process an additional 120 days. In the face of opposition by other property owners, Judge Mitchell extended the deadline only 30 days to October 18, 1985. Following the Judge's ruling, Region VI extended the comment period for the public hearing an additional two weeks to August 19, 1985. This extension of the comment period was announced in the Federal Register on July 19, 1985.

After the close of the comment period, the Regional Administrator submitted to me a Recommended Determination, as well as the administrative record compiled by the Region, to restrict specification of the Bayou aux Carpes site for the discharge of fill material. This determination is based on findings that show that the proposed discharge, as well as future discharges, will have unacceptable adverse effects on shellfish beds, fishery areas (including spawning and breeding areas) wildlife and recreational areas. The Recommended Determination is dated August 30, 1985 and was received at EPA Headquarters on September 4, 1985.

EPA subsequently notified involved property owners by letters dated September 13, 1985 and September 16, 1985, the Southern Natural Gas Pipeline Company, which owns a pipeline that crosses the site, by letter dated September 13, 1985 and Major General H.J. Hatch, Director of Civil Works, Corps of Engineers, by letter dated September 13, 1985 of the Recommended Determination and of their opportunity for consultation in compliance with the Section 404(c) regulations.

In response to this notification, EPA received letters dated October 1, 1985 from Mr. Joseph E. LeBlanc, Jr, September 24, 1985 from Mr. Harold L. Molaison, and September 25, 1985 from Mr. Daniel L. Morrow, three attorneys who represent property owners within the Bayou aux Capres site. Their letters maintained the position presented in a previous letter written by Mr. LeBlanc dated August 19, 1985 which questioned the legality of EPA's 404(c) action. They did not request a meeting. EPA also received a letter dated October 1, 1985 from the Director of Civil Works, Corps of Engineers which reiterated the request of the New Orleans District Engineer for EPA to exclude an area within the Bayou aux Carpes site from the 404(c) Final Determination for dredged material disposal. The letter from the Director of Civil Works did not request a meeting to discuss this issue. The Southern Natural Gas Pipeline Company, in a letter dated September 25, 1985, advised EPA of its pipeline maintenance requirements that would necessitate depositing dredged or fill material within the Bayou aux Carpes site.

III. Description of the Site

The Bayou aux Carpes site is located approximately 10 miles south of New Orleans, Louisiana, on the "West Bank" of Jefferson Parish. The site covers approximately 3200 acres and approximately 3000 acres is wetlands as defined in 40 CFR 230.3(t). The remainder of the site consists of land classified as old orchard, residential, agricultural, industrial, wooded upland, and grassland associated with levees and roads and is not included in EPA's 404(c) determination. The site is bounded on the north by the east-west Estelle Pumping Station Outfall Canal, on the east by the Plaquemine-Jefferson Parish line and Bayou Barataria (Intracoastal Waterway), on the south by Bayou Barataria and Bayou des Familles and on the west by State Highway 3134 and the "Vee-Levee" Pipeline Canal (refer to attachments A and B). The geographic coordinates are:

Range 23 East, Township 15 South, Portions of Sections 13, 14, 55, 57, 59;
Range 23 East, Township 14 South, Portions of Sections 55, 81, 82; and
Range 24 East, Township 15 South, Portions of Sections 48, 49, 50, 57.

Vegetative characteristics and habitat types were identified through on-site field visits by EPA, the U.S.Fish and Wildlife Service (FWS) and by interpretation of color infrared aerial photography. The Bayou aux Carpes site contained approximately 2190 acres of bottomland hardwoods, wooded swamps and scrub-shrub wetlands and approximately 648 acres of fresh marshes, pond and open waterways. Bald cypress (Taxodium distichum), tupelo gum (Nyssa aquatica) red maple (Acer rubrum) and green ash (Fraxinus pennsylvania) are common overstory vegetation in the bottomland hardwood, wooded swamp and scrub-shrub areas with bald cypress and tuplelo gum being the most predominant. In the scrub-shrub wetlands, the predominant shrub species are wax myrtle (Myrica spp.), buttonbush (Cephalanthus occidentales) and eastern baccharis (Baccharis spp.). In the fresh marshes, the predominant species include bulltongue (Sagittaria falcata), softstem bullrush (Scirpus validus), pennywort (Hydrocotyle bonariensis), iris (Iris giganticaerulea), smartweed (Polygonum spp.), spikerush (Eleocharis spp.) and alligator weed (Alternanthera philoxeroides). Water hyacinth (Eichlornia crassipes), and duckweed (Lemna spp.) characterize the floating vegetation of the open waterways within the site.

The entire perimeter of the Bayou aux Carpes site is spanned by levees except for the confluence of the Southern Natural Gas Pipeline canal with Bayou Barataria. The two mile long Southern Natural Gas Pipeline canal provides the primary hydrological connection between the site and Bayou Barataria (Intracoastal Waterway) and ultimately, Barataria Bay. Other major waterways within the Bayou aux Carpes site include two oil field location canals off of Bayou aux Carppes (approximately 2500 and 6,000 [illegible] long), a 3500 foot long powerline right-of-way canal connected to one of

the oil field location canals, and two plugged oil field location canals (1500 and 2000 feet long) off of Bayou Barataria. The Southern Natural Gas Pipeline Canal is directly connected to all of the aforementioned waterbodies except the two plugged canals off of Bayou Barataria. Dredged material was deposited along the banks of these canals during their construction. However, the dredged material levees have numerous breaks and are no more than a few feet above adjacent wetland elevations and do not completely block surface water flow across the site.

