

**Joint Legislative Committee on Performance  
Evaluation and Expenditure Review (PEER)**

Report to  
the Mississippi Legislature



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## **A Review of Flood Control Options for the Jackson Metropolitan Area, 1979-2010**

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Since the flood of 1979, five major Pearl River flood control plans for the Jackson metropolitan area have been introduced. The earlier plans focused solely on flood control and environmental impact. However, later flood control plans have attempted to generate economic development opportunities as well.

Thirty-one years after the 1979 flood, governmental entities have not yet implemented a comprehensive flood control plan for the Jackson metropolitan area. This report recounts the developments in flood control planning since 1979 and discusses the challenges faced by the Rankin-Hinds Pearl River Flood and Drainage Control District in implementing flood control measures.

In the last three years, the district's board has considered plans utilizing levees and lakes and levees alone. Recently, the United States Army Corps of Engineers informed the district that it will resume its feasibility study of the district's flood control options. Such study would include consideration of proposals containing economic development provisions, but could possibly further delay implementation of a plan.

While the PEER Committee recognizes that the Rankin-Hinds Pearl River Flood and Drainage Control District must proceed with the plan it believes will generate the greatest benefit to the Jackson metropolitan area, good public policy would dictate that a final decision be made expeditiously and effective flood control action be taken. Once the Corps of Engineers reconsiders the again pending flood control proposals, the district must take the actions necessary to implement an acceptable plan and provide the citizens of the metropolitan area with a long-awaited flood control program.

## **PEER: The Mississippi Legislature's Oversight Agency**

The Mississippi Legislature created the Joint Legislative Committee on Performance Evaluation and Expenditure Review (PEER Committee) by statute in 1973. A joint committee, the PEER Committee is composed of seven members of the House of Representatives appointed by the Speaker and seven members of the Senate appointed by the Lieutenant Governor. Appointments are made for four-year terms, with one Senator and one Representative appointed from each of the U. S. Congressional Districts and three at-large members appointed from each house. Committee officers are elected by the membership, with officers alternating annually between the two houses. All Committee actions by statute require a majority vote of four Representatives and four Senators voting in the affirmative.

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The Committee assigns top priority to written requests from individual legislators and legislative committees. The Committee also considers PEER staff proposals and written requests from state officials and others.

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October 12, 2010

Honorable Haley Barbour, Governor  
Honorable Phil Bryant, Lieutenant Governor  
Honorable Billy McCoy, Speaker of the House  
Members of the Mississippi State Legislature

On October 12, 2010, the PEER Committee authorized release of the report entitled **A Review of Flood Control Options for the Jackson Metropolitan Area, 1979-2010.**

  
Senator Nolan Mettetal, Chair

**This report does not recommend increased funding or additional staff.**



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# A Review of Flood Control Options for the Jackson Metropolitan Area, 1979-2010

## Executive Summary

The PEER Committee reviewed the major flood control options that have been discussed for the Jackson, Mississippi, metropolitan area since the flood of 1979.

Flood control is carried out in a complex political and legal environment involving entities at the state, local, and federal level. Several entities at each level have been involved in the process of flood control planning for the Jackson metropolitan area since the 1979 flood. Two state agencies have some legal authority to plan or carry out flood control activities in the Jackson metropolitan area: the Pearl River Basin Development District and the Pearl River Valley Water Supply District. A local flood control district, the Rankin-Hinds Pearl River Flood and Drainage Control District, also has responsibility for planning and executing flood control projects in the Jackson metropolitan area. The U. S. Army Corps of Engineers has oversight of all flood control projects carried out on the nation's waterways.

Since 1979, five major Pearl River flood control plans for the Jackson metropolitan area have been introduced. (See Exhibit A, page viii.) Originally, flood control plans (such as the Shoccoe Dry Dam Plan in the mid-1980s and the Comprehensive Levee Plan in the mid-1990s) focused solely on flood control and their environmental impact. However, later flood control plans have attempted to generate economic development opportunities as well as provide flood control, starting with the Two Lakes Plan in 1996 and continuing with the Lower Lake Plan. At present, the Comprehensive Levee Plan is the National Economic Development Plan, while the Lower Lake Plan is the Locally Preferred Plan.

Thirty-one years after the 1979 flood, governmental entities have not yet implemented a comprehensive flood control plan for the Jackson metropolitan area. In the last three years, the board of the Rankin-Hinds Pearl River Flood and Drainage Control District has considered plans utilizing levees and lakes and levees alone. Recently, the United States Army Corps of Engineers informed the district that it will resume the feasibility study and will

consider the locally preferred option, the Lower Lake Plan, in the study subject to funding.

## **Exhibit A: Description of Proposed Pearl River Flood Control Plans, 1984 to Present**

From 1984 to present, the following flood control plans for the Pearl River have been officially considered/reviewed by some combination of the U. S. Army Corps of Engineers, the Pearl River Basin Development District, and/or the Rankin-Hinds Pearl River Flood and Drainage Control District.

