

# **BAYOU MANCHAC AND AMITE RIVER LOUISIANA**

## **FEASIBILITY REPORT**

AUGUST 1979



**United States Army  
Corps of Engineers**

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# **New Orleans District**

## SYLLABUS

The purpose of this study was to investigate navigation problems, needs, and opportunities in the Bayou Manchac - Amite River area of Louisiana, and to determine whether practicable plans might be formulated to address these problems and needs.

The District Engineer finds that modification of existing projects to provide a navigable connection between Bayou Manchac and the Mississippi River and to improve Bayou Manchac and Amite River for navigation lacks economic justification and, in general, local support.

The District Engineer recommends that no modification to the existing project be made at this time and that the study be terminated.

BAYOU MANCHAC AND AMITE RIVER,  
LOUISIANA

REPORT FOR  
WATER RESOURCES DEVELOPMENT

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## INTRODUCTION

The study area is located in southeastern Louisiana within the greater New Orleans-Baton Rouge Metropolitan Area (NOBRMA). As a transportation artery, the Mississippi River contributes substantially to both the NOBRMA and national economies. A navigable connection between the Mississippi River and Bayou Manchac along with channel improvements offers the potential for shortening travel distances for some of the shallow-draft traffic presently transiting the Mississippi River between New Orleans and Baton Rouge. This report provides the results of a reconnaissance investigation and serves as an adequate basis to determine that further study of the navigation improvements is not warranted.

### STUDY AUTHORITY

On 24 June 1965 and 17 August 1965 the United States Committee on Public Works adopted resolutions which read as follows:

RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, That the Board of Engineers for Rivers and Harbors, created under Section 3 of the River and Harbor Act approved June 13, 1902, be, and is hereby requested to review the report of the Chief of Engineers on Amite River and Tributaries, Louisiana, published as House Document No. 419, 84th Congress, and other pertinent reports with a view to determining whether it is advisable at this time to modify the existing project in any way with particular reference to the provision of a navigable connection between Bayou Manchac and the Mississippi River and the improvement of Bayou Manchac and Amite River for navigation.

## SCOPE OF STUDY

The studies presented in this report are of reconnaissance scope, with primary consideration given to the economic and environmental factors associated with providing a navigable connection (lock) from the Mississippi River to Bayou Manchac and the Amite River for navigation. The **studies** also consider the need for related improvements to interconnecting navigation routes, including the Mississippi River, Amite River **diversion** channel, Blind River, Lake Maurepas, Pass Manchac, and Lake Pontchartrain. The studies were made in the depth and detail necessary to determine if further, more detailed studies of navigation improvements along Bayou Manchac and Amite River are warranted. Known problems involving recreation, water pollution and cultural resources, for which improvements have been requested, were given less attention in this study because they are being addressed in other currently authorized studies.

## STUDY PARTICIPANTS AND COORDINATION

The New Orleans District of the US Army Corps of Engineers was responsible for the conduct of the study, for formulation and coordination of plans, for consolidation of information from studies of other agencies, and for preparation of the report.

All studies were coordinated with appropriate state and Federal agencies. A public meeting was held in Baton Rouge, Louisiana, on 4 August 1977 to afford interested parties the opportunity to express their views.

## THE REPORT AND STUDY PROCESS

This report is organized into a main report and two appendixes. The main report provides brief nontechnical discussions of the problem identification, plan formulation, impact assessment and evaluation tasks performed for the study. It also provides a summary of public views and the conclusions and recommendations of the District Engineer. Appendix A provides technical details pertinent to benefit and cost computations. Appendix B consists of pertinent correspondence with other agencies.

## STUDIES AND REPORTS

The "Annual Report of the Chief of Engineers for 1868," pages 486-496, contained unfavorable recommendations regarding establishment of a lock at Manchac Bend to connect the Mississippi River to Bayou Manchac.

A report entitled, "Preliminary Examination of Bayou Manchac, Louisiana," which was presented in the "Annual Report of the Chief of Engineers for 1888," also contained unfavorable recommendations regarding establishment of a lock at Manchac Bend.

A 1907 report, "Pass Manchac, Louisiana," printed as House Document No. 882, 60th Congress, 1st Session, contained a recommendation of the Chief of Engineers for improvement of Pass Manchac between Lakes Maurepas and Pontchartrain. A project based on that recommendation was authorized by Congress in the River and Harbor Act of 24 June 1910 and was completed in 1912.

The existing navigation project, "Amite River and Bayou Manchac, Louisiana," was authorized by Congress in the River and Harbor Act of 21 January 1927 in accordance with recommendations contained in the report published as House Document No. 473, 68th Congress, 2nd Session. The project provides for a 7- by 60-foot navigation channel from the 7-foot contour of Lake Maurepas up the Amite River to Port Vincent and clearing of obstructions from that point to the Louisiana and Arkansas Railroad Bridge across Bayou Manchac. The project was completed in 1928.

In a 1930 report of the Amite River and Bayou Manchac, Louisiana, project printed as House Document No. 480, 71st Congress, 2nd Session, the reporting officer specifically addressed the feasibility of providing a navigable connection between Bayou Manchac and the Mississippi River. However, he found no economic justification for modifying the project.

The existing flood control and drainage project, "Amite River and Tributaries, Louisiana," was recommended by the Chief of Engineers in a report published as House Document No. 419, 84th Congress. The project was authorized under the Flood Control Act of 9 August 1955. Authorized improvements included: (1) construction of a diversion channel from the Amite River to the Blind River; (2) improvement of drainage on the Amite River, Bayou Manchac, Blind River and Comite River by clearing, snagging, enlargement, and realinement; (3) modification of three existing bridges and construction of one new bridge; (4) construction of a control weir on the Amite River at mile 25.3. Channel improvements on the Blind River were not required. The project was completed in 1954.

A report on the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection project was completed in 1954. The report included recommendations for hurricane protection improvements around Lake Pontchartrain including levees and barriers at the eastern entrances to Lake Pontchartrain to reduce inflow of

hurricane tides. Construction of the overall project began in 1967. Portions of the construction were halted in 1978 pending development of a revised environmental impact statement (EIS).

The Amite River and Tributaries, Louisiana, study was authorized to determine if additional improvements to the existing flood control project are justified. Under this study authority, an unpublished Corps of Engineers report, "Review of Reports on Amite River and Tributaries - Preliminary Evaluation," was submitted by the District Engineer of New Orleans to the Division Engineer of the Lower Mississippi Valley on 7 April 1972. In that report, the District Engineer concluded that additional improvements for flood control and other related purposes on the Amite River, Bayou Manchac, and Comite River and their tributaries were not justified at that time. The report was reviewed in 1977. At that time, the District Engineer concluded that conditions had not materially changed since 1972 and recommended that the study remain inactive and unfunded.

The New Orleans-Baton Rouge Metropolitan Area (NOBRMA) study, initiated in 1973 and scheduled for completion in 1980, is a multi-purpose planning study encompassing the economic area for this study. Water and related land resources development being considered include flood protection; flood plain management; navigation, regional water supply; regional wastewater and storm water. drainage management facilities; recreation.; water quality control'; conservation and enhancement, economic, and human resources development. The study output will be a broad-spectrum water resources management plan for the area to the year 2020. Study recommendation for wastewater management and water quality will be submitted to state and local entities for adoption and to the Environmental Protection Agency. Other study findings and recommendations, such as those concerning flood control, recreation, and navigation will be submitted to the appropriate agency and Congress for action.



## PROBLEM IDENTIFICATION

The study area, as shown on plate 1, is located in southeast Louisiana generally between Baton Rouge and New Orleans. It coincides with the area of the NOBRMA study which is currently underway. The economic area of NOBRMA is shown on figure 1.

### **EXISTING CONDITIONS**

ENVIRONMENTAL SETTING AND NATURAL RESOURCES. In general, the area under study is one of low relief. It is comprised of three distinct physiographic elements--the Mississippi Alluvial Valley, the Pleistocene Uplands, and the Pontchartrain Basin.

Bayou Manchac flows eastward from lower Manchac Bend, crosses natural levee and backswamp deposits of the Mississippi River and incises a narrow valley through the adjacent Pleistocene hills. It winds through the Pleistocene hills for nearly 7 miles, joins the southeastward-flowing Amite River which flows past Port Vincent and French Settlement, and continues through the marshland of the Pontchartrain Basin.

In the Pleistocene hills area, sediments form low hills composed of limonitic silt and gray sand clay; a maximum elevation of 32 feet mean sea level (msl) occurs in this area. Within the valley areas, natural slopes are very gentle with most of the area being at or near sea level. Holocene sediments deposited by the Mississippi River cover the remainder of the surface in the study area. Natural levee deposits consist of 15 to 25 feet of inter-fingering sands, coarse silts, and clays. In the western portion of the study area, the natural levee overlies and gradually gives way to the thick sequence of backswamp clays that are exposed between Highway 61 and the Mississippi River. To the east of the Pleistocene hills, near French Settlement, there is a vast cypress tupelogram swamp--the western portion of the Pontchartrain Basin. Here, the surface sediments are wet, spongy, organic clays and silts, ranging from 3 to 10 feet in thickness and covered by fresh or brackish water most of the year. The alluvial valley of the Amite River is incised into the underlying Pleistocene and backswamp sediments to a depth of 50 feet or more. Coarse-grained Holocene deposits fill the floodplain and are mined locally as sources of sand and gravel.

The climate of the project area is characterized by mild winters and hot, humid summers. During the summer prevailing southerly winds produce conditions favorable for convective thundershowers. In the colder seasons, the area experiences frontal passages which produce squalls and sudden temperature drops.

Temperature and precipitation records, back to 1899, are available from stations at New Orleans International Airport, Donaldsonville, and Baton Rouge. These data indicate a maximum recorded temperature of 110 °F, and a minimum recorded temperature of 2 °F, both occurring at Baton Rouge. The records show the annual maximum rainfall was 89.05 inches and the minimum annual rainfall was 37.33 inches, both occurring at Donaldsonville. The normal annual temperature and precipitation, obtained by averaging records for the three stations, are 68.3 °F. and 56.91 inches, respectively.

The water bodies of major interest in this study are Bayou Manchac, the lower Amite River, the Amite River diversion channel, lower Blind River and Lakes Maurepas and Pontchartrain.

Bayou Manchac is a tributary of the Amite River and a former distributary of the Mississippi River. It drains the lower portion of the city of Baton Rouge and an area of lowlands located to the south and east of the city. Stages on Bayou Manchac are strongly influenced by the backwater effects of the Amite River. Water quality in the bayou is poor; the stream is frequently stressed as a result of municipal sewage treatment plant discharges as well as urban storm runoff. The upper reach of the bayou, above Highway 61, has deteriorated into little more than a ditch. The stream is navigable below Highway 61; little commercial traffic exists, but the bayou is used by recreational craft.

The Amite River originates in southwestern Mississippi, flows generally southward for 170 miles, and drains into Lake Maurepas. The area under study encompasses a portion of the lower Amite River Basin beginning at the head of navigation on the Amite which is at the mouth of Bayou Manchac (mile 35.75), slightly north of Port Vincent. Below this confluence, the Amite's channel meanders through a heavily timbered swamp with little relief. The area is subject to headwater flooding; when heavy runoff occurs, the river overflows its banks and the swamp acts as a sump. Also, stages are influenced by tides in Lakes Maurepas and Pontchartrain. Water quality in the Amite River above its confluence with its diversion channel (mile 25.3) is generally good; however, below this point, water quality problems are experienced during periods of normal and low flows (due to the inflow of swamp waters with low dissolved oxygen levels). The lower Amite River is a popular recreation area for boating and fishing, and area residents maintain a number of camps along its banks. Although the river is used for navigation, barge traffic has decreased in recent years.