In addition to the relatively flat topography of the site, numerous breaks in the dredged material levees and the unfilled area at the head of the Southern Natural Gas Pipeline canal provide a pathway for surface water to exchange between the canals and surrounding swamps and marshes. Remnants of the original Bayou aux Carpes waterway are unleveed, thus allowing surface water to sheet flow across to the adjoining wetlands. Studies conducted by EPA revealed that during 1984, water levels in the Barataria Waterway exceeded the average swamp/marsh subtrate elevation of 1.24 feet National Geodetic Vertical Datum (NVGD) at least 50 percent of the time. Marsh-swamp elevations of 0.44 and 1.65 feet NGVD, which represent the range of elevations in the site, were exceeded 95% and 20% of the time, respectively, by water levels in the waterway during the EPA study in 1984. The frequency at which water levels equaled or exceeded 1.24 feet NGVD were most pronounced during the period from May through October 1984 and appeared as a response to southerly wind directions. During 1984, the average annual water level in Bayou Barataria was 10 to 14 percent below the 20-year mean; hence the potential for the flooding of the Bayou aux Carpes site may be greater than that observed during the study. A diurnal tide range of 0.3 to 0.4 feet was recorded in the Bayou aux Carpes site during the study. This range appears typical of the upper basin region of the Barataria Bay system and is further evidence of the close hydrologic relationship of the site with the rest of the system, in spite of the partially completed flood control project.

The Bayou aux Carpes site is bordered on the west by 600 acres of the Barataria Unit of Jean Lafitte National Historical Park. This portion of the park is hydrologically connected to the Bayou aux Carpes site via four sets of culverts under State Highway 3134. The Barataria Unit contains approximately 500 acres of bottomland hardwood wetlands.

IV. Ecological Values Associated With The Site

The record, including biological and hydrological studies of the Bayou aux Carpes site conducted by EPA and FWS, demonstrates that the site is a viable and valuable functioning component of the Barataria Bay and estuarine system. Despite existing alterations, which include the levee spanning its perimeter and canals with associated dredged material levees, the Bayou aux Carpes site contributes organic material for the nutritional needs of fish and shellfish communities in the adjacent estuary, provides valuable habitat for fish and wildlife, acts as a pollutant filtering mechanism helping to reduce degradation of water quality in adjacent waters, and provides opportunities for public recreation.

A. Contribution to Barataria Bay Estuary

The Bayou aux Carpes site is comprised of bottomland hardwoods, wooded swamps, scrub shrub wetlands, fresh marshes, as well as open waterways. The amount of plant biomass produced in the study area may be compared to that measured in nearby sites exhibiting similar species composition. Conner and Day (1976) reported total primary production for several types of seasonally flooded Louisiana swamps. They arrived at values of 1,574 $g/M^2/yr$ at a bottomland hardwood site and 1,140 $g/M^2/yr$ at a cypress-tupelo site. Given the similarities between the Bayou aux Carpes site and these study sites, it is reasonable to conclude that comparable levels of plant biomass are produced at the Bayou aux Carpes site.

Production of plant biomass with resultant decomposition results in the production of carbon and nitrogen which serve as nutrients. EPA field and laboratory studies confirmed that the Bayou aux Carpes study area is a source of organic carbon and nitrogen to Bayou Barataria, leading to Barataria Bay. Nutrient exchange measurements and dye tracer studies verified the export mechanism. During the study period, water transport from Bayou aux Carpes to Bayou Barataria was rapid and directed towards Barataria Bay. Traced waters leaving the Bayou aux Carpes study area via the Southern Natural Gas Pipeline canal traveled downstream in Bayou Barataria a distance of six miles in less than 24 hours.

This plant biomass is significant because it serves both as an important direct food source for numerous species of fish and wildlife that live on or visit the project site, and as a source of detritus (i.e., plant and animal material undergoing various stages of decay by the action of bacteria and fungi). Detrital materials are consumed by fishes and invertebrates and thereby contribute to the downstream estuarine food webs. By this mechanism, recreational and commercial fish and shellfish resources are supported.

B. Fishery Values

EPA conducted aquatic sampling in January 1985 in the Bayou aux Carpes site within the canals, as well as in the adjacent marshes and wooded swamps. FWS sampled primarily the canals within the site during April 1985.

Aquatic sampling conducted by EPA and FWS revealed the presence of several fish species that tolerate both fresh and brackish environments. Observations of bay anchovy, striped mullet, threadfin shad, tidewater silverside and blue crab provide recent evidence of ingress and egress of estuarine organisms. In addition, data from Day (1984) and EPA's sampling in 1985 revealed at least 15 species of fresh water fishes associated with the Bayou aux Carpes site. Many of these species, such as channel and blue catfish, sunfish and bass are recognized as important to both commercial and sport fisheries. In addition to finfish, field sampling yielded 14 taxa of macroinvertebrates from stations in the canals and Bayou aux Carpes waterway and 27 taxa of macroinvertebrates from the marsh and swamp areas. Species such as the blue crab and adult red swamp crawfish are of direct commercial value. Juvenile forms of grass shrimp, crawfish, blue crabs and bay anchovies were observed during sampling within the Bayou aux Carpes site which indicates that it is used as nursery habitat by these species.

The Bayou aux Carpes site exhibits several trophic levels (that is, several steps in the food web). For example, in addition to the available emergent and floating vegetation in the open waterways and on the marsh surface, the site contains juvenile crawfish, grass shrimp and amphipods that consume detritus. These are, in turn, used as fish food items by the aforementioned sport and commercial species.