<b>Flood Control Plan</b>	<b>Description of Proposed Plan</b>
<p><b><i>Shoccoe Dry Dam (1984 - 1987)</i></b></p>	<p>A 38,850 acre dry lake in Leake, Madison, Rankin, and Scott counties</p> <p>Created by building a dry dam 20 miles above the Ross Barnett Reservoir on the Pearl River at the confluence of Fannegusha Creek</p> <p>Identified by the Corps as the most comprehensive flood control project in October 1984</p> <p>The Mississippi House of Representatives defeated a bill authorizing the Pearl River Basin Development District to serve as the local sponsor for Shoccoe Dry Dam in 1987</p>
<p><b><i>Comprehensive Levee Plan (National Economic Development Plan)* (1996 - Present)</i></b></p>	<p>The addition of 21 miles of new levees along both sides of the Pearl River from Richland to the Ross Barnett Reservoir</p> <p>Proposed by the Corps in both 1996 and 2007 but has not received local support because the plan does not offer additional economic development opportunities and could cause increased flooding south of the Jackson area</p> <p>Legislation enabling the Pearl River Basin Development District to serve as the local sponsor for the Comprehensive Levee Plan was defeated in both the 1995 and 1996 sessions of the Mississippi Legislature</p>
<p><b><i>Two Lakes Plan (1996 - Present)</i></b></p>	<p>Originally proposed by John McGowan in 1996 to provide both flood protection and economic development opportunities for the Jackson area</p> <p>Included the dredging and widening of the Pearl River channel between the Ross Barnett Reservoir and Richland plus the insertion of an upper weir to create a 4,500-acre upper lake and a lower weir to create a 500-acre lower lake</p> <p>Included the development of a 600-plus-acre island for economic development purposes</p> <p>Has been continually modified since its inception; as of April 2008, Two Lakes now includes 36 smaller islands and lowered the original elevation of the second lake to be 22 feet lower than the upper lake</p>

<p><b>LeFleur Lakes Plan (2001 - 2007)</b></p> <p><b>Modification A: LeFleur Lakes plus the Byram Lake</b></p> <p><b>Modification B: LeFleur Lakes Plus Additional Levees</b></p>	<p>The Two Lakes Plan was adopted by the Rankin-Hinds Pearl River Flood and Drainage Control District and renamed the LeFleur Lakes Plan. The Rankin-Hinds Pearl River Flood and Drainage Control District presented the original LeFleur Lakes Plan to the Corps as the Locally Preferred Plan</p> <p>The Corps determined that the original LeFleur Lakes Plan did not provide adequate flood control protection during initial hydraulic investigations</p> <p>In 2007, even despite being significantly modified in two different ways by the Corps (in consult with the Rankin-Hinds Pearl River Flood and Drainage Control District's contract engineers) to provide adequate flood control protection, the LeFleur Lakes plan was still unable to meet the Corps' standards for being economically or environmentally feasible</p>
<p><b>Lower Lake Plan (2007 - Present)</b></p>	<p>Introduced in 2007 after the LeFleur Lakes Plan failed to receive the Corps' support</p> <p>A combination of a Lower Lake from just south of I-20 to Lakeland Drive plus the 21 miles of additional levees proposed by the Comprehensive Levee Plan</p> <p>From an economic development perspective, the Lower Lake Plan offers two developable islands (combined 200 plus acres), developable shoreline, and an option to develop Town Creek</p> <p>Currently considered the Locally Preferred Plan because of its estimated lower cost (compared to Two Lakes or LeFleur Lakes) combined with its potential economic development opportunities and flood protection capabilities</p>

\*The federal government will provide funding equal to 65% of the cost of the National Economic Development (NED) Plan. Since the Comprehensive Levee Plan, which is currently the NED plan, is estimated to cost \$200 million, the federal government will pay \$135 million toward any federally approved flood control plan.

SOURCES: *Comprehensive Pearl River Flood Control Program* by the Pearl River Basin Development District, 1985; Pearl River Basin Development District website; *Pearl River Watershed (Mississippi), Feasibility Study, Main Report, Draft and Environmental Impact Statement, Volume 1*, U.S. Army Corps of Engineers (Vicksburg District), February 2007; *Two Lakes: Dreams Realized* by the Two Lakes For Mississippi Foundation; minutes and correspondence of the Rankin-Hinds Pearl River Flood and Drainage Control District; interview with the Rankin-Hinds Pearl River Flood and Drainage Control District's Contract Engineer.

Many of the plans for flood control in the Jackson metro area mix flood control with economic development. The plans incorporating economic development cost more than levees.

- The Lower Lake Plan would require more funds than would be needed to complete the Comprehensive Levee Plan.
- A Comprehensive Levee Plan would be less expensive than a lake plan. Completing the feasibility study issued in preliminary form in 2007

would mean that more time would elapse before the district could begin to implement a flood control plan. Completion of the feasibility study does not guarantee that the Corps will favorably report on the Lower Lake Plan's environmental impact.

In view of the complex regulatory environment, as well as the likely need for future legislation on the subject of flood control district authority, the Rankin-Hinds Pearl River Flood and Drainage Control District should report by December 31 of each year to the Secretary of the Senate, the Clerk of the House, and the PEER Committee on any actions it has taken or progress toward completion of a comprehensive flood control program for the Jackson metropolitan area.

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# A Review of Flood Control Options for the Jackson Metropolitan Area, 1979-2010

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## Introduction

### Authority

The PEER Committee reviewed the major flood control options that have been discussed for the Jackson, Mississippi, metropolitan area since the flood of 1979. The Committee acted in accordance with MISS. CODE ANN. Section 5-3-51 et seq.

### Scope and Purpose

Since the historic flood in the spring of 1979, residents of the Jackson metropolitan area have been concerned that another flood of similar proportions could wreak a disaster much like the one that occurred in that year. To many, improved flood control is of paramount importance to the vitality of the community.

Since over thirty years have passed without a comprehensive solution, PEER was asked to review the efforts that have taken place regarding comprehensive flood control for the area since that flood and to report on their fate.