The Amite River diversion channel was constructed as a feature of the Amite River and Tributaries, Louisiana, project. At its head, at mile 25.3 of the Amite River, it is controlled by a low

level weir at elevation 0.0 feet m.s.l. The purpose of the weir is to confine the majority of low flows below the point of diversion to the Amite River to prevent channel degradation on the Amite River. Directly downstream of the weir, a navigation gap with a width of 20 feet and a bottom elevation of minus 5.0 feet msl provides a connection for shallow draft navigation between the Amite River and the diversion channel. In essence, the diversion channel augments the flood carrying capacity of the lower Amite River by operating as a floodway. The diversion channel flows through a swamp area and drains into the lower Blind River at mile 4.8. It is extensively used for boating and fishing.

The Blind River has been classified as a natural and scenic river by the State of Louisiana, and comprises a popular recreational area. Blind River drains into Lake Maurepas; thus high lake levels can impede runoff. Water quality in the Blind River is poor; **in** its upper reaches, poor water quality results from municipal wastewater discharges, while in its lower reaches, influx of swamp waters with low dissolved oxygen levels are the main cause of its problems.

The interconnected (via Pass Manchac) Lakes Maurepas and Pontchartrain, receive runoff from a 4,700-square mile drainage area. They are shallow, flat-bottomed water bodies, and receive diluted saline gulfwater via several inlets to Lake Pontchartrain. Lake Maurepas is predominantly freshwater, and Lake Pontchartrain ranges between fresh and brackish [(brackish waters have a salinity of 1.0 to 5.0 parts per thousand (p/t)]. At times of extreme low flows Lake Maurepas can become brackish. Salinities average less than 0.2 p/t in Lake Maurepas and about 1.5 p/t in Lake Pontchartrain. Normal tides in the lakes' areas average 0.6-foot. A maximum stage of 4.7 feet msl in Pass Manchac was recorded in 1972, while a maximum stage of 13 feet msl occurred at Frenier Beach (a Lake Pontchartrain station) in 1915. Thus, one can see that the tidal effects of hurricanes are much more pronounced in Lake Pontchartrain than in Lake Maurepas. Water quality is generally good **in** both lakes, but problems do exist. Polluted storm runoff from New Orleans causes depressed oxygen levels along the south shore of Lake Pontchartrain while polluted storm runoff from Baton Rouge causes the same problem in Lake Maurepas. Increased elevated water temperatures in the summer have depressed bottom oxygen levels in Lake Pontchartrain and caused crab kills. Camps along the east shore of Lake Pontchartrain are dumping untreated sewerage directly into the lake. Further, both lakes face potential eutrophication problems as a result of nutrient inflow from tributary streams to the north. The lakes support important commercial fishing industries; provide direct recreational opportunities for

fishing, boating, and waterskiing; provide indirect recreational opportunities, i.e., they justify the existence of adjacent public use parks, beach facilities, and the like; are used for shallow draft navigation; oil and natural gas is extracted from their underlying substrata; and shells (a locally important construction material and source of lime) are dredged from the bottom of Lake Pontchartrain. The lakes and their adjacent wetlands also serve as a valuable estuarine nursery area for virtually every important sport and commercial species of fish found along southeast Louisiana's coast.

Available pertinent stage and water quality data relating to the study area's streams are presented in tables 1 and 2, respectively.

Forested wetlands are abundant and are characterized by extensive baldcypress-tupelogum swamps. Dominant trees in the swamps include baldcypress, tupelogum, Drummond red maple, and pumpkin ash. On drier sites, bottomland hardwood communities exist, consisting of water oak, Nuttal oak, bitter pecan, black willow, green ash, sweetgum and ironwood. Floating and submerged aquatic vegetation is abundant throughout the area. The dominant species include water hyacinth, yellow pond lily, coontail and fanwort. Upland forest is limited to the area north of Bayou Manchac and west of the Amite River. It is characterized by several species of oaks, sweetgum, white ash, beech and dogwood.

The forested wetlands and associated streams provide a wide variety of habitats for terrestrial and aquatic animals. Common mammals in the area include white-tailed deer, muskrat, raccoon, opossum, mink, otter, red fox, grey fox, bobcat, nutria, beaver, cottontail rabbit, swamp rabbit, fox squirrel and grey squirrel. The area supports large numbers of resident and migratory birds. Important game birds present in the area include wild turkey, woodcock, mourning dove, and many species of waterfowl. The wetlands support many species of reptiles, including the threatened American alligator. Sport fishes occurring in the Amite River and Bayou Manchac include spotted bass, largemouth bass, black crappie, white crappie, bluegill and warmouth. Commercially important fishes include black bullhead, blue catfish, channel catfish and freshwater drum.

Recreational activities in the area include hunting, fishing, canoeing, hiking, camping, birdwatching and nature photography. Due to the proximity to large urban populations, the area is being subjected to increasing demand for these activities.

A cultural resources survey for the existing Amite River and Bayou Manchac navigation project (operation and maintenance) was completed in 1975. The survey did not cover locations that could

Table 1

PERTINENT STAGE DATA  
(feet above mean sea level)

Station location	Period of record	Mean	Average annual high water -	Average annual low water	Maximum	Date	Minimum	Date
Amite River Denham Springs 85040	1938-77	12.7 (1955-76)	29.4 (19 55-76)	9.2 (19 55-76)'	41.1	Apr 77	3.9	Jun 61
Port Vincent 85175	1954-77	1.8* (1955-76)	7.2 (1955-76)	1.1 (1955-76)	12.9	Apr 77	-1.6	Dec 54
French Settlement	1954-77		4.5 (1955-76)	-0.4 (1955-76)	7.4	Apr 77	-1.5	Dec 54
10 Bayou Manchac Hope Villa 85100	1945-77	1.7 (1965-75)	10.4 (1945-76)	-0.8 (1945-76)	14.8	May 53	-1.6	Dec 54
Pass Manchac near Ponchatoula 85420	1955-57	1.4 (1965-75)	3.3 (1955-76)	-0.7 (1955-76)	4.7	Sep 73	-2.0	Jan 61

\*Stage related from Denham Springs.

Table 2  
WATER QUALITY

Sample station Site description	Dissolved oxygen (mg/l)			Parameters pH (standard units)			Depth of sample (feet)		
	14 Feb 78	19 Apr 78	18 May 78	14 Feb 78	19 Apr 78	18 May 78	14 Feb 78	19 Apr 78	18 May 78
Amite River									
1/2 mile above Bayou Manchac	9.8	7.5	7.1	6.9	6.8	6.8	3	3	3
near Port Vincent	9.8	7.5	7.0	6.9	6.8	6.8	13	18	18
opposite head of Amite Diversion	9.5	6.4	5.1	7.1	7.1	7.0	3	3	3
approximately 12.5 miles above mouth	9.5	5.7	5.0	7.0	7.1	7.0	21	23	21
	9.8	5.7	5.1	6.9	6.9	7.0	3	3	3
	9.7'	4.0	4.3	6.9	6.9	7.0	21	21	24
	9.8	4.2	2.0	6.8	7.1	6.5	3	3	3
	9.7	1.1	1.8	6.8	6.7	6.5	19	21	22
Amite River Diversion Channel									
2 1/2 miles below diversion			4.9			7.0			3
			4.0			7.0			25
Bayou Manchac									
1/2 mile west of Amite River	7.8	1.1	1.1	7.3	7.2	7.1	3	3	3
	7.7	0.8	0.9	7.3	7.2	7.1	9	7	9
Blind River									
at Kansas City Southern Railroad	20 Feb 76	28 Apr 76	18 Jun 76	20 Feb 76	28 Apr 76	18 Jun 76	20 Feb 76	28 Apr 76	18 Jun 76
	3.2	5.0	2.3	6.9	7.0	6.9	3	3	3
3 miles upstream of Amite Diversion	3.0	4.7	1.8	6.9	6.9	6.9			
	7.5	4.9	6.9	6.9	6.9	6.9	3	3	3
3/4 mile upstream of Lake Maurepas	2.5	0.0	0.1	6.9	6.8	6.5	30	30	30
	7.4	4.7	8.8	7.0	6.9	6.8	3	3	3
	5.6	5.1	2.2	6.9	6.9	6.8			

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be affected by additional cutoffs, channel enlargement or realignment considered herein, nor did it cover the existing Amite River diversion channel. The known sites along the waterways are only representative of an undoubtedly larger number of sites located in the area.

The National Register of Historic Places, as published in the "Federal Register" dated 7 February 1978 and monthly supplements through 30 May 1978, lists **one registered site**, "Fort Pike," which is located by The Rigolets, the eastern entrance to Lake Pontchartrain. The site has experienced some erosion, and riprap has been placed to reduce this problem. The "Galvez Town Site," located at the confluence of Bayou Manchac and Amite River has been nominated to the National Register of Historic Places.

The Blind River, from its origin in St. James Parish to its junction with Lake Maurepas has been classified as a natural and scenic river of Louisiana. Also, portions of the Amite River and its main tributary, the Comite River, are classified as natural and scenic rivers. Additionally, 17 other streams classified in whole or in part as natural and scenic rivers are located within the economic study area.

HUMAN RESOURCES. Based on information extracted from the NOBRMA study, the population of the economic study area, shown, on figure 1, increased 49 percent from 1950 to 1970. The growth rates for the study area exceeded both state and national rates for the same period while paralleling the general decrease in population growth rate. The regional trend during this period was migration towards the urban areas, with metropolitan parishes becoming more densely settled and residential settlement spreading to an adjacent parish.

Population projections through the year 2020 are summarized in table 3. The projections are based on an assumed continuation of historic growth patterns in the\_ study area tempered by recent trends.

DEVELOPMENT AND ECONOMY. The economic study area covers, roughly, the southeastern portion of the state. It contains a large percentage of Louisiana's water resources, and is dominated by the cities of New Orleans and Baton Rouge. The general economy of the study area is closely linked to the ports of these two cities. Hence, improvement of the waterway systems connecting these ports can favorably affect the area's economy.

There is a growing demand for outdoor recreation areas within easy access of the areas metropolitan areas. This trend is expected to continue over the long term as urban populations increase and development causes land use changes. The waterways that would be

TABLE 3

POPULATION PROJECTIONS

<u>Year</u>	<u>Number</u>	<u>Annual Growth Rate (%/yr)</u>
1970	1,767,000	
1980	2,023,000	1.37
1990	2,315,000	1.36
2000	2,577,000	1.22
2020	3,095,000 .	0.92



affected by possible navigation improvements have great value as recreation areas; this value is expected to increase in the foreseeable future.

Economic activity within the region was forecasted by assuming that regional employment opportunity and population growth (i.e., rates of natural increase and migration) have been in equilibrium over the last 20 years and will continue this pattern through 2020. Projections for employment were made based on an analysis of historic trends and current opportunities. for future growth.

Historic data and projections for both future employment and earnings-per-worker for the study area related to each of eight major industrial sectors are summarized in tables 4 and 5, respectively.

The economic study area encompasses about 6.5 million acres or slightly more than 10,000 square miles, of which about 7 percent is urban land use. Approximately 71 percent of the population resides in the urban areas. The remaining 29 percent of the population is distributed over the nonurban land which comprises 93 percent of the study area. Based on the economic outlook for the study area and past development trends, land-use analysis was employed to project future land use. Overall urban land uses are estimated to increase by 45 percent (at the expense of agricultural, forest, and wetlands acreages) and represent approximately 10 percent of the total land use by 2020. A summary of present and estimated future land use is presented in table 6.