C. Wildlife Values

The U.S. Fish and Wildlife Service (FWS) conducted a study and prepared a Habitat Evaluation Procedure (HEP) report that covered the Bayou aux Carpes site and the adjacent Barataria Unit of the Jean Lafitte National Historical Park. As noted above, these areas are hydrologically connected and both contain bottomland hardwood wetlands (The Bayou aux Carpes site also contains scrub-shrub wetlands and fresh marshes). The HEP, which is a standard procedure used by the FWS, is based on the assumption that vegetative communities have value to wildlife and that positive or negative impacts can be expressed in terms of modification (both quantity and quality) to wildlife habitat. These impacts can be measured and compared. Additionally, optimum habitat for a certain species can be characterized and any habitat can be compared to the optimum to develop a Habitat Suitability Index (HSI). There is an assumed linear relationship between the HSI and the carrying capacity of a habitat. The HSI for a particular species is determined by utilizing models which contain measurable key habitat components for a specific animal in a particular habitat. An HSI value of 0 indicates that a cover type provides little or no potential habitat for the evaluation species, whereas a value of 1.0 indicates that the habitat provides optimum life requisites in the form of food, cover, and/or reproduction.

The wildlife species selected for evaluation by the FWS for its report in this case, included the gray squirrel,pileated woodpecker, North American mink, wood duck, great egret, American alligator and the common muskrat. These are species associated with wetland systems like those within the Bayou aux Carpes site and are representative of a broad array of community positions (e.g. trophic levels, habitat requirements, taxonomic groupings), and provide recreational, commercial, and aesthetic values.

The results of the HEP analysis indicated that the bottomland hardwoods and wooded swamps of the Bayou aux Carpes site and the Barataria Unit of the adjacent park, as well as the scrub-shrub wetlands and fresh marshes of Bayou aux Carpes site are high value habitat for the evaluated species, with the exception of the muskrat; the HEP analysis revealed that the site is of moderate value for the habitat requirements of this species.

The FWS field studies revealed that the site provides valuable habitat for a diversity of wildlife species. The marshlands and forested wetlands provide feeding, resting, nesting, and escape habitat to numerous species of game and nongame mammals and commercially important furbearers, songbirds, raptors, migratory and resident waterfowl, wading birds, woodpeckers, other birds, and many species of amphibians and reptiles. During the field studies conducted by EPA and FWS, at least 70 species were observed in the Bayou aux Carpes site, including nine species of amphibians, 10 species of reptiles, 45 species of birds, and six species of mammals. Observations included the American alligator which FWS has listed on the threatened species list in Lousiana. Of those species observed, the wood duck and the osprey are considered by FWS to be National Species of Special Emphasis. FWS is monitoring these species because of their declining populations due to factors which include habitat loss. The endangered bald eagle is known to nest in the general vicinity of the Bayou aux Carpes site. At least three bald eagle nests have been documented within a 10 mile radius of this area by FWS (1984).

D. Water Retention and Pollution Filtering Values

Studies conducted by EPA scientists indicate that the relatively flat topography of the Bayou aux Carpes site, in combination with the low and/or broken levees, enhances the capacity of the site to detain surface waters and affect a slow release to downstream systems. The water storage capacity of the site was confirmed by measuring the cyclic chloride concentrations of swamp water discharged to Bayou Barataria and by monitoring a dye tracer. Chloride concentrations, measured at the junction of Southern Natural Gas Pipeline canal and Bayou Barataria, increased with ebb flows from the Bayou aux Carpes site and decreased when the direction of flow reversed and originated from Bayou Barataria (flood tide). This means that the water draining from the site was more saline. This salinity would logically be derived during the summer and fall periods when water is pushed up into this vicinity of Bayou Barataria by winds and tides. The salt content shows up in the standing water in the marsh.

The storage capacity is significant for the purposes of 404(c) because the site is absorbing pollutants and excess nutrients from stored waters. Water which is frequently introduced into the study area from Bayou Barataria contains urban runoff from the surrounding areas. EPA analyses and comparison of heavy metal content of sediments samples obtained from the Bayou aux Carpes site and Bayou Barataria revealed that the canals and swamp-marsh habitat trap finely divided particles and the associated heavy metals. Copper, lead, and iron concentrations appear uniformly distributed between the swamp, marsh, canal, and Bayou Barataria indicating the capacity of the marsh/swamp system to trap these heavy metals typically associated with urban runoff. Bayou Barataria appeared to retain greater concentrations of zinc compared to the Bayou aux Carpes swamp and marsh areas. EPA analysis did not reveal the reason for this. It may be that the particles to which zinc is bound are too heavy to remain in suspension long enough to be carried into the Bayou aux Carps site.

The biological cycling of inorganic nitrogen (NO_2-NO_3) was evident in the Bayou aux Carpes swamp. The NO_2-NO_3 concentration gradient decreased from sampling points in Bayou Barataria to stations in the forested swamp and marshes. Thus, Bayou Barataria appears to be a source of NO_2-NO_3 and the Bayou aux Carpes swamp an area for its assimilation into other nitrogen forms such as animal or plant protein. Both the nutrient assimilation and pollutant trapping help maintain water quality which benefits the associated aquatic life.