Specifically, this report:

- identifies the major local, state, and federal entities that have played a role in planning and evaluating comprehensive flood control plans for the Jackson metropolitan area;
- describes the comprehensive flood control proposals that have been actively pursued by the Pearl River Basin Development District and the Rankin-Hinds Pearl River Flood and Drainage Control District since the 1979 flood;

- explains the fate of each proposal that was considered but never adopted; and,
- identifies the challenges that confront proponents of the flood control plans currently under consideration for the metropolitan area.

This report neither renders an opinion as to the environmental, economic, or hydraulic feasibility of any project discussed nor offers a preference for any flood control proposal mentioned.

## Method

In conducting fieldwork, PEER:

- reviewed pertinent provisions of state and federal law relating to flood control responsibilities of federal, state, and local entities;
- reviewed records of the U. S. Army Corps of Engineers for major proposals considered since the 1979 flood;
- reviewed pertinent legislation considered by the Mississippi Legislature since the 1979 flood;
- interviewed staff and contractors of the Rankin-Hinds Pearl River Flood and Drainage Control District regarding efforts to implement flood control since the 1990s; and,
- reviewed correspondence between the Rankin-Hinds Pearl River Flood and Drainage Control District and the U. S. Army Corps of Engineers.

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## Background: The Flood of 1979

As a result of a powerful storm system that dropped torrents of rain over the Pearl River region of Mississippi between April 11 and April 13, 1979, the Pearl River flooded, cresting at 43.25 feet on Tuesday, April 17, 1979--more than twenty-five feet above its eighteen-foot flood stage. By then, 6,500 people in the Jackson area had been left homeless. In total, the flooding was credited with doing more than \$500 million worth of damage to businesses, residences, and public buildings. Pearl River flooding continued southward, flooding Georgetown, Monticello, and Columbia. Louisville, where the Pearl River begins, received twenty inches of rain between Wednesday evening (April 11) and Friday morning (April 13).

By Friday, April 13, 1979, floodwaters from the Pearl River were filling the Ross Barnett Reservoir at a rate of 130,000 cubic feet per second. The Ross Barnett Reservoir dam, which could release water at a maximum rate of 180,000 cubic feet per second, released the Pearl River waters at a rate of from 100,000 to 125,000 cubic feet of water per second between Friday, April 13, and Tuesday, April 17, 1979.

Following the flood, it became apparent that flood control measures that had been taken in the 1960s to develop levees in several places along the Pearl River in Hinds and Rankin counties had been inadequate to meet the record amounts of water that descended upon the area in the spring of 1979. While some changes were made to the existing levee system following the flood, several serious efforts at comprehensive flood control have been considered since the 1979 flood.

Since 1979, multiple federal, state, and local entities have been involved in working to develop a comprehensive flood control plan for the Jackson metropolitan area. These entities include the U. S. Army Corps of Engineers, the Pearl River Basin Development District, the Pearl River Water Valley Supply District, the Rankin-Hinds Pearl River Flood and Drainage Control District, Mississippi's Congressional delegation, local governments representing the affected counties and municipalities, and the private Two Lakes for Mississippi Foundation led by Mr. John McGowan.

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# State, Local, and Federal Entities Involved in Flood Control Planning in the Jackson Metropolitan Area

Flood control is carried out in a complex political and legal environment involving entities at the state, local, and federal level. Several entities at each level have been involved in the process of flood control planning for the Jackson metropolitan area since the 1979 flood.

This chapter includes a discussion of the legal authority of these entities and their mandates related to flood control.

## State Agencies

*Two state agencies have some legal authority to plan or carry out flood control activities in the Jackson metropolitan area: the Pearl River Basin Development District and the Pearl River Valley Water Supply District.*

### The Pearl River Basin Development District

Since the 1979 flood, the principal state agency involved in flood control planning in the Pearl River Basin has been the Pearl River Basin Development District. Created in 1964 and empowered by MISS. CODE ANN. Section 51-11-1 et seq. (1972), the Pearl River Basin Development District is a state agency consisting of member counties that opted to join in the operations of the district. At present, the member counties are Hancock, Leake, Lincoln, Marion, Neshoba, Pearl River, Pike, Scott, Simpson, and Walthall. (Hinds County withdrew from the Pearl River Basin Development District in March 2010.)

The general purpose of the district was to allow eligible counties along the Pearl River to join in the formation of an agency that would plan and construct projects for recreation, flood control, pollution abatement, and conservation.

The district identifies its current programs and services as follows:

- serving as a local sponsor for member counties and localities on joint federal projects;
- establishing recreational opportunities in member counties;
- receiving federal funds for park development;
- managing a recreation grant program;

- maintaining the Pearl River Boatway<sup>1</sup> park maintenance program,
- operating and maintaining Bogue Chitto Water Park;
- maintaining the Pearl River Floodway<sup>2</sup>;
- finding and operating a flood gauge program; and,
- engaging in joint water management programs.

***Comprehensive Flood Control Efforts of the Pearl River Basin Development District***

The Pearl River Basin Development District has a history of working with the U. S. Army Corps of Engineers on comprehensive flood control projects. Following the 1985 study jointly sponsored by the Corps of Engineers and the Pearl River Basin Development District that recommended the construction of a dry dam (i. e., Shoccoe Dry Dam) above the Ross Barnett Reservoir, the district supported legislation that would have allowed it to be the local sponsor for the construction of the dry dam. (See page 14 for further discussion.)