#### CONDITIONS IF NO FEDERAL ACTION TAKEN

Before any action alternative can be evaluated, an estimation of the conditions which would prevail were no additional Federal action undertaken ("future without project") is necessary, i.e., alternate futures can be compared to this condition to evaluate the net effects over the project life attributable to additional Federal action. The following assumptions and estimations have been made: existing Federal projects for navigation and flood control will continue to be maintained; commercial traffic in Lakes Maurepas and Pontchartrain and along Bayou Manchac and the Amite River will remain at moderate levels; commercial traffic along the Mississippi River will continue to grow; increased residential and commercial development along the upper reach of Bayou Manchac will intensify existing drainage and water quality problems; and along the lower reaches of Bayou Manchac and the lower Amite River, increased recreational demand will lead to construction of additional camps and an increase in boating and fishing activities.

#### PROBLEMS, NEEDS, AND OPPORTUNITIES

The basic issue addressed in this study is the opportunity for navigation improvements related to the provision of a navigable

Table 4

HISTORIC AND PROJECTED ESTIMATES OF EMPLOYMENT BY PLACE OF WORK  
BY BROAD INDUSTRIAL SECTOR: 1967-2020

Year	Agriculture	Mining	Construction	Manufacturing	Trans., Comm., 8 Utilities	Trade	Services	Other	Total*
1967	22,650	21,079	54,057	92,165	59,659	122,945	119,253	126,234	618,042
1970	17,807	22,036	43,661	91,671	59,512	132,469	124,916	147,574	<b>639,646</b>
1972	17,459	21,657	48,902	91,593	58,203	142,025	131,012	154,964	665,815
1980	17,870	30,054	49,799	118,232	70,679	155,743	148,234	185,385	775,996
1990	17,870	35,546	58,898	140,553	83,595	184,202	176,219	220,383	917,266
2000	17,870	35,546	67,686	163,203	96,069	211,688	204,622	255,903	1,052,587
2010	17,870	35,546	76,167	185,050	108,099.	238,199	232,015	290,161	1,183,107
2020	17,870	35,546	83,347	203,550	118,295	260,716	255,212	319,169	1,293,705

Source: US Department of Commerce, Bureau of Economic Analysis with projections by URS Research

\*Excludes nonagricultural proprietors or self-employed.

Table 5

HISTORIC AND PROJECTED ESTIMATES OF EARNINGS PER WORKER  
BY BROAD INDUSTRIAL SECTOR: 1970-2020  
(1,000's of 1967 dollars)

Year	Agriculture	Mining	Construction	Manufacturing	Trans., comm., utilities	Trade	Services	Other	Total*
1967	2.313	9.728	7.976	8.151	7.032	5.783	4.702	6.199	5.822
1970	3.069	9.781	8.946	8.529	8.093	5.868	5.121	6.039	6.513
1972	3.701	10.175	8.937	9.227	8.760	6.045	5.435	6.456	6.494
1980	6.639	11.097	11.296	10.928	11.979	6.650	6.769	6.798	8.315
1990	12.093	13.251	14.361	14.002	16.898	7.925	8.853	8.062	10.586
2000	15.480	16.962	18.383	17.942	21.631	10.145	11.333	10.320	13.526
2010	19.816	21.713	23.532	22.967	27.689	12.986	14.507	13.211	17.288
2020	25.367	27.794	30.123	29.399	35.445	16.623	18.570	16.911	22.107

Source: US Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System for historic figures; URS Research Company for projections.

\*Computed from aggregate totals of sector projections.

Table 6

ESTIMATED LAND USE IN THE STUDY AREA, 1970-2020  
(acres)

Land use category	Year									
	1970	1975	1980	1985	1990	1995	2000	2005	2010	2020
Urban	465,700	487,200	508,600	531,900	553,800	575,800	594,000	619,500	638,700	676,800
Agriculture	1,506,800	1,498,100	1,489,200	1,479,700	1,470,000	1,459,200	1,449,800	1,437,500	1,427,800	1,408,900
Forest	1,772,600	1,765,500	1,759,300	1,752,600	1,747,200	1,741,400	1,736,100	1,728,900	1,723,400	1,712,500
Wetlands	2,407,100	2,401,400	2,395,100	2,388,000	2,381,200	2,375,800	2,372,300	2,366,300	2,362,300	2,354,000
Water and Barren Land	366,300	366,300	366,300	366,300	366,300	366,300	366,300	366,300	366,300	366,300
<b>Total</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>	<b>6,518,500</b>

Source: URS Research Company

connection between the Mississippi River and Bayou Manchac. Problems and needs related to flood control, recreation, water quality and cultural resources are being addressed by other ongoing studies, and are considered herein only to the extent that they interface with the navigation improvements considered.

#### STATUS OF EXISTING PLANS AND IMPROVEMENTS

Several Federal projects related to navigation and flood control currently serve the area, and one Federal project for hurricane protection is under construction.

The Mississippi River, Baton Rouge to the Gulf of Mexico project provides a 40- by 800-foot channel in Southwest Pass (600 feet wide across its bar), a 30- by 450-foot channel through South Pass (600 feet wide across its bar), a 40- by 1,000-foot channel from Head of Passes to the Port of New Orleans, a 40- by 500-foot and 35- by 1,500-foot channel through the Port of New Orleans, and a 40- by 500-foot channel from the Port of New Orleans through the Port of Baton Rouge. The Mississippi River-Gulf outlet provides a 36- by 500-foot tidewater channel from the Gulf of Mexico to the Inner Harbor Navigation Canal in New Orleans.

A 30- by 150-foot reach of the Inner Harbor Navigation Canal links the Mississippi River-Gulf Outlet and the Mississippi River via a lock. This link is owned by the State of Louisiana, but leased by the Federal Government. The Inner Harbor **Navigation** Canal Lock, with dimensions of 31.5 by 75 by 640 feet, limits the **size** of ships traveling between the river and the Mississippi River-Gulf Outlet. Congestion at the lock is extreme with delays occasionally lasting as long as 28 hours. Post-authorization **feasibility** studies are currently underway to determine if replacement and/or enlargement of the existing lock are justified.

In 1896, Congress authorized a navigation channel 9 feet deep and 250 feet wide at mean low water on the Mississippi River between Cairo, Illinois, and Head of Passes. In 1928, the width was increased to 300 feet, and in 1944, an increase in channel depth to 12 feet at mean low water was authorized for the reach from Cairo, Illinois, to Baton Rouge, Louisiana. No change was made in the authorized width of 300 feet. The 12-foot channel is to be obtained by a program of bank stabilization and maintenance dredging. Progress is being made on **developing** this channel; however, only a 9-foot depth is now being maintained.

The Gulf Intracoastal Waterway (GIWW), between Apalachee Bay, Florida, and the Mexican border, provides a waterway with 12- by 150-foot dimensions from Mobile Bay, Alabama, to New Orleans. From New Orleans westward, channel dimensions are 12- by 125 feet. An alternate route is provided to New Orleans, via The Rigolets and

**Lake Pontchartrain with dimensions of 9-** by 100 feet. An alternate route is also provided from Morgan City, Louisiana, to Port Allen, Louisiana (near Baton Rouge.), with 12- by 125-foot dimensions. Further enlargement of the Louisiana-Texas section of the GIWW was authorized in 1962 and is being studied at the present time.

The Lake Pontchartrain and Vicinity Hurricane Protection project, initiated in 1967, currently has some features under construction (levees) while construction of other features await revision of the EIS and judicial approval thereof. The barrier feature, which cannot be constructed pending the outcome of adjudication, provides, among other things, for construction of a barrier across the east end of Lake Pontchartrain to consist of a gated control structure, navigation lock (110- by 800-feet) and approach channels, a closure dam and adjoining barrier levees at The Rigolets; a gated control structure and channels, navigable floodgate and approach channels, relocation of the GIWW, a closure dam and adjoining barrier levees at the Chef Menteur Pass; and construction of a navigation lock (84- by 800-feet) and gated control structure at the lake end terminus of the Inner Harbor Navigation Canal in the vicinity of Seabrook. The navigation lock at The Rigolets would be open at all times, except for necessary closure during the peak intensity periods of hurricanes and for necessary operation during periods when flow velocities associated with tidal action affect navigation traffic through The Rigolets. The lock in the vicinity of Seabrook would be operated as necessary to accommodate navigation traffic and to control saltwater intrusion into Lake Pontchartrain.

Dredging and clearing and snagging has been performed by the Corps of Engineers at the mouth of Pass Manchac to maintain navigation between Lakes Maurepas and Pontchartrain.

The Amite River and Bayou Manchac, Louisiana, project completed in 1928, provides for a 7- by 60-foot navigation channel from Lake Maurepas up the Amite River to Port Vincent and removal of obstructions between that point and the L & A Railway Bridge across Bayou Manchac. Total length of the improvement is 44 miles. Very little commercial traffic has been reported on this waterway in recent years, and it is now used primarily for recreational purposes.

The Amite River and Tributaries, Louisiana, project completed in 1964, is primarily a flood control and drainage project. Improvements in the study area include improved drainage on the Amite River and Bayou Manchac by means of clearing and snagging and a diversion channel, controlled at its head by a low level weir (with shallow draft navigation gap) which leaves the Amite River at mile 25.3 and eventually intercepts the lower Blind River 4.8 miles above its outfall into Lake Maurepas.

#### IMPROVEMENTS DESIRED

At the public **meeting** held on 4 August 1977 some local support was expressed relative to the provision of a navigable connection between Bayou Manchac and the **Mississippi** River, and the improvement of Bayou Manchac and Amite River for navigation. The majority of public sentiment, however, was against such measures, and practically everyone who voiced an opinion expressed the view that the environment should be safeguarded. The South Tangipahoa Parish Port Commission was the major proponent of a navigation project. The Office of Public Works (OPW) of the Louisiana Department of Transportation and Development expressed the opinion that a navigation project could not be economically justified because of the high cost of bridge modifications and other relocations that would be required; and that local cooperation requirements for a project could exceed the capabilities of local interests to participate. OPW questioned the need for a study, but indicated that they would cooperate and if further information proved a project feasible, they would support it. No apparent need for a navigation project was demonstrated. Opposition to a navigation project was expressed by officials of St. James Parish, commercial fishermen, and local residents. Many of the speakers voiced concerns about problems related to water quality in Bayou Manchac; flooding along Amite River and its tributaries; and preservation and enhancement of the recreational and cultural resources.

#### PLANNING CONSTRAINTS

The studies of Bayou Manchac and Amite River were generally limited to the primary purpose of navigation and associated environmental considerations. Authority to consider other needs and purposes in the area related to flood control, water quality, wastewater management, and water-oriented recreation are currently being considered in the NOBRMA study (page 4). Flood control in the Amite and Comite basins has also been previously considered under the Amite River and Tributaries study (page 4).

#### PLANNING OBJECTIVES

The proposed connection (lock) between the Mississippi River and Bayou Manchac offers the potential for shortening travel time for some shallow draft navigation presently using the Mississippi River between Baton Rouge and New Orleans and thusly reducing travel costs. The associated channel improvements in the interest of navigation offer the opportunity to reduce flooding.