E. Recreation Values

Recreational opportunities such as boating, fishing, trapping, and some hunting (with permission from private property owners) are available within the bounds of the Bayou aux Carpes site. The public currently has access to portions of the tract by way of the Southern Natural Gas Pipeline canal that connects Bayou Bartaria with the water courses within the site.

F. Conclusion

Under Section 404(c), a finding of unacceptable adverse effects must be based on effects on one or more of the listed resources, that is, municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, and recreational areas. Based on the records and the preceding discussion, I conclude that the Bayou aux Carpes site has significant value for all these resources except municipal water supplies. The next section discusses the likely impact on these values if Bayou aux Carpes is used as a disposal site for dredged or fill material.

V. Unacceptable Adverse Impacts

As discussed above, exercise of my authority under Section 404(c) to restrict or prohibit the use of a site for disposal of dredged or fill material must be based on a finding of "unacceptable adverse impact" to one or more of the listed resources. EPA's regulations define unacceptable adverse effect to mean, in pertinent part, "significant loss of or damage to fisheries, shellfishing or wildlife habitat or recreation areas." 33 CFR §231.2(e). As the preamble explains, Section 404(c) determinations are by their nature based on predictions of future impacts; therefore, what is required is a finding of reasonable likelihood that unacceptable adverse effects will occur, not absolute certainty. (44 Fed. Reg. 58078, Oct. 9, 1979).

In evaluating the projected impacts on the relevant resources in this case, EPA studied information available from: previous studies of the area associated with various public and private project proposals; recent studies conducted in association with this determination; coordination with other agencies; comments received from the public, including affected landowners; and considered the relevant portion of the Section 404(b)(1) Guidelines, in this case 40 CFR §230.10(c). The following specific adverse impacts are likely to result from the proposed discharge of fill material to close tidal waterways and facilitate the installation of a pumping station to drain the site or from the discharge of dredged or fill material within the Bayou aux Carpes site.

A. Impacts to Shellfish Beds and Fishery Areas

As reported by the Department of Commerce (USDC, 1980), Louisiana is the third ranking state in fisheries employment and the state's estuarine system produces 28 percent of the nation's fishery harvest. Studies by Craig and Day (1977) and EPA indicate that the Barataria Basin is responsible for a large, if not the largest, share of Louisiana's total commercial fishery harvest. The National Marine Fisheries Service, utilizing commercial catch data from 1953 through 1978, calculated the average annual commercial harvest directly attributable to Barataria Basin. This annual harvest, which includes menhaden, shrimp, oysters, croaker, blue crab, sea trout, spot and red drum is approximately 302.7 million pounds at a value of approximately 83 million dollars. Adult and juvenile forms of the blue crab were observed in the Bayou aux Carpes site. Menhaden, shrimp and oysters directly consume the detritus produced and exported from the site.

Completion of the Levee Project would ultimately eliminate the export of detritus and nutrients to the downstream estuary and subsequent filling or other land conversion activities within the Bayou aux Carpes site would serve to accelerate this result. Therefore completion of the project would eventually eliminate the export of swamp-marsh production that constitutes a necessary component of the estuarine food web and, thereby, have an unacceptable adverse impact to shellfish and fishery areas. Filling the Bayou aux Carpes site without completion of the project would also eliminate such exports.

Studies conducted by EPA and FWS revealed that the Bayou aux Carpes site provides foraging and nursery habitat for fresh and estuarine species, many of which are of recreational and commercial importance including: channel and blue catfish, sunfish, bass, blue crab and red swamp crawfish. In addition, the studies revealed the presence of forage fish, juvenile crawfish, grass shrimp and other amphipods that break down detritus and are utilized as a food source by the commercial and sport species mentioned above. **Completion of the Levee Project would eliminate access to, as well** as the fishery values of the Bayou aux Carpes site; filling the site would have a similar effect. For all these reasons, completion of the Levee Project and/or filling in the Bayou aux Carpes site would have an unacceptable adverse effect on shellfish beds and fisheries areas.

B. Impacts to Wildlife Values

The projection of future conditions, prepared by FWS as part of the HEP analysis, indicated that with the completion of the Levee Project, all of the evaluation species would show loss of available habitat and that, if the site were subsequently filled and developed, it would lose virtually all of its current wildlife value.

Completion of the Levee Project will adversely affect the habitat of the the American alligator, which is threatened in the state of Louisiana, the osprey and the wood duck, which are National Species of Special Emphasis, commercially important furbearers, and game animals. **Completion of the** project and subsequent draining and filling will have an unacceptable adverse impact on wildlife values.

C. Impacts to Water Retention and Pollution Filtering Values

Hopkins and Day (1979) found that Lake Cataouatche and, to a lesser extent, Lake Salvador have already begun to experience the effect of an altered hydrological regime. These lakes in the Barataria Basin used to be a prime nursery ground for Louisiana commercial fisheries, but now drainage canals from the West Bank of New Orleans bypass the swamps and enter directly into the lakes. High nutrient loads from the West Bank have caused Lake Cataouatche to become eutrophic and fish kills after large rainstorms are indicative of the impact of the changes in the natural hydrology of this area. The Barataria Waterway also allows urban runoff to flow unhindered to the upper part of Barataria Bay. While the total contribution of Bayou aux Carpes site for filtering pollutants has not been measured, it is certain that the adjacent waters of Bayou Barataria and the Barataria Bay estuary, as well as the associated fish and shellfish, will receive higher levels of pollutants and heavy metals from urban runoff and other sources, if the site is isolated by completing the Levee Project or if it is filled. This will contribute to the unacceptable adverse effects to fish and shellfish discussed above, in section A.