In 1991, the district served as the local sponsor for a feasibility study for the construction of a comprehensive levee network in the metropolitan area. This study was conducted by the Corps of Engineers and ultimately recommended what had become known as the Comprehensive Levee Plan (see page 14). Legislation that would have authorized the district to serve as the local sponsor for the construction of the Comprehensive Levee Plan was introduced in the 1995 and 1996 regular legislative sessions and was defeated in both sessions.

The district also conducted its own study of the Two Lakes Plan discussed further at page 16. Additionally, the district acceded to a request in October 2003 from the Hinds County Board of Supervisors to provide \$200,000 to support a study between the Corps of Engineers and the Rankin-Hinds Pearl River Flood and Drainage Control District of the Comprehensive Levee Plan and the LeFleur Lakes Plan, further discussed at page 19 of this report.

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<sup>1</sup> The *Pearl River Boatway* consists of ten water parks totaling 981 acres with the purpose of providing public outdoor recreation activities and access to the Pearl River, Strong River, Bogue Chitto River, Magees Creek, and the Jourdan River.

<sup>2</sup> The *Pearl River Floodway* is the Pearl River's flood plain, which includes the area directly adjacent to the Pearl River that would naturally flood if the Pearl River overflowed its banks.

### ***Attempts to Expand the Flood Control Authority of the Pearl River Basin Development District***

During the 1990s, there were efforts to make the Pearl River Basin Development District a more powerful participant in flood control in the Pearl River Valley. Following the issuance of two Attorney General's opinions in which the Attorney General opined that the Pearl River Basin Development District has no authority over the management and operations of the Ross Barnett Reservoir, (see *Attorney General's Opinion to Hudson*, April 3, 1998, and *Attorney General's Opinion to White and Ellington*, April 25, 1998), the Legislature considered legislation that would have given the district greater authority over flood control in the Pearl River Basin. Senate Bill 2652, Regular Session 1999, had it been adopted, would have given the Pearl River Basin Development District the authority to adopt rules directing the Pearl River Valley Water Supply District to operate the spillway under specified conditions. None of the related bills were reported out of the Senate Environmental Protection, Conservation and Water Resources Committee.

### **The Pearl River Valley Water Supply District**

Created in 1958 and empowered by MISS. CODE ANN. Section 51-9-101 et seq. (1972), the Pearl River Valley Water Supply District operates the Ross Barnett Reservoir and manages the property of the district. The statutes creating and empowering the district make clear that while flood control is one function of the district, it has other functions, such as providing for the conservation of resources, providing drinking water, and recreation, as well as flood control. In fact, the major purpose of the Ross Barnett Reservoir is to provide a source of water for the Jackson metropolitan area. In reality, the reservoir has minimal flood control capability due to its required minimum low needed to supply water (as well as recreational opportunities) to the Jackson metropolitan area and its relatively low maximum flood capacity (before the fuse plug breaks<sup>3</sup>).

MISS. CODE ANN. Section 51-9-103 (1972) sets out the Legislature's purpose for creating the district. This section states:

*It is hereby declared, as a matter of legislative determination, that the waterways and surface waters of the state are among its basic resources, that the*

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<sup>3</sup> A *fuse plug* is a collapsible dam installed on spillways in dams to increase the dam's capacity. Under normal flow conditions, the water spills over the fuse plug and down the spillway. In high flood conditions, where the water velocity may be so high that the dam itself may be put in danger, the fuse plug simply washes away, and the floodwaters safely spill over the dam.

*overflow and surface waters of the state have not heretofore been conserved to realize their full beneficial use, that the preservation, conservation, storage, and control of such waters are necessary to insure an adequate, sanitary water supply at all times, to promote the balanced economic development of the state, and to aid in flood control, conservation and development of state forests, irrigation of lands needing irrigation, and pollution abatement. It is further determined and declared that the preservation, conservation, storage, and control of the waters of the Pearl River and its tributaries and its overflow waters for domestic, municipal, commercial, industrial, agricultural, and manufacturing purposes, for recreational uses, for flood control, timber development, irrigation, and pollution abatement are, as a matter of public policy, for the general welfare of the entire people of the state. . . .*

When in 1997 the Attorney General was asked whether the original purpose of the Ross Barnett Reservoir was flood control and whether other legislation enacted subsequent to the creation of the reservoir changed the status of the reservoir and the district, the Attorney General cited the above CODE Section 51-9-103, which has remained unchanged since its adoption in 1958 (see *Attorney General's Opinion to Moak*, July 25, 1997).

In view of the multifaceted statement of intent, the Attorney General has opined that the Ross Barnett Reservoir was not intended to be purely a flood control entity. Thus, like the Pearl River Basin Development District, the Pearl River Valley Water Supply District carries out a broad range of functions above and beyond flood control. PEER notes that in a November 23, 2009, letter from the U. S. Army Corps of Engineers to the Rankin-Hinds Pearl River Flood and Drainage Control District, the Corps stated that the Ross Barnett Reservoir was constructed for water supply and recreation and has little capacity for reducing downstream flooding.

## Local Political Subdivisions

***A local flood control district, the Rankin-Hinds Pearl River Flood and Drainage Control District, also has responsibility for planning and executing flood control projects in the Jackson metropolitan area.***

In 1962, the Legislature enacted Chapter 226, *Laws of 1962*, known as the Urban Flood and Drainage Control Law. Codified as MISS. CODE ANN. Section 51-35-301

(1972) to provide for the creation of flood and drainage control districts, this act established a procedure by which counties and municipalities could join and seek an order in chancery court establishing such a district. These districts have the authority to issue bonds for improvements and have the authority to levy ad valorem taxes to generate revenues for operations.