## FORMULATION OF PRELIMINARY PLANS

### MANAGEMENT MEASURES

A preliminary examination of the area's existing navigation projects and traffic was made as the first step toward identifying management measures to address the planning objective relative to navigation. Some findings were:

- a. Existing navigation traffic that might benefit from the provision of a navigable connection between Bayou Manchac and the Mississippi River consists predominately of through traffic, i.e., it does not originate and end within the study area.
- b. Only shallow draft traffic would benefit from establishing a navigation connection between the Mississippi River and Bayou Manchac. Specifically, the connection might effect economies for barge tows presently transiting the Mississippi River or the Gulf Intracoastal Waterway east of New Orleans.
- c. The authorized dimensions of the Mississippi River navigation channel above Baton Rouge (Baton Rouge to Cairo, Illinois) are 12-by 300 feet. The authorized dimensions of the relevant reach of the GIWW (New Orleans to Mobile Bay) are 12- by 150 feet.

### PLAN FORMULATION RATIONALE

The need to improve Bayou Manchac and Amite River for navigation is not apparent, but it is obvious that their improvement and related works could provide an alternate and shorter route for barge traffic now moving on the Mississippi River and the GIWW between the Baton Rouge and New Orleans, Louisiana, area. In preliminary studies to evaluate economic justification for an alternative route, it was reasoned that any route considered should include a connecting lock between the Mississippi River and the head of Bayou Manchac. Further, any route should provide access to the Port of New Orleans and to the GIWW east of New Orleans.

It was reasoned that the primary economic outputs generated by either plan would be navigation and area redevelopment benefits. It was qualitatively determined that the aggregate economic impacts of either plan on other values such as recreation would be both similar and negative. Therefore, it was felt that a quantification of primary economic outputs in tandem with qualitative assessments on other values would be adequate to compare plans through the first plan evaluation iteration.



## ANALYSIS OF PLANS CONSIDERED IN PRELIMINARY PLANNING

DESCRIPTION OF PLANS. The alternate plans, as shown on plate 2, were investigated; the no action alternative was also considered. Plan 1- consisted of a lock through the Mississippi River East Bank levee near the head of Bayou Manchac, thence proceeding along Bayou Manchac to the Amite River, thence along the Amite River to Lake Maurepas, thence across Lake Maurepas and through Pass Manchac to Lake Pontchartrain, and thence by two separate routes to the Port of New Orleans (via the Inner Harbor Navigation Canal) and to the GIWW (via The Rigolets), respectively.

Plan 2- consisted of a lock through the Mississippi River East Bank levee near the head of Bayou Manchac, thence proceeding along Bayou Manchac to the Amite River, thence along the Amite River diversion channel to its confluence with the lower reach of the Blind River, thence along the Blind River to Lake Maurepas, thence across Lake Maurepas and through Pass Manchac to Lake Pontchartrain, and thence by two separate routes to the Port of New Orleans (via the Inner Harbor Navigation Canal) and to the GIWW (via The Rigolets), respectively.

A low level control weir across the Amite River, just below its diversion, was added as a feature to plan 2 whose route followed the diversion channel below this point. The Amite River presently acts as the master stream during times of low and normal flow, whereas the diversion channel acts as a floodway during times of flooding. The weir feature would serve to prevent channel degradation of the Amite River below the streams' confluence due to reduced flows and hence reduced sediment carrying capacity in the Amite River resulting from establishment of a larger connection between the two streams.

The data indicated either route would be primarily used by through traffic destined for points north of Baton Rouge from origins using the GIWW, east of New Orleans. Hence, channels and locks for both routes were sized to accommodate the typical barge traffic moving on the GIWW, i.e., three-barge tows. Therefore, both plans have the common features of: a 12-by 125-foot navigation channel (a 12-foot navigable depth below average low water, with an allowable 2-foot overdraft; 125-foot bottom width except at bendways, where a 250-foot bottom width would be used; 1 on 3 side slopes; and a 450-foot channel right-of-way); a 75- by 800-foot lock through the Mississippi River levee at lower Manchac Bend; improvement of Bayou Manchac; maintenance and marking of navigation channels through Lake Maurepas to Pass Manchac and maintenance and marking of navigation channels from Pass Manchac across Lake Pontchartrain to the Inner Harbor Navigation Canal at New Orleans and The Rigolets, respectively.

COMPARATIVE ASSESSMENT AND EVALUATION OF PLANS. Preliminary analysis indicated that most of the benefits to be realized would result from transportation savings to that traffic now moving westbound via the GIWW, east of New Orleans, thence up the Mississippi River to beyond Baton Rouge. With the project in place, this traffic could enter Lake Pontchartrain via The Rigolets and proceed over the proposed route to the Baton Rouge junction; thus, avoiding the river currents, as well as enjoying a 49-mile savings in distance. A lesser amount of transportation benefits would accrue from traffic presently moving through the Inner Harbor Navigation Canal-Lake Pontchartrain area and moving to and above Baton Rouge over a 38-mile shorter route. It was determined that all downbound traffic would continue to use the Mississippi River due to better operating conditions such as faster speeds and larger tow sizes which would offset any savings due to the shorter proposed routes.

Initial qualitative assessments of the various plans' impacts on other values, such as water quality, flood control or recreation, indicated that the main differences resulted from the route alignments rather than the channel sizes or lock sizes. It was further determined that neither of the plans would enhance opportunities to implement features for other purposes. For example, a boat ramp could be built without either of the plans in place and generate as much or more benefits than if any navigation improvements were built. Therefore, it was assumed that formulation of additional separable multipurpose features would not aid in measuring differences between navigation plans.

Using an interest rate of 7 1/8 percent, the average annual transportation' benefits attributable to the proposed routes are estimated to be \$3.8 million. In addition, it was determined that construction of the features for either plan would generate about \$1.1 million in annual area redevelopment benefits.

Table 7 is a summary comparison of the economics of plans 1 and 2. Subsequent paragraphs discuss the qualitatively determined effects the respective plans are projected to have on other values. Table 8 gives a summary comparison of the relative effects of the plans on the four separate accounts of National Economic Development, Environmental Quality, Regional Development, and Social Well-Being.

All streams and lakes within the study area are presently experiencing some water quality problems. Future urbanization and the resultant increases in sewage discharges and urban runoff can be expected to aggravate existing ills. Any secondary development associated with either alternate plan would add to these problems. Further, the weir feature associated with plan 2, would reduce low flows to the lower Amite River and aggravate an already serious situation.

Table 7  
FIRST COSTS AND ANNUAL CHARGES

	Plan 1	Plan 2
<u>First Costs</u>		
Land and damages	13,525,000	10,506,000
Relocations	45,461,000	50,961,000
Construction	30,867,000	29,581,000
Contingencies	21,752,000	22,259,000
Engineering and design	4,020,000	4,131,000
Supervision and administration	4,805,000	4,872,000
Total First Costs	120,430,000	122,310,000
Interest during construction	21,470,000	21,790,000
TOTAL INVESTMENT	141,900,000	144,100,000
<u>Annual Charges</u>		
Interest and amortization	10,445,000	10,607,000
Operation, maintenance, and replacement <sup>1</sup>	3,196,000	3,058,000
Total Annual Charges	13,641,000	13,665,000
Annual Benefits	4,905,000	4,966,000
Net Benefits <sup>2</sup>	-8,736,000	-8,699,000
Benefit/cost ratio <sup>3</sup>	0.36:1	0.36:1

<sup>1</sup>Excludes increased O&M costs resulting from conversion of two railroad bridges from standard ballast type to draw bridges and costs of marking lake channels.

<sup>2</sup>Disregards adverse impacts on non-navigation items such as recreation.

<sup>3</sup>The benefit/cost ratio is overstated by an unquantified amount-- Reference 1 and 2 above.

TABLE 8

SUMMARY COMPARISON OF ALTERNATIVE PLANS

EVALUATION CRITERIA	NO ACTION	ALTERNATIVES		
		PLAN 1 - Route from Bayou Manchac along the Amite River to Lake Maurepas.	PLAN 2 - Route from Bayou Manchac along the Amite River, Amite River Diversion Channel, and Blind River to Lake Maurepas.	
A. PLAN DESCRIPTION-	No action	Construction and maintenance of a 75- by 800-foot lock through the Mississippi River at lower Manchac Bend, and a 12- by 125-foot navigation channel along the above-mentioned route and through Lake Maurepas, Pass Manchac, and Lake Pontchartrain to the IHNC at New Orleans and the Rigolets.	Same as Plan 1 except with channel work to the west of Lake Maurepas along the above-mentioned route.	
B. SIGNIFICANT IMPACTS				
	1. Economic	Economic growth will continue adjacent to existing urban centers and along the Mississippi River. Tidal flooding from the lakes will be alleviated by completion of the Lake Pontchartrain hurricane protection project. Areas adjacent to the lower Amite River will continue to experience flooding.	Transportation savings will accrue to traffic moving westbound from the New Orleans area to and above Baton Rouge with such average annual benefits amounting to \$3.8 million. Average annual benefits to otherwise underemployed labor will be \$1,105,000. Total average annual project costs will be \$13,641,000.	Same navigation benefits as under Plan 1. Average annual employment benefits will be \$1,166,000. Total average annual project costs will be \$13,665,000.
	2. Social	More extensive use of the area's water resources for recreation will occur.	Project construction and O&M will result in reduced Amite River area esthetic values and recreation opportunities.	Same as under Plan 1.

NA

TABLE 8 (Continued)

## SUMMARY COMPARISON OF ALTERNATIVE PLANS

EVALUATION CRITERIA	NO ACTION	ALTERNATIVES	
		PLAN 1 - Route from Bayou Manchac along the Amite River to Lake Maurepas.	PLAN 2 - Route from Bayou Manchac along the Amite River, <b>Amite River</b> Diversion Channel, and Blind River <u>to Lake Maurepas.</u>
3. Environmental	Area would remain a viable, productive river swamp ecosystem.	Channel right-of-way dredging and clearing and dredged material disposal would result in destruction of 9,897 acres of wetlands and loss of asso- ciated biological production. High probability of damage to unsurveyed archeological sites.	Same, except 9,795 acres of wetlands affected. Also will affect 4.8 miles of state natural and scenic river.
C. PLAN EVALUATION			
1. Contribution to Plan- ning Objectives	None	Navigation objectives will not be satisfied economically.	Same as under Plan 1.
2. Relationship to Four National Accounts			
a. National Economic Development			
(1) Average Annual Benefits			
(a) Employment		\$1,105,000	\$1,166,000
(b) Navigation		3,800,000	3,800,000
Total		\$4,905,000	\$4,966,000
(2) Average Annual Costs			
(a) Interest and Amortization		\$10,445,000	\$10,607,000
(b) Operation and Maintenance		3,196,000	3,058,000
(c) Fish and Wildlife Losses		not quantified	not quantified
Total		\$13,641,000	\$13,665,000

TABLE 8 (Continued)

## SUMMARY COMPARISON OF ALTERNATIVE PLANS

EVALUATION CRITERIA	NO ACTION	ALTERNATIVES	
		PLAN 1 - Route from Bayou Manchac along the Amite River to Lake Maurepas.	PLAN 2 - Route from Bayou Manchac along the Amite River, <b>Amite River Diversion Channel, and Blind River</b> to Lake Maurepas.
b. Environmental Quality			
(1) Beneficial	None	None	None
(2) Adverse			
(a) Destruction of forested wetlands and loss of associated production	None	<b>9,897 acres</b>	<b>9,795 acres</b>
(b) State natural and scenic river affected	None	<b>None</b>	<b>4.8 miles</b>
c. Social Well Being			
(1) Beneficial	Increased use of area's water resources for recreation will occur.	<b>None</b>	<b>None</b>
(2) Adverse	None	Project will reduce the esthetic values and recreation opportunities in the Amite River area.	Same as under Plan-1.
d. Regional Development			
(1) Beneficial	None	Average annual employment benefits will be \$1,105,000. All indirect regional income and employment benefits-not evaluated.	Average annual employment <b>heriefits</b> will be \$1,166,000. <b>All indirect regional income and employment</b> benefits-not evaluated.
(2) Adverse	None	Average annual non-Federal project costs will be \$6,632,000.	Average annual non-Federal <b>project</b> costs will be \$6,952,000.