D. Impacts to Recreation

The potential for adverse effects upon recreation (primarily from the potential loss of sport fishing and hunting opportunities) within the site has generated a high level of public concern throughout the public hearing comment period.

Completion of the Levee Project will block public access to the site. Draining the site via the proposed pump will eliminate the fisheries community and, in conjunction with future filling and other land reclamation activities, eventually eliminate the available wildlife habitat. Recreation, in the form of hunting and fishing, will be eliminated within the Bayou aux Carpes site.

E. Impacts to the Barataria Unit of the Jean Lafitte National Historical Park

The Barataria Unit of the Jean Lafitte National Historical Park lies immediately west of the Bayou aux Carpes site and a 600 acre section lies within the same drainage basin as the Bayou aux Carpes site. There is a direct hydrological connection, via four sets of culverts under State Highway 3134; this area of the park is comprised of approximately 500 acres of bottomland hardwoods and wooded swamp. The FWS HEP analysis revealed that the wetlands of the Barataria Unit are of high value for the representative species selected. On site observations included the bald eagle, which has been listed by FWS on the endangered species list. In addition, there is a great egret and great blue heron nesting colony located in the wooded swamp within this section of the National Park. The fish species collected in the Bayou aux Carpes site were the same as those collected by FWS in the Barataria Unit in September 1984, with the exception of six species that were collected only in the park and two species that were collected only in the Bayou aux Carpes. This portion of the National Park and the Bayou aux Carpes site represent, in form and in function, two interconnected segments of one wetland system.

The Barataria Unit is open to the public for fishing. In addition, the Park Service has placed an emphasis on this area as an educational resource. An interpretative walkway traverses typical bottomland hardwoods wetlands, then enters a cypress-tupelo swamp. The trail receives high visitor use and is a major tool in the park's education program. Therefore, this unit of the National Park provides recreation opportunities in addition to the aforementioned ecological values.

The hydrological relationship between the Barataria Unit and Bayou aux Carpes site is such that attempts to drain or significantly alter the hydrology of the site would result in adverse hydrological alterations within the Barataria Unit of the park. A study of the effects that draining of the Bayou aux Carpes site would have on the park was conducted by John W. Day, Jr., of the Louisiana State University Center for Wetland Resources. Dr. Day concluded

that as long as the surface water connection remains functional, the forced drainage of the Bayou aux Carpes swamp would result in drainage of much of the area within the park. This would ultimately result in vegetative transition to upland species with loss of productivity, detrital export, existing fish and wildlife habitat and the attendant recreational opportunities.

Alternative means of preserving the wetland values of the park if the study area was placed under pump would include placing control structures at the highway culverts and implementing an intensive water management plan. Although the control structures might initially slow the rate of ecological transformation due to draining, EPA feels that the success of constantly maintaining flooded conditions is questionable and may eventually lead to the deterioration of the wooded swamp and bottomland hardwood communities. Attempts to reproduce natural hydrological cycles through extensive water management would be expensive, involving major alterations in order to pump water into the area and then drain it out again.

Completion of the Levee Project or any other fill proposals which would have the effect of draining, drying, or hydrologically isolating the Bayou aux Carpes site would result in adverse impacts to fisheries areas, wildlife areas and recreation associated with the Barataria Unit of the Jean Lafitte National Historical Park.

F. Cumulative Impacts

The significance of impacts associated with completing the Levee Project and eliminating the ecological contribution of the Bayou aux Carpes site are even greater when considered within the context of wetland alterations within the Barataria Basin and coastal Louisiana.

A report to the Louisiana Joint Legislative Committee on Natural Resources, stated that over the last 80 years, over 800,000 acres of land in coastal Louisiana have been lost. Approximately 58 percent of this has occurred over the past 25 years. Recent losses of forested wetlands in the state are on the order of 87,200 acres annually (U.S. FWS, March 1984; Dozier et al.; and Gagliano, 1981). These losses affect not only biological, water quality, recreational, and flood protection benefits but also economic values of the wetlands because of the significance to Louisiana's coastal fishery. The causes cited for these wetland losses include such natural phenomena as coastal subsidence and compaction, erosion, and sea level rise, and such anthropogenic causes as channelization, levee construction, canal dredging, subsidence due to mineral extraction, agricultural expansion, and urban expansion. This is significant for two reasons. First, some causes of wetland losses are natural and, therefore,

not subject to jurisdiction under Section 404 of the Clean Water Act. Second, while natural phenomena are causing wetland losses from seaward, man's activities are threatening wetlands from the landward side. It has been predicted, in a report by the Department of Commerce that "if the present draining and filling operations for urban and commercial development in the coastal area continue at the current rate, an additional 186,000 acres of the state's wetlands will be lost by the year 2000" (USDC, 1980).

The same types of activities causing significant statewide coastal wetland losses are also reported by the Department of Interior as major influences in the Barataria Basin, (USFWS, 1983). The Louisiana Department of Transportation and Development (LDTD, 1976) has calculated the total loss of Barataria Basin wetlands as being 44,800 acres by 1970. The upper Barataria Basin wetlands are increasingly being ringed by urban development. This can be seen along the Bayou des Familles ridge to the northwest of the Estelle Pumping Station Outfall Canal. Also, the effects of pumping upon habitat similar to that of the study area may be seen immediately west of that canal. The Bayou aux Carpes site represents a notable portion, roughly four percent of the periodically flooded marsh and swamp area in the Barataria Basin; and would, therefore, represent a sizeable loss to this area.