While PEER notes that the law authorizing the creation of the Rankin-Hinds Pearl River Flood and Drainage Control District refers to such districts as “state agencies,” PEER notes this particular district lacks certain attributes commonly associated with state agencies. The district is not subject to the appropriations and budgetary oversight processes of the Legislature or the Department of Finance and Administration (see MISS. CODE ANN. Sections 27-103-101 et seq. and Section 27-104-1 generally and Sections 27-103-103 and 27-104-13, specifically).

Further, the Rankin-Hinds Pearl River Flood and Drainage Control District appears to fit within the definition of a political subdivision for purposes of MISS. CODE ANN. Section 11-46-1 et seq. (1972) for purposes of immunity and tort claims issues because its area of service and responsibility is not statewide.

Finally, the district operates wholly from millage generated by property owners who live within its boundaries. While admittedly the use of the term “state agency” in the statute creates some confusion, it appears that the Rankin-Hinds Pearl River Flood and Drainage Control District has more in common with the political subdivisions of local government than a state agency. Consequently, this report will refer to this district as an entity of local government.

The Rankin-Hinds Pearl River Flood and Drainage District was established by order of the Rankin County Chancery Court on May 9, 1962. At present, the district board’s membership consists of seven members appointed from the municipalities and areas served by the district, including the mayors of Jackson, Flowood, Pearl, and Richland, appointees from the Hinds and Rankin counties’ boards of supervisors, and a gubernatorial appointee.

During the 1960s, this board worked with the U. S. Army Corps of Engineers to develop the system of levees that are present in Hinds and Rankin counties. In recent years, this entity has taken the lead in working with the Corps of Engineers for the development of comprehensive flood control measures for the Jackson metropolitan area.

Of particular note are the efforts of the district’s board related to recent efforts to improve flood control through the consideration of both levee protection and several proposals dealing with the construction of lakes along the Pearl River. See pages 19 to 23 for a discussion of these projects.

## The United States Army Corps of Engineers

***The U.S. Army Corps of Engineers has oversight of all flood control projects carried out on the nation's waterways.***

The U. S. Army Corps of Engineers must play a prominent role in the discussion and planning of flood control efforts in the Pearl River Basin area.

The Corps is given broad responsibility under several provisions of federal law to regulate the activities related to flood control. These include:

- *The Water Resources Development Act(s) (WRDA):* The several iterations of WRDA give the Corps authority over many structural and non-structural projects built in the waterways of the United States. PEER notes that the WRDA of 1986 and the WRDA of 2007 contained projects under the Corps' authority that were to benefit the Jackson metropolitan area.
- *The National Environmental Policy Act of 1969 (NEPA):* NEPA requires that regulators assess the impact on the environment that a project may have. For flood control projects, the Corps of Engineers is responsible for the enforcement of NEPA and the environmental review process.
- *Section 404 of the Clean Water Act of 1972:* This act gives the Corps responsibility for permitting of activities that could result in the destruction of wetlands or other damage to the waters of the United States. Because flood control requires dredging and construction activities, a permit under this section is essential for compliance with federal law and the Corps of Engineers has authority over this permitting process.

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## Comprehensive Flood Control Projects Considered Since the 1979 Flood

Since the record flood of 1979, five major Pearl River flood control plans for the Jackson metropolitan area have been introduced. Originally, flood control plans (such as the Shoccoe Dry Dam Plan in the mid-1980s and the Comprehensive Levee Plan in the mid-1990s) focused solely on flood control and their environmental impact. However, later flood control plans have attempted to generate economic development opportunities as well as provide flood control, starting with the Two Lakes Plan in 1996 and continuing with the Lower Lake Plan. At present, the Comprehensive Levee Plan is the National Economic Development Plan, while the Lower Lake Plan is the Locally Preferred Plan.

This chapter includes a discussion of the projects of note that were intended to provide the Jackson metropolitan area with comprehensive flood control improvements and have been considered since the 1979 flood:

- the Shoccoe Dry Dam Plan;
- the Comprehensive Levee Plan;
- the Two Lakes Plan;
- the LeFleur Lakes Plan, including--
  - the Original LeFleur Lakes Plan (Two Lakes as adopted by the Rankin-Hinds Pearl River Flood and Drainage Control District and initially presented to the corps as the Locally Preferred Plan);
  - Modification A: LeFleur Lakes plus the Byram Lake; and,
  - Modification B: LeFleur Lakes Plus Additional Levees; and,
- the Lower Lake Plan (currently the Locally Preferred Plan).

This chapter summarizes the major points of each of these flood control projects. Exhibit 1, page 11, lists and gives a brief description of each plan.

## Exhibit 1: Description of Proposed Pearl River Flood Control Plans, 1984 to Present

From 1984 to present, the following flood control plans for the Pearl River have been officially considered/reviewed by some combination of the U.S. Army Corps of Engineers, the Pearl River Basin Development District, and/or the Rankin-Hinds Pearl River Flood and Drainage Control District.