TABLE 8 (Continued)

## SUMMARY COMPARISON OF ALTERNATIVE PLANS

EVALUATION CRITERIA	NO ACTION	ALTERNATIVES	
		PLAN 1 - Route from Bayou Manchac along the Amite River to Lake Maurepas.	PLAN 2 - Route from Bayou Manchac along the Amite River, Amite River Diversion Channel, and Blind River to Lake Maurepas.
3. Plan Response to Associated Evaluation Criteria			
a. Acceptability	A high degree of acceptance by most concerned.	Unacceptable to most concerned.	Same as under Plan 1.
b. NED Benefit-Cost Ratio	None	0.36	0.36
D. IMPLEMENTATION RESPONSIBILITIES			
1. Federal	None	Total average annual Federal costs will be \$7,009,000.	Total average annual Federal costs will be \$6,713,000.
2. Non-Federal	None	Total average annual non-Federal costs will be \$6,632,000.	Total average annual non-Federal costs will be \$6,952,000.

The study area presently experiences flood problems. Tidal flooding from Lake Pontchartrain will be greatly alleviated by completion of the hurricane protection project. It is expected that Amite River headwaters will continue to cause problems; however, flood control works are not currently justified. Improvement of Bayou Manchac would improve local drainage, but would not significantly alleviate flooding due to Amite River backwater effects. Plan 1, i.e., navigation improvement along the Amite River channel, would not otherwise affect flood stages in the area. Plan 2, i.e., opening the Amite River diversion channel to navigation while controlling the Amite River below the diversion channel, would result in some initial enlargement of the diversion channel, but this channel enlargement would not significantly lower flood stages. Based on information contained in House Document No. 419, 84th Congress, the existing "Amite River and Tributaries, Louisiana, project" eliminated 90 percent of the average annual flood damages in the Bayou Manchac-Amite River project area.

The area is expected to experience continued urban expansion which will result in the conversion of forested land, wetlands, and agricultural lands to urban uses. Thus, undeveloped land, or "open green spaces," will become more valuable as more people vie for less recreation space. The main land use impacts associated with implementation of either alternate plan would result from channel right-of-way dredging and clearing and disposal of dredged material. Most of the areas which would be affected by channel improvements are presently forested wetlands. Since these lands are adjacent to streams which are both popular with recreationists and accessible to urban areas, it is presumed that their recreation and esthetic values are greater than those of the area's undeveloped land in general. Thus; it is concluded that both plans would have a negative impact on land use. Plan 1 would require 2,156 acres of channel right-of-way and 7,741 acres of disposal area. Plan 2 would require 2,054 acres of channel right-of-way and 7,741 acres of disposal area. Additionally, plan 2's route encompasses a reach of a stream classified by the State of Louisiana as a natural and scenic river; the stream (Blind River) would require channel improvement (realignment), which would be incompatible with the State of Louisiana's designation of Blind River as a natural and scenic stream.

Although Lakes Maurepas and Pontchartrain and the Amite River are presently used for navigation, the considered navigation improvements would provide for increased barge traffic. Initial qualitative assessments are that the increased traffic and maintenance dredging will have some negative, though unquantified, effects on water related recreational opportunities and commercial fishing. Most of the projected traffic that would use the navigation improvements would be through barge traffic. Hence, comparatively little development can be expected to occur as a result of and adjacent to the navigation improvements.



## PUBLIC VIEWS

The draft reconnaissance report, containing the negative findings of the District Engineer, was coordinated with appropriate state and Federal agencies. Correspondence pertaining to this coordination is contained in Appendix B.

### VIEWS OF FEDERAL AGENCIES

No dissenting views were received from any responding agency relative to the negative findings presented in the draft report.

### VIEWS OF NON-FEDERAL AGENCIES AND OTHERS

No response has been received from any state agency which has received the draft report. At the 4 August 1977 public meeting, the State of Louisiana, Office of Public Works opined that a navigation project could not be justified. The majority of public sentiment was against additional navigation improvements. The South Tangipahoa Parish Port Commission was the major proponent of the navigation project.

## CONCLUSIONS AND RECOMMENDATIONS

It is concluded that modification of the existing projects for navigation and flood control on the Amite River and tributaries lacks justification. It is recommended that no modification to the existing project be made at this time and that the study be terminated.

**Q<sup>9</sup>~4'40A** 

THOMAS A. SANDS  
Colonel, CE  
District Engineer

LMVPD-P (31 Aug 79) 1st Ind

SUBJECT: Bayou Manchac and Amite River, Louisiana, Navigation  
Feasibility Report

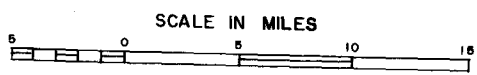
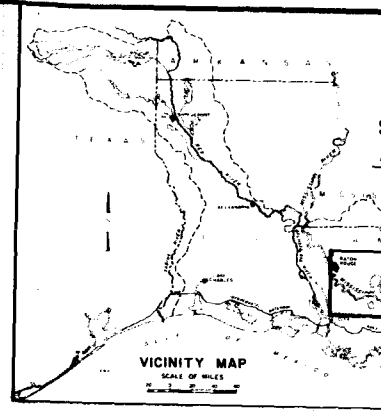
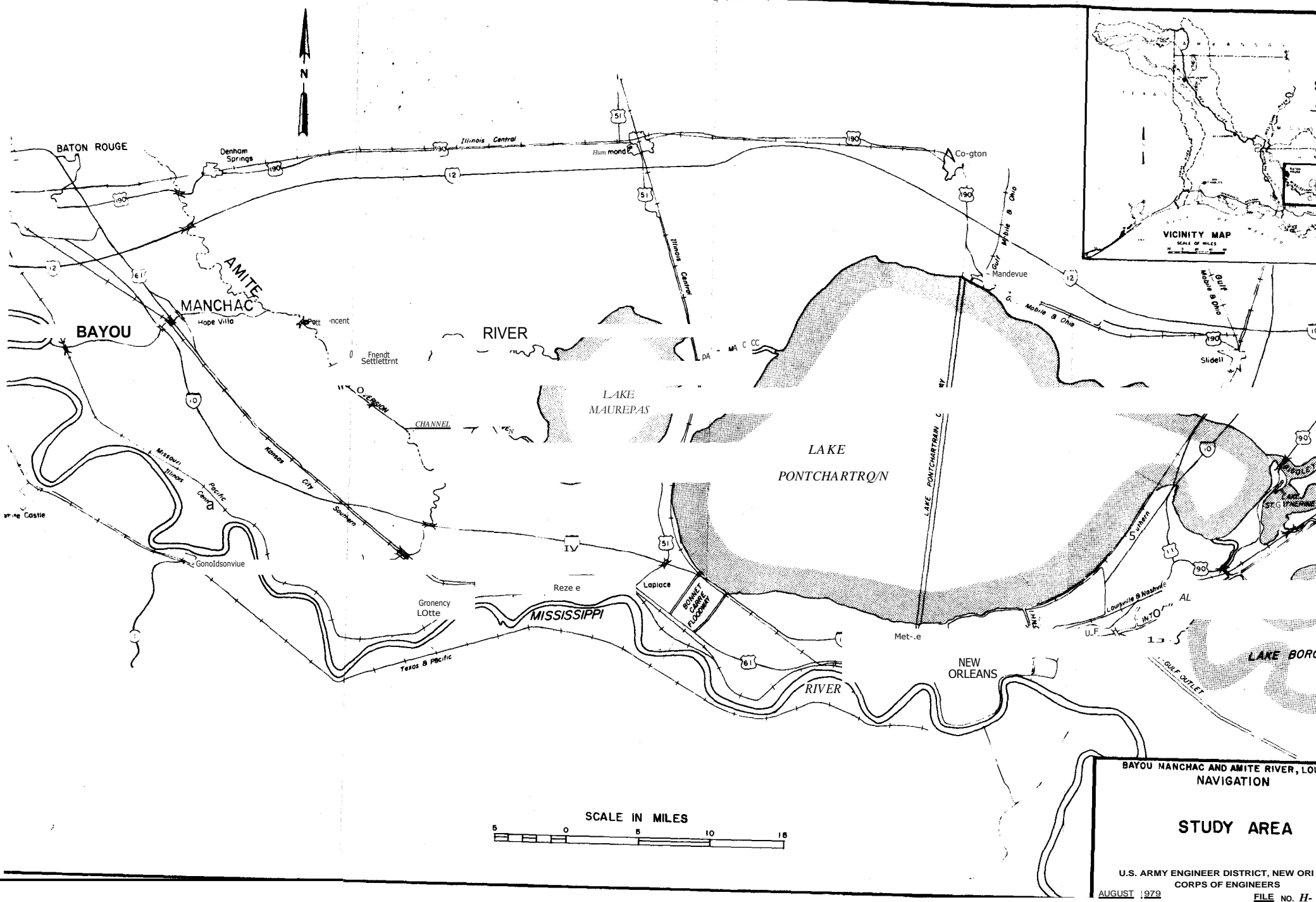
DA, Lower Mississippi Valley Division, Corps of Engineers, Vicksburg,  
MS 39180 7 November 1979

TO: Resident Member, Board of Engineers for Rivers and Harbors,  
Kingman Building, Fort Belvoir, VA 22060

I concur in the recommendations of the District Engineer.