G. Proposed Corrective Measure

Counsel for some of the landowners proposed, as a corrective measure to eliminate the likelihood or unacceptable adverse effects, that the Park Service purchase a portion of the tract and that the pumping station be relocated to the pipeline canal. In my judgement this proposal would not materially reduce the significant adverse effects of the project, even if the Park Service were in a position to implement it. In any case, the Service has indicated that it does not have an interest in acquiring this land at this time.

Neither during the Regional 404(c) consultation period and public comment period nor during EPA headquarters' consultation period did any of the landowners or their representatives identify any desired property uses or specific projects which would involve less significant filling within the Bayou aux Carpes site and, therefore, could possibly be exempted from the general prohibition on discharge. However, the Southern Natural Gas Pipeline Company by letter dated September 25, 1985 indicated that routine maintenance of their pipeline would require some discharges of dredged or fill material but that it could be done so as to have minimal environmental effects. We agree and our final 404(c) determination recognizes this exception.

VI. A Discussion of the Report Prepared by Steimle and Associates, Inc. on Behalf of the Property Owners

The technical material submitted on behalf of the property owners to the record in opposition to EPA's studies of the Bayou aux Carpes site consisted of a report entitled "Review of CWA 404(c) Related Studies in the Bayou aux Carpes Area" prepared by Steimle and Associates, Inc. in August 1985. The report and EPA's analysis of same have been made part of the record on this case. This section provides a discussion of my findings regarding the main points of the report.

Steimle and Associates reviewed the assessment of the Bayou aux Carpes site performed by Region IV, Environmental Services Division in Athens, Georgia. Their report states that the sampling effort was restricted to a small segment of the site and that the duration of sampling was not sufficient to develop seasonal conclusions. In addition, the report states that the storage/detention of surface water is not supported by the study results; specifically, the Steimle report compared the water level recorder readings between the site and Bayou Barataria after a rain event and concluded that their similarity contradicted the idea that the Bayou aux Carpes site stores water.

Steimle and Associates is correct in that sampling was performed primarily in and adjacent to the major watercourses within the site. The data obtained, however, was accurate and the resultant observations and/or conclusions were not expanded to include unsampled areas. EPA feels that the literature research performed in conjunction with the assessment, as well as other site specific studies, such as the HEP analysis performed by FWS, provide information on segments of the site not directly sampled by Region IV such that the ecological values of the entire site may be ascertained.

EPA agrees that the duration of sampling was too short to support seasonal conclusions in the absence of other data. However, conclusions regarding seasonal characteristics, such as the frequency of tidal inundation, were reached by combining and comparing onsite results with the review of seasonal records and available scientific literature.

The comparison of water level recorder readings referred to by Steimle and Associates is misleading because the recorder in the Bayou aux Carpes site is located within one of the canals which is hydrologically connected to Bayou Barataria and would, therefore, react in a similar fashion to Bayou Barataria to hydrological changes. EPA believes that the study data do support the conclusion that water is stored by the Bayou aux Carpes site. The measurement of cyclic chloride concentrations confirmed that the site stores water. In addition, a diurnal tidal range of .3 to .4 feet was recorded at the site during EPA's study. This value, when added to the average marsh-swamp surface elevation of the swamp resulted in an average water level elevation of 1.54 feet NGVD. This elevation was above the maximum water level height recorded in Bayou Barataria and study canals indicating that the site was storing additional water.

Steimle and Associates also reviewed the HEP analysis conducted by FWS. The report stated the view that the HEP is based upon two assumptions that are untrue in nature; that is: (1) that there is a linear relationship between the HSI value and the number of a species that a given type of habitat can support and; (2) that all of the members of the species are going to be evenly distributed in a given habitat.

The HEP is a means by which different habitats may be compared (regarding their value to a certain wildlife species) by comparing each against a model. These procedures are a basis for comparison and do not provide absolute wildlife support information for a specific area. The two above assumptions are made to provide a qualitative basis of habitat comparison; for example, an area with an HSI of 1.00 is more valuable than an area with an HSI of 0.50 for the same wildlife species and, if two areas have the same HSI for a particular species, it is assumed that the larger area can accommodate a larger population of that species. The HEP is a standard methodology used by FWS and provides a reasonable basis for evaluating the wildlife values of the site.

Steimle and Associates also reviewed the report by Dr. Day which addressed the impacts of the Levee Project on the Barataria Unit of Jean Lafitte National Historical Park. They conclude that Dr. Day's report is general and lacks site specific data. They also state that this report dismisses the concept of water level management rather than providing a plan that could be evaluated.

The data obtained by EPA on the hydrological connection between Bayou aux Carpes and the Barataria Unit indicates that completing the Levee Project and pumping and draining the Bayou aux Carpes site will ultimately drain the Barataria Unit of the National Park. Information in the record on the ecology of this site reveals the resources that will ultimately be lost. EPA believes that, while a water management plan may be feasible from an engineering standpoint, it may still result in vegetative changes within the Barataria Unit and subsequent changes in values. Therefore it is reasonable to conclude that using the Bayou aux Carpes site for disposal will adversely affect the values of the historic park. These values include fish and wildlife habitat, as well as recreation.

In summary, the report done by Steimle and Associates fails to raise substantive issues that would cause reconsideration of the conclusions within the three aforementioned reports.