Flood Control Plan	Description of Proposed Plan
<p><b><i>Shoccoe Dry Dam (1984 - 1987)</i></b></p>	<p>A 38,850 acre dry lake in Leake, Madison, Rankin, and Scott counties</p> <p>Created by building a dry dam 20 miles above the Ross Barnett Reservoir on the Pearl River at the confluence of Fannegusha Creek</p> <p>Identified by the Corps as the most comprehensive flood control project in October 1984</p> <p>The Mississippi House of Representatives defeated a bill authorizing the Pearl River Basin Development District to serve as the local sponsor for Shoccoe Dry Dam in 1987</p>
<p><b><i>Comprehensive Levee Plan (National Economic Development Plan)* (1996 - Present)</i></b></p>	<p>The addition of 21 miles of new levees along both sides of the Pearl River from Richland to the Ross Barnett Reservoir</p> <p>Proposed by the Corps in both 1996 and 2007 but has not received local support because the plan does not offer additional economic development opportunities and could cause increased flooding south of the Jackson area</p> <p>Legislation enabling the Pearl River Basin Development District to serve as the local sponsor for the Comprehensive Levee Plan was defeated in both the 1995 and 1996 sessions of the Mississippi Legislature</p>
<p><b><i>Two Lakes Plan (1996 - Present)</i></b></p>	<p>Originally proposed by John McGowan in 1996 to provide both flood protection and economic development opportunities for the Jackson area</p> <p>Included the dredging and widening of the Pearl River channel between the Ross Barnett Reservoir and Richland plus the insertion of an upper weir to create a 4,500-acre upper lake and a lower weir to create a 500-acre lower lake</p> <p>Included the development of a 600-plus-acre island for economic development purposes</p> <p>Has been continually modified since its inception; as of April 2008, Two Lakes now includes 36 smaller islands and lowered the original elevation of the second lake to be 22 feet lower than the upper lake</p>

<p><b>LeFleur Lakes Plan (2001 - 2007)</b></p>	<p>The Two Lakes Plan was adopted by the Rankin-Hinds Pearl River Flood and Drainage Control District and renamed the LeFleur Lakes Plan. The Rankin-Hinds Pearl River Flood and Drainage Control District presented the original LeFleur Lakes Plan to the Corps as the Locally Preferred Plan</p>
<p><b>Modification A: LeFleur Lakes plus the Byram Lake</b></p>	<p>The Corps determined that the original LeFleur Lakes Plan did not provide adequate flood control protection during initial hydraulic investigations</p>
<p><b>Modification B: LeFleur Lakes Plus Additional Levees</b></p>	<p>In 2007, even despite being significantly modified in two different ways by the Corps (in consult with the Rankin-Hinds Pearl River Flood and Drainage Control District's contract engineers) to provide adequate flood control protection, the LeFleur Lakes plan was still unable to meet the Corps' standards for being economically or environmentally feasible</p>
<p><b>Lower Lake Plan (2007 - Present)</b></p>	<p>Introduced in 2007 after the LeFleur Lakes Plan failed to receive the Corps' support</p> <p>A combination of a Lower Lake from just south of I-20 to Lakeland Drive plus the 21 miles of additional levees proposed by the Comprehensive Levee Plan</p> <p>From an economic development perspective, the Lower Lake Plan offers two developable islands (combined 200 plus acres), developable shoreline, and an option to develop Town Creek</p> <p>Currently considered the Locally Preferred Plan because of its estimated lower cost (compared to Two Lakes or LeFleur Lakes) combined with its potential economic development opportunities and flood protection capabilities</p>

\*The federal government will provide funding equal to 65% of the cost of the National Economic Development (NED) Plan. Since the Comprehensive Levee Plan, which is currently the NED plan, is estimated to cost \$200 million, the federal government will pay \$135 million toward any federally approved flood control plan.

SOURCES: *Comprehensive Pearl River Flood Control Program* by the Pearl River Basin Development District, 1985; Pearl River Basin Development District website; *Pearl River Watershed (Mississippi), Feasibility Study, Main Report, Draft and Environmental Impact Statement, Volume 1*, U.S. Army Corps of Engineers (Vicksburg District), February 2007; *Two Lakes: Dreams Realized* by the Two Lakes For Mississippi Foundation; minutes and correspondence of the Rankin-Hinds Pearl River Flood and Drainage Control District; interview with the Rankin-Hinds Pearl River Flood and Drainage Control District's Contract Engineer.

## The Shoccoe Dry Dam Plan

***The Shoccoe Dry Dam Plan was the first comprehensive flood control plan developed for the Jackson metropolitan area following the 1979 flood. Proponents of the Shoccoe Dry Dam Plan did not secure the legislative support necessary for its completion.***

*In 1985, the U. S. Army Corps of Engineers chose the Shoccoe Dry Dam Plan as the best solution at the time for providing flood protection for the metropolitan area of Hinds and Rankin counties.*

In October 1984, the U. S. Army Corps of Engineers identified the Shoccoe Dry Dam Plan as the most comprehensive flood control plan. In 1985, based on a five-year investigation of alternatives, the Comprehensive Pearl River Flood Control Program report also stated that the U. S. Army Corps of Engineers recommended the construction of the Shoccoe Dry Dam in Leake County (near Carthage) “as the only economically feasible solution that will control 87% of the drainage area of the Pearl River above Jackson and regulate floods larger in size than the Easter Flood of 1979.” In 1985, the U. S. Army Corps of Engineers chose the Shoccoe Dry Dam Plan as the best solution at the time for providing flood protection for the metropolitan area of Hinds and Rankin counties.