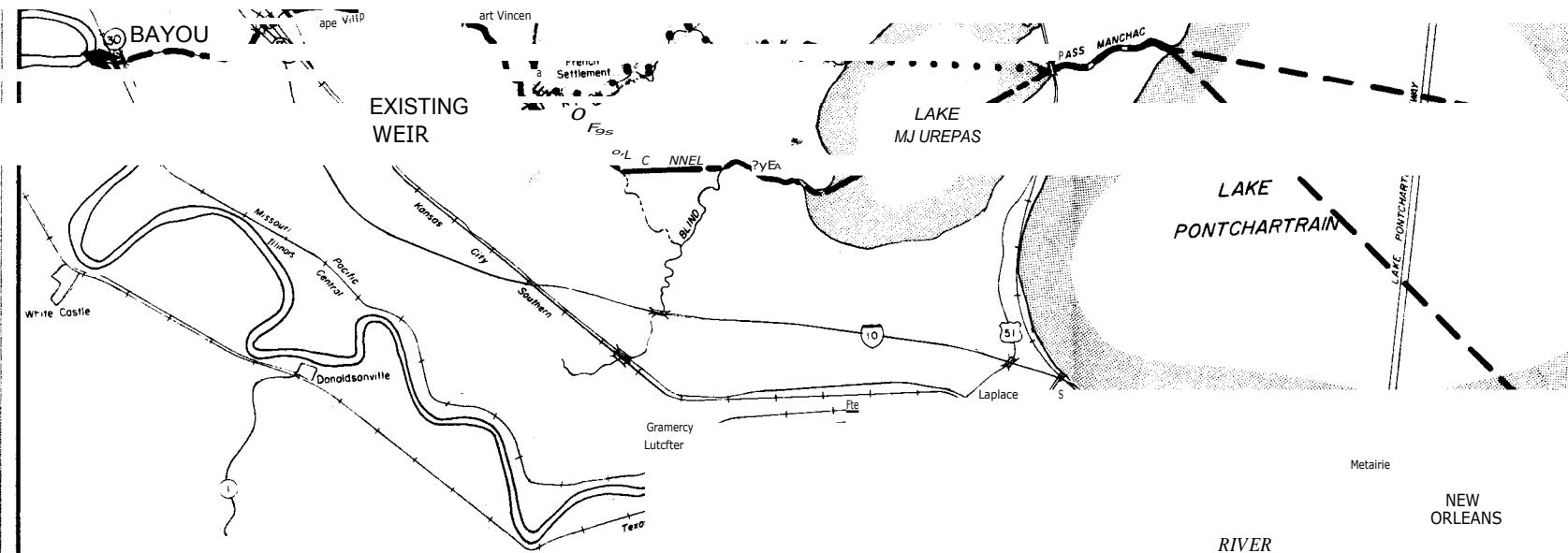
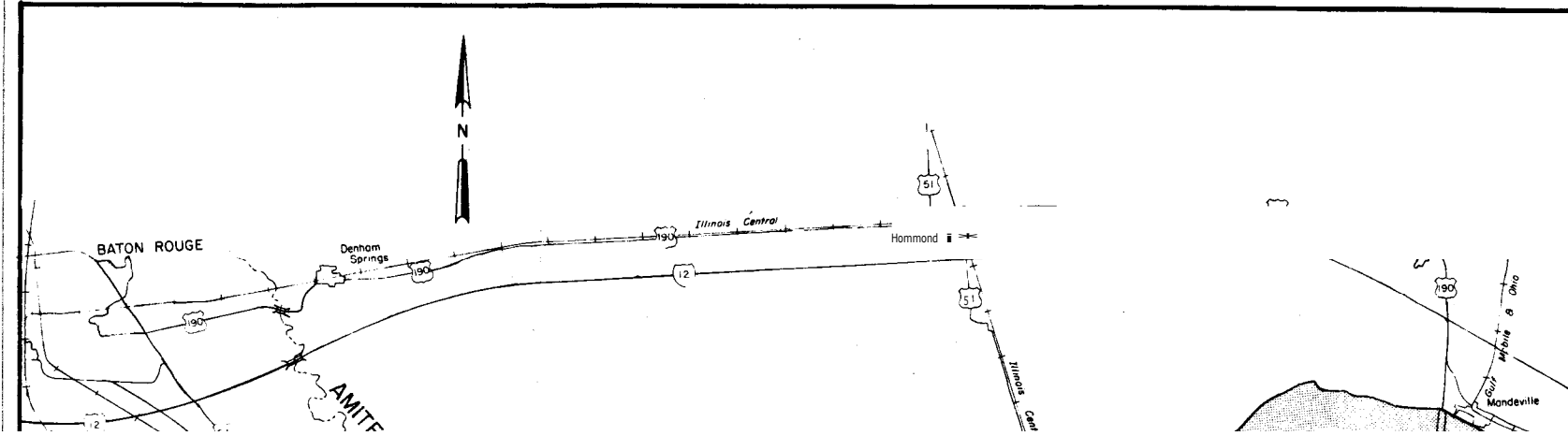
R. C. MARSHALL  
Major General, USA  
Division Engineer









BAYOU MANCHAC AND AMITE RIVER, LOUISIANA  
 NAVIGATION

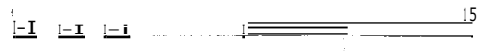
**STUDY AREA**

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS  
 CORPS OF ENGINEERS  
 AUGUST 1979  
 FILE NO. H-



**LEGEND**

-  PLANS I AND 2 -COMMON CHANNEL ALINEMENT
-  PLAN I-CHANNEL ALINEMENT ,
-  PLAN 2-CHANNEL ALINEMENT
-  LOCK
-  WEIR
-  BRIDGE TO BE RECONSTRUCTED



Bayou Manchac and Amite River, Louisiana  
Navigation Study

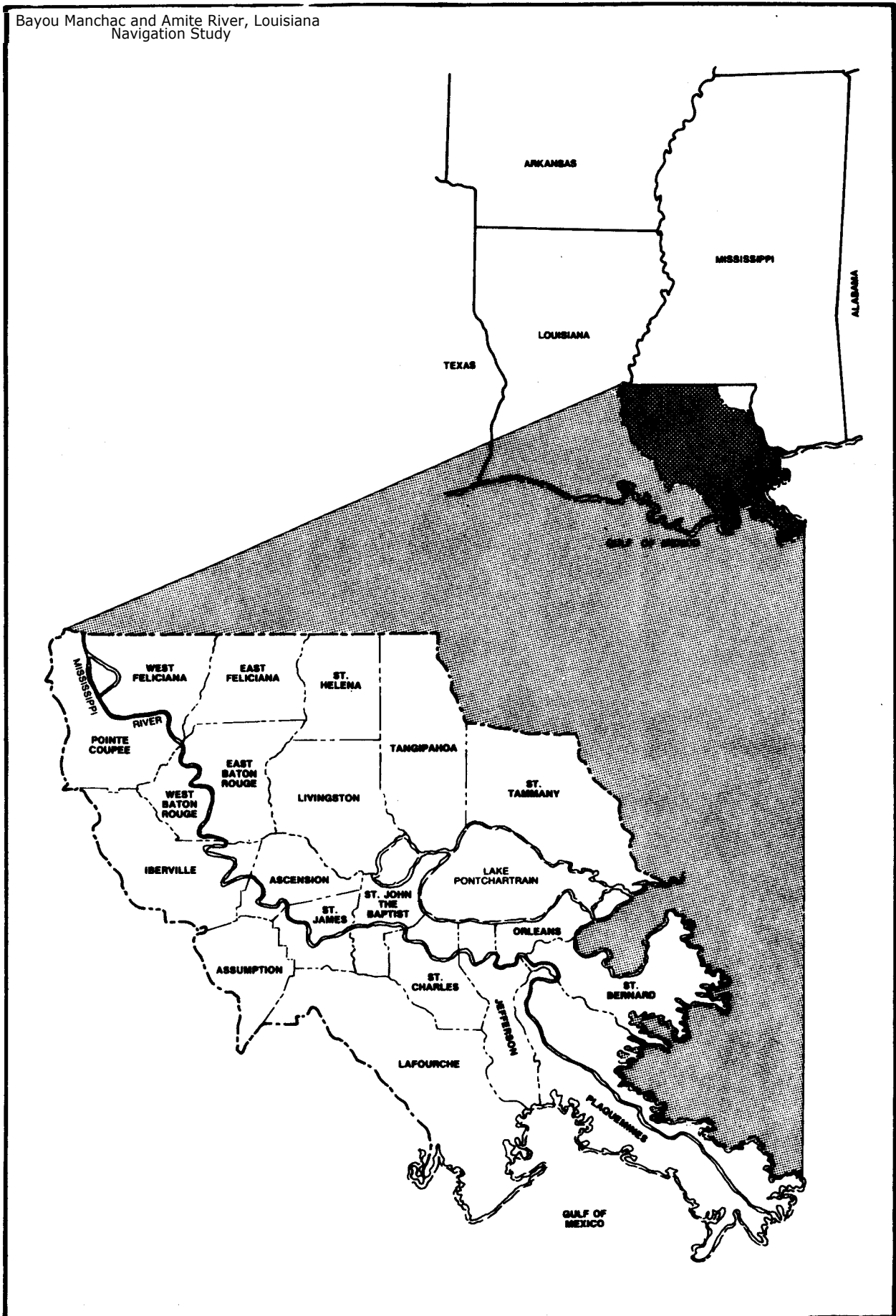


Figure 1 Economic Study Area

BAYOU MANCHAC AND AMITE RIVER,  
LOUISIANA

REPORT FOR  
WATER RESOURCES DEVELOPMENT

APPENDIX A  
BENEFIT AND COST ANALYSIS

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**BAYOU MANCHAC AND MITE RIVER,  
LOUISIANA**

**APPENDIX A  
BENEFIT AND COST ANALYSIS**



**APPENDIX A**

## BAYOU MANCHAC AND AMITE RIVER, LOUISIANA

### APPENDIX A BENEFIT AND COST ANALYSIS

#### IMPROVEMENTS DESIRED

The purpose of these analyses was to evaluate the benefits and costs related to alternatives considered for a shallow draft navigation between the Mississippi River (below Baton Rouge, Louisiana, near mile 215 AHP) and Lake Pontchartrain via Bayou Manchac, Amite River, and Lake Maurepas. The shallow draft traffic that could utilize such alternatives presently moves over waterways such as the Mississippi River (Baton Rouge, Louisiana, to Cairo, Illinois) where the authorized dimensions are 12 by 300 feet; the Gulf Intracoastal Waterway (east) where the dimensions are 12 by 150 feet; and Lake Pontchartrain where the controlling depth is generally 10 to 12 feet. It was therefore assumed that alternative channel improvements would have dimensions of 12 by 125 feet.

#### COSTS

Reconnaissance scope estimates of the first costs and annual charges associated with two plans were made. Also, cost sharing responsibilities associated with these plans were determined. Cost estimates were based on projected October 1979 price levels. A 5-year construction period was assumed (1980-1985) with project operation to commence in 1985, and a 7 1/8 percent interest rate over a 50-year project life were also assumed. In accordance with existing cost sharing policy, costs associated with lands and damages and relocations were allocated to local interests and all other costs were allocated to Federal interests. These data are presented in tables A-1 and A-2.

#### NAVIGATION BENEFITS

##### HISTORICAL COMMERCE

1. Commerce that has moved over waterways in and around Lake Pontchartrain for the period 1971-1976 is shown in table A-3. As shown in the table, there has been little shallow-draft commerce of consequence reported over the Bayou Manchac-Amite River section of the proposed improvement. Small quantities of unmanufactured shell have moved intermittently to various points along this segment of the waterway, mainly for use in road construction.