VII. Restriction on Use of the Bayou aux Carpes Site for Specification as a Disposal Site

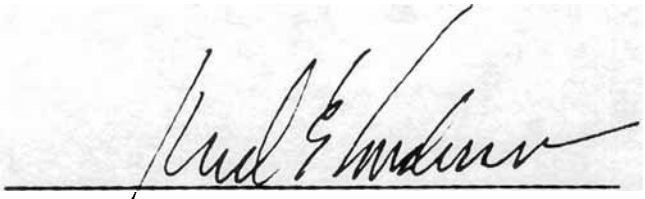
Section 404(c) authorizes EPA to impose different limitations on discharges through actions on disposal site specifications. Where the facts warrant I may recommend that any defined area be prohibited from specification as a disposal site pursuant to Sections 404(a) and (b). If I should determine that the discharge of certain materials will have significantly less damaging effects than others, or that limiting discharges by amount, method, and/or location will reduce the likelihood of unacceptable adverse effects, I may recommend that the use of a specified site merely be restricted in some manner and/or that the restriction or prohibition apply to only a portion of the area under consideration.

In the present case, my finding of unacceptable adverse effects stems from the direct and indirect effects of discharges regulated under Section 404 of the Clean Water Act and within the Bayou aux Carpes site. Accordingly, I have decided to restrict the use of the Bayou aux Carpes site for any discharges of dredged or fill material, including those associated with the original Harvey Canal-Bayou Barataria Levee Project, with three exceptions. The first exception is discharges associated with completion of the modified Harvey Canal-Bayou Barataria Levee Project, as described in the Wilson Order of November 16, 1976; on condition that the closure at the confluence of Bayou aux Carpes and Bayou Barataria be replaced by floodgates. By retaining the current hydrologic regime except during storms, the modified project will largely maintain the current values of the site. The second exception is discharges associated with routine operation and maintenance of the Southern Natural Gas Pipeline Company pipeline as long as dredged or fill material is placed in piles with breaks in between to allow sheet flow to adjacent wetlands and as long as pre-maintenance contours are restored. The third exception is discharges associated with projects with the sole purpose of habitat enhancement and specifically approved by EPA. I believe that these three types of activities are unlikely to result in significant adverse effects to the aquatic environment as long as they are performed in accordance with these restrictions as well as any permit conditions which may be imposed by the Corps of Engineers through the permit process.

I have decided not to make a fourth exception for a disposal site for dredged material resulting from dredging in Bayou Barataria as requested by the Corps of Engineers since the disposal of dredged material within the Bayou aux Carpes site would result in the loss of a significant area and contribute to the unacceptable adverse effects discussed above. I note that there is no ongoing maintenance dredging in the Bayou and none is planned for the foreseeable future, so this should not create any

hardship. Even if circumstances should change, today's decision would permit dredged material to be used in completing and maintaining the modified Levee Project described in the Wilson Order.

Should the landowners in the future identify any other specific activities which require some discharge of dredged or fill material and which would have only minor impacts, they may, of course, apply to EPA for reconsideration of today's decision with respect to those particular activities. However, based on the current record, only the three specifically identified exceptions to my restriction are justified.



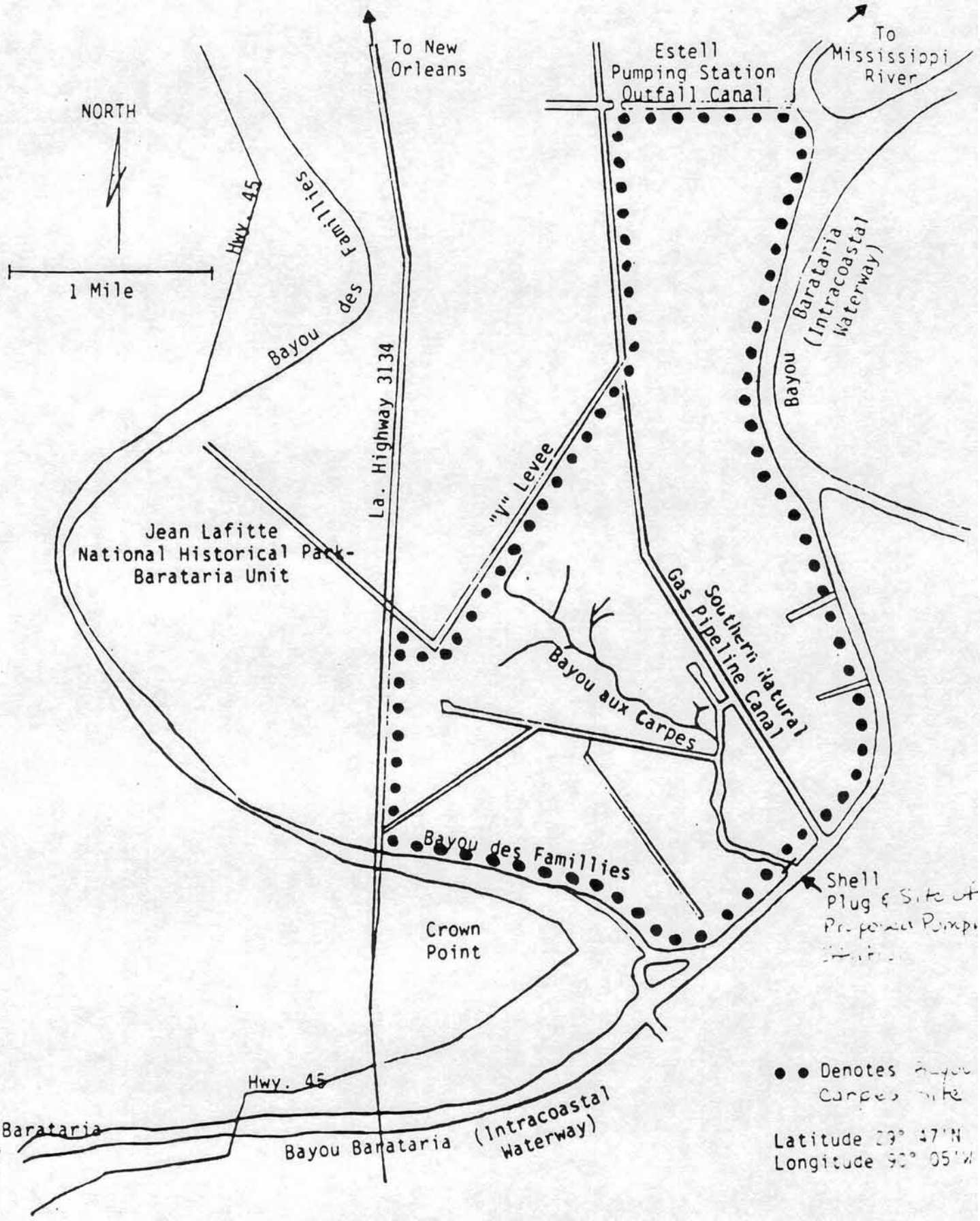
Assistant Administrator
for Office of External Affairs
U.S. Environmental Protection Agency