According to the 1985 Comprehensive Pearl River Flood Control Program report by the Pearl River Basin Development District, the Shoccoe Dry Dam Plan would have:

- been built twenty miles north of the Ross Barnett Reservoir on the Pearl River at the confluence of Fannegusha Creek;
- stood approximately 43 feet high and measured 14,600 feet long (2.76 miles);
- encompassed 38,850 acres of land in Leake, Madison, Rankin, and Scott counties. At the time of the report, 92% (35,810 acres) of the land was occupied by timberland while the remaining 8% of the land consisted of pasture, crop, recreational, and home sites;
  - 3,600 acres were to be acquired in “fee simple” for the construction of the actual dam, service spillway, emergency spillway, and sedimentation area; and,
  - the remaining acres for the project would be acquired by easement for temporary storage of floodwater during flood periods.
- created a dry dam that would have allowed the river to continue its natural flow through the service spillway during normal conditions, yet also

allowed the flood water to back up behind the dam into a dry reservoir during flood conditions.

Further, the report noted “the U. S. Army Corps of Engineers evaluated over 50 alternatives to provide flood protection for the metropolitan area of Hinds and Rankin Counties.”

Federal support for the Shoccoe Dry Dam Plan was sufficient for it to have been included in the Water Resources Development Act of 1986 for future authorization. For the plan to be brought to fruition, a state or local sponsoring organization would have had to participate in the funding of the plan as a local sponsor.

*Proponents of the Shoccoe Dry Dam Plan did not secure the legislative support necessary for its completion.*

During the 1987 legislative session, two bills filed would have empowered the Pearl River Basin Development District to cooperate fully with the federal government on the dry dam project and would have empowered the district to issue bonds to fund the state’s share of the project. S. B. 2746, Regular Session 1987, was never reported out of the Senate Conservation Committee. H. B. 806, Regular Session 1987, was defeated on the floor of the House. Consequently, the Shoccoe Dry Dam Plan never received the necessary support from the Legislature to be completed.

## The Comprehensive Levee Plan

***The Comprehensive Levee Plan, also known as the National Economic Development Plan, was the second comprehensive flood control plan to be considered for the Jackson metropolitan area since 1979. As with the Shoccoe Dry Dam Plan, supporters of the Comprehensive Levee Plan did not secure the passage of legislation necessary to the plan’s implementation.***

*The Corps of Engineers completed the Pearl River Feasibility Flood Control Study in February 1996.*

Following the failure of the Shoccoe Dry Dam legislation to pass, the Pearl River Basin Development District asked the Corps of Engineers to initiate alternative flood control studies. The Corps of Engineers received authorization and funding in February 1989 to begin a new flood control study. Federal funds were used for the Reconnaissance Study, which was completed in June 1990. The Pearl River Basin Development District agreed to serve as local sponsor for the Feasibility Flood Control Study for the Jackson metropolitan area. The feasibility study took four and a half years to complete and cost \$3 million. The Pearl River Basin Development District provided half of this amount in cash and in-kind contributions. The Pearl

River Basin Development District and the Corps of Engineers signed a Feasibility Cost-Sharing Agreement in September 1991 and feasibility studies were initiated in October 1991. The Corps of Engineers completed the Pearl River Feasibility Flood Control Study in February 1996.

The Corps of Engineers recommended the construction of twenty-one miles of new levees at a cost of \$122,000,000, officially known as the Comprehensive Levee Plan. The local sponsor would be required to provide \$38,000,000 for the acquisition of land, easements, rights-of-way, relocations, and disposal areas.

*As with the Shoccoe Dry Dam Plan, supporters of the Comprehensive Levee Plan did not secure the passage of legislation necessary to the plan's implementation.*

Again, efforts to implement comprehensive flood control measures in the Jackson metropolitan area were stymied when legislation necessary to authorize the district to serve as a local sponsor were not adopted. In 1995, two Senate bills and five House bills were introduced to provide the Pearl River Basin Development District with the necessary bonding authority to participate in the project. In the Senate, S. B. 3095, Regular Session 1995, was never reported out of committee. S. B. 3296, Regular Session 1995, passed the Senate, but was defeated in the House by a substantial margin. From a review of the House Journal for 1995, it is apparent that members from the lower Pearl River Valley voiced concerns over the impact that a comprehensive levee system would have on flooding south of Jackson. An amendment to S. B. 3296 would have required the persons responsible for paying all bonds authorized for levee construction to also be responsible for bonding funds necessary to repair damages caused by increased flooding south of the Jackson area. In the House, none of the five bills introduced were reported out of Committee.

Supporters of the Comprehensive Levee Plan again made attempts to obtain the necessary legislation in the 1996 session. H. B. 1549, Regular Session 1996, was defeated on the floor of the House of Representatives. Two Senate bills were introduced but not reported out of committee. Following the 1996 session, other plans for flood control became prominent, as it appeared that the Comprehensive Levee Plan would not be supported.

## The Two Lakes Plan

***First introduced in 1996, the Two Lakes Plan, which consists of weirs, channel improvements, and river islands for development, was the first plan to attempt to generate economic development opportunities as well as provide flood control.***

Following the failure of the 1996 Comprehensive Levee Plan to advance in the Legislature, the first of several lake plans of flood control came to the forefront and have been through several iterations since 1996. All have a common element in that they offer at least one lake in the Pearl River flood plain<sup>4</sup> as a component of a flood control plan. Some lake plans have two or even three lakes. Some feature levees while others do not. All also have artificial islands in the river as economic development opportunities. The following offers the evolution of these lake plans, with their beginning in 1995.