2. For the most part, commerce reported for Lake Pontchartrain includes most of the tonnages reported for the other streams in the study area, except that reported for the Inner Harbor Navigation



TABLE A-1

## ESTIMATE OF FIRST COSTS

Description	PLAN 1				PLAN 2			
	Estimated	Unit	Unit	Estimated	Estimated	Unit	Unit	Estimated
	Quantity		Price	Amount	Quantity		Price	Amount
			\$	\$			\$	\$
<u>Channels</u>								
Dredging	33,860,100	C.Y.	0.60	20,316,000	31,578,600	C.Y.	0.60	18,947,000
Clearing R/W-Bayou Manchac	949	Ac.	1,100	1,044,000	949	Ac.	1,100	1,044,000
Amite River	1,207	Ac.	1,100	1,328,000	-			-
Amite River Diversion								
Chan. & Blind River				-	1,105	Ac.	1,100	1,216,000
Environmental protection		Lump Sum		112,000		Lump Sum		88,000
Subtotal				22,800,000				21,295,000
Contingencies	25%±			5,700,000	25%*			5,325,000
Subtotal				28,500,000				26,620,000
Engineering and design	6%±			1,710,000	6%±			1,600,000
Supervision and administration	8%±			2,290,000	8%±			2,130,000
Total Channels				32,500,000				30,350,000
<u>Relocations</u>								
Bridges (install draw bridges)		Ea.	5,500,000	16,500,000	4	Ea.	5,500,000	22,000,000
Bridges-4 lane high rise	2	Ea.	11,000,000	22,000,000	2	Ea.	11,000,000	22,000,000
Roads (approx. 1000' each)	11	Ea.	110,000	1,210,000	11	Ea.	110,000	1,210,000
Railroad (approx. 1,600')	2	Ea.	55,000	110,000	2	Ea.	55,000	110,000
Railroad bridge	2	Ea.	2,750,000	5,500,000	2	Ea.	2,750,000	5,500,000
Powerlines	5	Ea.	5,500	27,500	5	Ea.	5,500	27,500
Pipelines	1,032	L.F.	110	113,500	1,032	L.F.	110	113,500
Subtotal				45,461,000				50,961,000
Contingencies	25%±			11,369,000	251±			12,739,000
Subtotal				56,830,000				63,700,000
Engineering and design	3%±			1,705,000	3%±			1,910,000
Supervision and administration	3%±			1,705,000	31			1,910,000
Total Relocations				60,240,000				67,520,000

TABLE A-1 (Continued)

Description	PLAN 1				PLAN 2			
	Estimated Quantity	Unit	Unit Price	Estimated Amount	Estimated Quantity	Unit	Unit Price	Estimated Amount
			\$	\$			\$	\$
<u>Structures</u>					Same as Plan 1			
<u>Lock (75' x 800')</u>								
Direct construction	+	Lump Sum		8,067,000				
Contingencies	25%-			<u>2,018,000</u>				
Subtotal	+			10,085,000				
Engineering and design	6%-			605,000				
Supervision and administration	8%-			<u>810,000</u>				
Total Lock				11,500,000				11,500,000
<u>Weir</u>		Not applicable to Plan.1						
Direct construction					+	Lump Sum		219,000
Contingencies					25%-			<u>53,000</u>
Subtotal					+			272,000
Engineering and design					6%-			16,000
Supervision and administration					8%-			<u>22,000</u>
Total Weir								310,000
Total Structures				11,500,000				11,810,000
<u>Lands and Damages</u>								
R/W-Bayou Manchac	949	Ac.	1,160	1,100,800	949	Ac.	1,160	1,100,800
Amite River	1,207	Ac.	370	446,600				
Amite River Div. Channel and Blind River					1,105	Ac.	370	409,000
Disposal area-Bayou Manchac	2,864	Ar.	1,026	2,938,400	2,864	Ac.	1,026	2,938,400
Amite River	4,877	Ac.	235	1,146,000				
Amite River Div Chan. and Blind River					4,877	Ac.	235	1,146,000
Dwellings	128	Ea.	30,000	3,840,000	82	Ea.	30,000	2,460,000
Camps	271	Ea.	4,200	1,138,200	114	Ea.	4,200	478,800
Commercial and Misc.	5	Lump Sum		160,000	2	Lump Sum		60,000
Subtotal				<u>10,770,000</u>				8,593,000
Contingencies	25%-			2,665,000	25%-			2,124,000
Resettlement cost (PL 91-646)		Lump Sum		1,420,000		Lump Sum		878,000
Real estate hired labor cost	890	Tract	1,500	<u>1,335,000</u>	690	Tract	1,500	1,035,000
Total Lands and Damages				16,190,000				12,630,000
TOTAL CONSTRUCTION				120,430,000				122,310,000
Interest during construction				<u>21,470,000</u>				<u>21,790,000</u>
								[(0.07125/yr) (5 yr)/2] x \$122,310,000-
TOTAL INVESTMENT				141,900,000				144,100,000

TABLE A-2  
COST SHARING

FIRST COSTS								
Item	PLAN 1			Item	PLAN 2			
	Federal	Non-Federal	Total		Federal	Non-Federal	Total	
	\$	\$	\$		\$	\$	\$	
Channels	32,500,000		32,500,000	Channels	30,350,000	-	30,350,000	
Relocations		60,240,000	60,240,000	Relocations		67,520,000	67,520,000	
Structures	11,500,000		11,500,000	Structures	11,810,000		11,810,000	
Lands and Damages		<u>16,190,000</u>	<u>16,190,000</u>	Lands and Damages		<u>12,630,000</u>	<u>12,630,000</u>	
Subtotals	44,000,000	76,430,000	120,430,000	Subtotals	42,160,000	80,150,000	122,310,000	
Interest during construction	<u>7,800,000</u>	<u>13,670,000</u>	<u>21,470,000</u>	Interest during construction	<u>7,500,000</u>	<u>14,290,000</u>	<u>21,790,000</u>	
TOTAL	51,800,000	90,100,000	141,900,000	TOTAL	49,660,000	94,440,000	144,100,000	

ANNUAL CHARGES								
Item	PLAN 1			Item	PLAN 2			
	Federal	Non-Federal	Total		Federal	Non-Federal	Total	
	\$	\$	\$		\$	\$	\$	
Interest	3,691,000	6,419,006	10,110,000	Interest	3,538,000	6,729,000	10,267,000	
Amortization	122,000	213,000	335,000	Amortization	117,000	223,000	<u>340,000</u>	
Subtotal (I&A)	3,813,000	6,632,000	10,445,000	Subtotal (I&A)	3,655,000	6,952,000	10,607,000	
Operations (Lock)	220,000	-	220,000	Operations (Lock)	220,000	-	220,000	
Maintenance				Maintenance				
Lock	138,000		138,000	Lock	138,000		138,000	
Channels	<u>2,838,000</u>		<u>2,838,000</u>	Channels	<u>2,700,000</u>		<u>2,700,000</u>	
Subtotal (Maintenance)	2,976,000		2,976,000	Subtotal (Maintenance)	2,838,000		2,838,000	
Subtotal (O&M)	3,196,000	-	3,196,000	Subtotal (O&M)	3,058,000	-	3,058,000	
TOTAL	7,009,000	6,632,000	13,641,000	TOTAL	6,713,000	6,952,000	13,665,000	

Table A-3

LAKE PONTCHARTRAIN AND VICINITY  
HISTORICAL SHALLOW-DRAFT COMMERCE  
(1971-1976)

	1971 (Tons)	1972 (Tons)	1973 (Tons)	1974 (Tons)	1975 (Tons)	1976 (Tons)
Amite River	No cam. rep.	200	50,400	7,200	No commerce reported	
Bayou Lacombe	179,700	182,800	23,700	27,800	9,600	1,600
Chefuncte & Bogue Falia Rivers	15,300	65,300	96,700	154,500	70,900	63,900
Tickfaw, Natalbany, Pontchatoula & Blood Rivers	7,900	10,000	36,300	13,200	14,200	12,600
Lake Pontchar- train	5,255,400	5,308,500	5,791,600	6,877,600	6,326,700	5,389,000
Inner Harbor Navigation Canal Lock	23,259,400	23,642,200	22,913,000	25,489,700	25,194,400	27,761,200
Pass Manchac	10,300	149,600	779,500	747,700	585,600	474,300
Lake Maurepas			763,000	603,600	340,300	

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Canal Lock. The 1976 tonnage reported for Lake Pontchartrain amounted to 5,389,000 tons. The principal commodities included in the above tonnage in 1976 are shown in table A-4.

Table A-4  
LAKE PONTCHARTRAIN--1976 COMMERCE

Commodity	Percent
Marine shells, unmanufactured	86.0
Crude Petroleum	1.1
Sand and Gravel	0.6
Distillate Fuel Oil	1.2
Building Cement	1.7
Misc. Nonmetallic Mineral Products	8.3
Miscellaneous Products	0.3
Waterway Improvement Materials	0.8
	<u>100.0</u>

3. In addition to the Lake Pontchartrain commerce, the waterway traffic that could most logically benefit by the proposed improvement would be that associated with the Inner Harbor Navigation Canal Lock. The principal commodities making up the 27,761,200 tons reported for the lock in 1976 are shown in table A-5.

Table A-5  
INNER HARBOR NAVIGATION CANAL LOCK--1976 COMMERCE

Commodity	Percent
Grain	6.1
Coal	14.3
Sulphur	0.7
Crude Petroleum	14.6
Petroleum	33.3
Misc. Nonmetallic Minerals	15.9
Industrial Chemicals	7.8
Primary Metals	2.4
Agricultural Chemicals	2.4
Misc. Metallic Ores & Concentrates	0.5
Wood and Paper Products	1.1
Misc. Food Products	0.4
Misc. Cargo	0.5
	<u>100.0</u>

BASE YEAR BENEFITS

1. An origin-destination study was made on the 1976 commerce that moved to and from Lake Pontchartrain and the Gulf Intracoastal Waterway (east) via the IHNC Lock. Inspection of the above data revealed that 8,162,000 tons of the commerce that moved through the lock in 1976, also passed the Baton Rouge area (mile 215 AHP), thus qualifying for further analysis for possible transportation savings to the proposed project. Approximately 1,207,000 tons were destined to or from the Lake Pontchartrain area (65 percent to and 35 percent from Lake Pontchartrain and vicinity). The remaining 6,955,000 tons moved to or from the GIWW, east of New Orleans (71 percent moved east and 29 percent moved west through the lock).

2. A traffic analysis was made to determine the travel time required to move the accepted 1976 traffic via the existing Mississippi route and via the proposed route. The analysis indicated that most benefits to be realized would result from transportation savings to that traffic now moving westbound via the GIWW (east of New Orleans); thence up the **Mississippi** River beyond Baton Rouge. With the project in place, this traffic could enter Lake Pontchartrain via The Rigolets and proceed over the proposed route to the Baton Rouge junction; thus, avoiding the river currents, as well as enjoying a 49-mile saving in distance. A lesser amount of transportation benefits would accrue from traffic presently originating in the Inner Harbor Navigation Canal-Lake Pontchartrain area and moving to and above Baton Rouge over a 38-mile shorter route. On the other hand, it was determined that all downbound traffic would continue to use the **Mississippi** River due to better operating conditions for the marine operators. This would include speeds enjoyed moving with the current, as well as the longer distance the large tows can move before having to break up into smaller tandem tows, necessary for moving on the GIWW. This would more than offset any savings due to the shorter distance of the proposed route.

3. The base year benefits that would accrue, were the project in place in 1985, would be as follows:

	Dollars <sup>1/</sup>
Savings via proposed route westbound from the IHNC-Lake Pontchartrain area	260,000
Savings via proposed route westbound from GIWW (east) wiv Lake Pontchartrain	807,000
Savings for empty tows via proposed route westbound from GIWW (east) via Lake Pontchartrain	<u>910,000</u>
	\$1,977,000

<sup>1/</sup>Based on a three-barge tow, 1,200 tons/barge and \$110/tow operating cost.

ANNUAL BENEFITS. The annual growth rate of traffic through the IHNC Lock (1971-1976) has been nearly 3 5/8 percent. However, the growth rates of transporting marine shells on Lake Pontchartrain and petroleum/petroleum products moving westward via the GIWW (presently the leading commodities) are expected to decline significantly over the life of the project. Further, it is expected that completion of the Tennessee-Tombigbee project (scheduled for 1985) will capture about a 20 percent share of the traffic which is now moving through the Inner Harbor Navigation Canal. For the purpose of analysis a 3 percent annual growth rate, which is assumed to be a liberal estimate, was applied for the 50-year economic life of the project. The initial year of project was assumed to be 1985. Annual savings during the project life were brought back to the year 1985 employing present worth methods and amortized over a 50-year period at an interest rate of 7 1/8 percent. Average annual benefits were computed to be \$3.8 million.