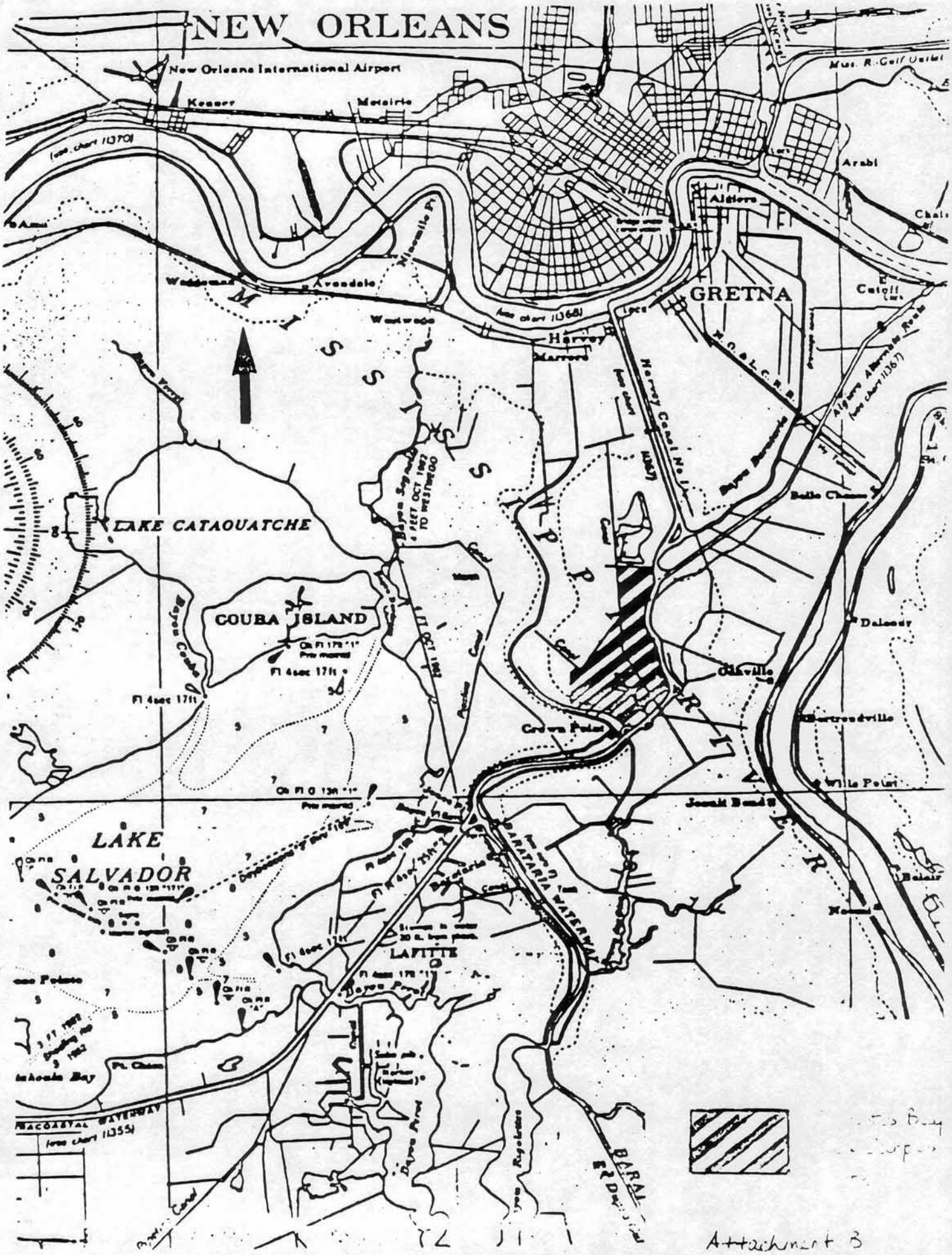
OCT 16 1985

Date

BAYOU AUX CARPES SITE

JEFFERSON PARISH, LOUISIANA





Attachment B