#### AREA REDEVELOPMENT BENEFITS

It was determined that construction features would generate additional area redevelopment benefits by utilizing underemployed labor. Annual area redevelopment benefits whould would result from project construction would be as follows:

Amite River and Bayou Manchac thru Amite River Employment Benefits

7 1/8 Percent over 50 years

<sup>1/</sup> Item x %Labor = Labor x %Skilled x %Underemployed = Employment Benefits  
Expenditure X %Unskilled x %Underemployed = Employment Benefits

Plan 1

Channel Dredging

\$25,395,000 x .42 = 10,666,000 x .60 x .30 = 1,920,000  
x .40 x 1.00 = 4,266,000

Clearing

\$2,965,000 x .57 = 1,690,000 x .25 x .30 = 127,000  
x .75 x 1.00 = 1,268,000

Relocations

\$56,830,000 x .25 = 14,208,000 x .89 x .30 = 3,794,000  
x .11 x 1.00 = 1,563,000

Locks

\$10,085,000 x .60 = 6,057,000 x .85 x .30 = 1,543,000  
x .15 x 1.00 = 908,000

Total Construction

\$95,275,000 x .337 - 32,105,000 x .467 = 15,004,000

Use

\$95,275,000 x .35 = 33,346,000 x .45 = 15,006,000  
x .07361 = 1,105,000 (rounded)

Plan 2

Total Construction

\$100,566,000 x .35 = 35,198,000 x .45 = 15,839,000  
x .07361 = 1,166,000 (rounded)

<sup>1/</sup> Includes direct construction costs and contingencies



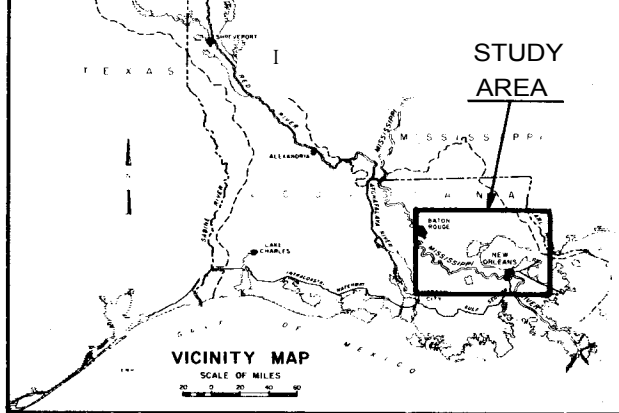
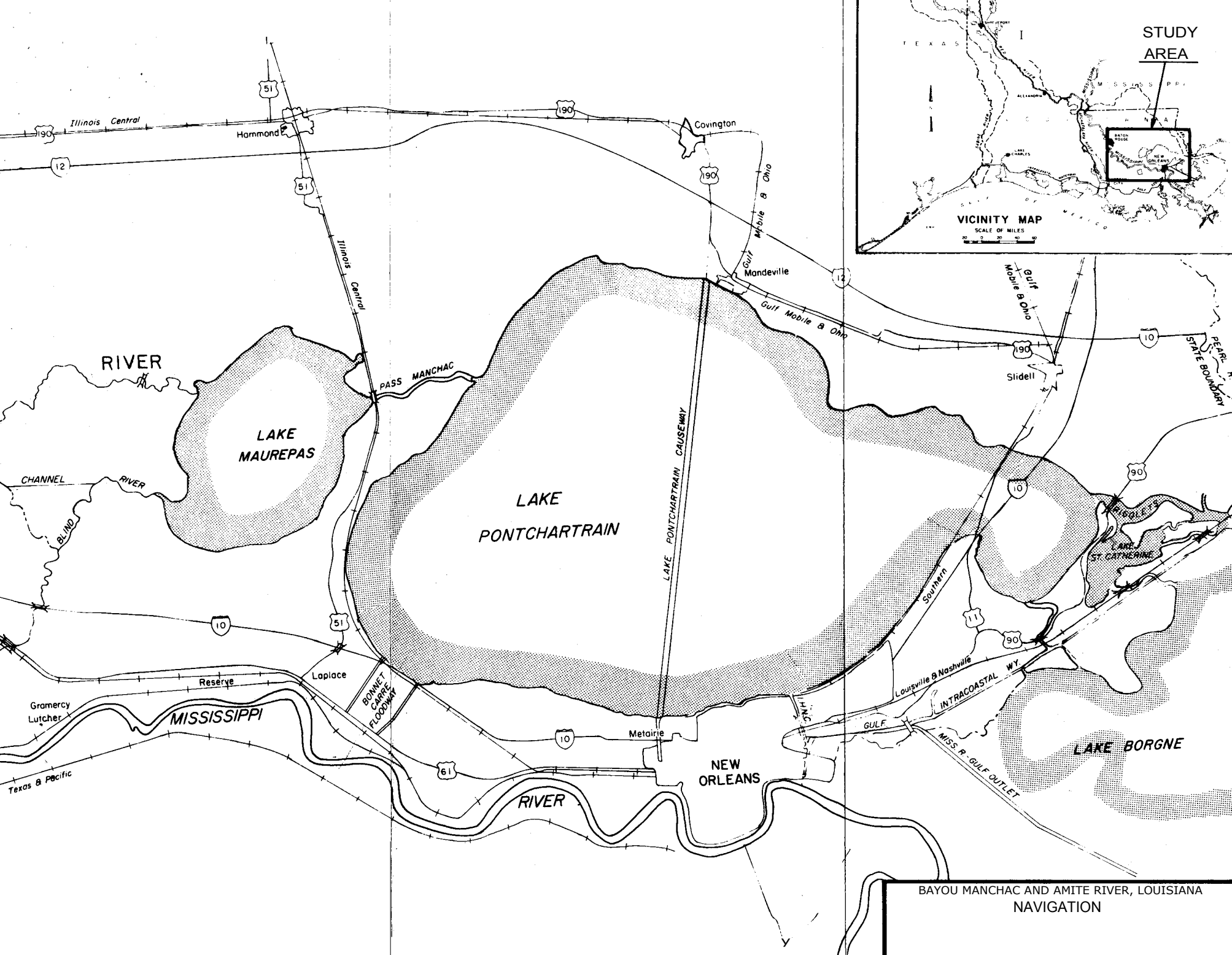
SUMMARY

The results of the economic investigations are summarized in table A-6.

TABLE A-6

SUMMARY OF AVERAGE ANNUAL BENEFITS AND COSTS

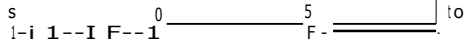
	Plan 1	Plan 2
	\$	\$
Average annual benefits	4,905,000	4,966,000
Average annual costs	<u>13,641,000</u>	<u>13,665,000</u>
Net benefits	-8,736,000	-8,699,000
Benefit/cost ratio	0.36	0.36

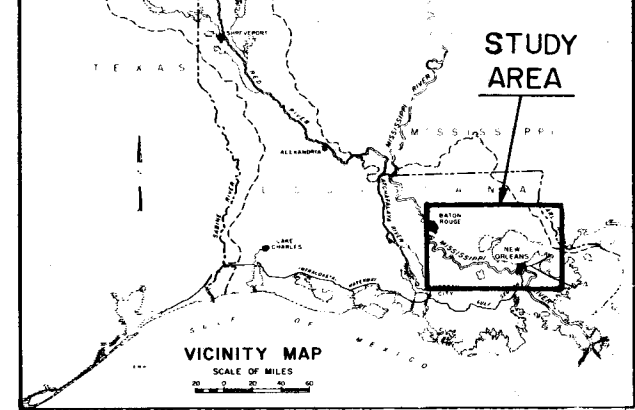
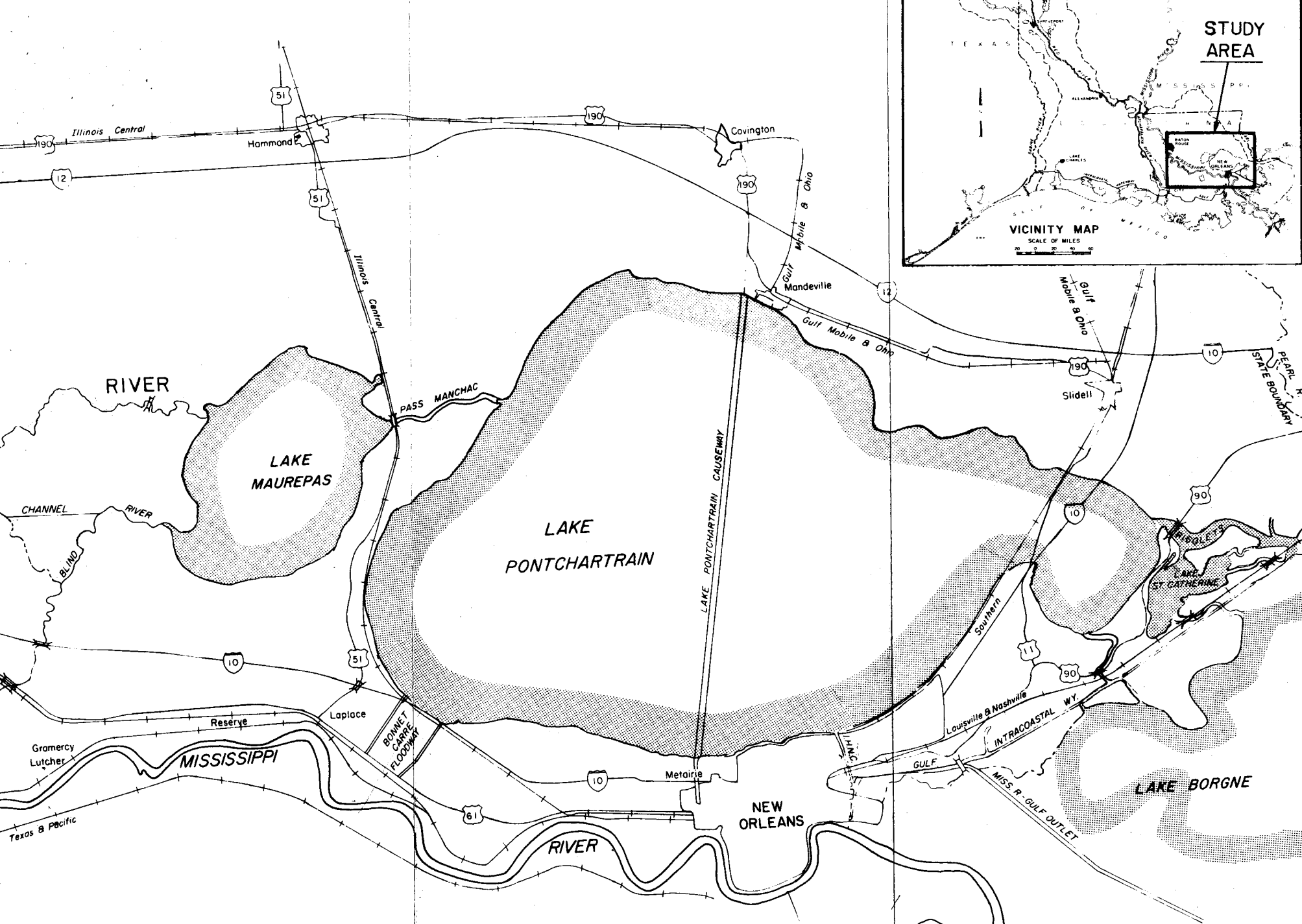


BAYOU MANCHAC AND AMITE RIVER, LOUISIANA NAVIGATION

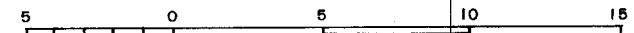
STUDY AREA

SCALE IN MILES





SCALE IN MILES



BAYOU MANCHAC AND AMITE RIVER, LOUISIANA  
NAVIGATION

STUDY AREA