### The Original Two Lakes Plan

*A Jackson area developer proposed the Two Lakes Plan in its original form.*

The Two Lakes Plan was developed to provide both flood protection and economic development opportunities for the Jackson metropolitan area.

John McGowan, a Jackson area businessman and developer, first proposed the Two Lakes Plan, which would have inserted two weirs<sup>5</sup> into the Pearl River, thus creating an upper lake and a lower lake in the metro area. McGowan's original Two Lakes Plan would have also dredged the Pearl River between the Lower Weir and the Ross Barnett Reservoir. The original Two Lakes Plan would then use the dredged material for economic development purposes by constructing a 600- to 700-acre developable island on the Pearl River between the Upper Weir and the Lakeland Drive crossing of the Pearl River.

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<sup>4</sup> Technically, the Pearl River channel would be widened and deepened. A weir would then be inserted into the river channel to block the river's flow so as to raise the river height and flood a lower portion of the flood plain, yet also still allow water to pass over the weir and continue down river.

<sup>5</sup> Also known as a lowhead dam, a *weir* is a small overflow-type dam commonly used to raise the level of a river or stream or divert its flow, traditionally as a way to create lakes or ponds amidst a river. There are multiples types of weirs.

## Major Components of the Two Lakes Plan

*The Two Lakes Plan consisted of weirs, channel improvements, river islands for development, removal of a landfill, and utility relocations.*

Major components of the Two Lakes Plan included the following:

- *Weirs:* Weirs would create the two lakes. The 4,300-acre upper lake would be controlled by a weir 800 feet long to be located immediately downstream of the I-55 bridge crossing. The Upper Lake would have a permanent pool elevation of 270.0 feet. The Lower Lake would be created by a weir located three miles downstream of I-20 that would control the new 500-acre Lower Lake. The Lower Lake would have a permanent pool elevation of 260 feet.
- *Channel Improvements:* The plan included major channel improvement on the Pearl River from the outlet of the Ross Barnett Reservoir to approximately three miles south of I-20, a distance of sixteen river miles. Channel excavation would be performed through the existing bridges on the Pearl River.
- *Island and Disposal Areas:* The Two Lakes Plan would construct a 661-acre island located across from the Jackson central business district from excavated material. The island would be available for commercial development.
- *Gallatin Street Landfill Removal:* The Two Lakes plan would relocate portions of the Gallatin Street Landfill.
- *Utility Relocations:* Due to extensive channel excavation and other Two Lakes plan components, the Two Lakes plan would require the relocation of numerous public utilities, including natural gas lines, communication lines, electrical distribution lines, drinking water lines, and sanitary sewer lines.
- *Property Acquisition Relocations:* The Two Lakes plan would acquire all lands lying in the lake footprint in fee title. In addition, a three-foot flowage easement<sup>6</sup> would be acquired around the perimeter of the permanent pools.
- *LeFleur's Bluff State Park:* The portion of the LeFleur's Bluff State Park lying in the Pearl River flood plain would be inundated with a minimum of

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<sup>6</sup> *Flowage easement* land is privately owned land on which the U. S. government has acquired certain perpetual rights, including the right to flood it; the right to prohibit construction or maintenance of any structure for human habitation, and the right to approve all other structures constructed on flowage easement land, except wire fencing.

ten feet of water (270.0 feet [NGVD]) Upper Lake pool elevation and thus would require relocation.

Mr. McGowan's Two Lakes Plan did not include any additional levees beyond the two existing levees (i. e., the Fortification Levee and the East Jackson Levee). In fact, the original Two Lakes Plan would have relocated a portion of the existing East Jackson Levee to the east to make room for the island, although it would be unlikely that the Corps would allow movement of an existing levee.

## **How Would the Two Lakes Plan Work As a Flood Control Option?**

*The Two Lakes Plan depended on optimizing the flow of the river to control flooding.*

The Two Lakes Plan attempts to try to optimize the efficiency of the flow of the Pearl River by dredging and rechanneling the narrow, snake-like Pearl River, thus turning it into a significantly wider, straighter river.

Currently, the Pearl River is a winding river as it runs south from the Ross Barnett Reservoir to LeFleur's Bluff State Park, but has been channelized by the Corps of Engineers to flow straight from LeFleur's Bluff State Park south past the Gallatin Street Landfill, where the Pearl River returns to its natural flow. Because of the average width of the Pearl River, when a major flood event like the 1979 flood flows from the Pearl River's origins, the river begins to back up and flood out of its banks. The floodwaters then are slow to recede from the trees, shrubs, and undergrowth in the wetlands surrounding the Pearl River.

To improve these stagnant areas as well as the efficiency of the Pearl River to move water through the river channel through the Jackson metro area, the Two Lakes Plan proposed carving out and dredging out the sixteen miles of the Pearl River channel from the Lower Weir north to the Ross Barnett Reservoir, thus turning the portion of the Pearl River between the Lower Weir and Ross Barnett Reservoir into a 1,500-foot-wide river channel that runs straight. The Two Lakes Plan would have also cleared most of the shrubs, trees, and underbrush in the direct flood plain of the Pearl River, thus allowing the floodwaters to flow more smoothly downriver. Because the river would be straighter and because water moves more efficiently over water (the now wider lake/river channel) as opposed to the banks of the river that include the obstacles in the flood plain (e. g., shrubs, trees), the Pearl River would be able to move water more efficiently down the river, thus preventing the river from backing up during periods of heavy rains/flooding.

In order to prevent the redistribution of sand and silt and to prevent the re-growth of trees in the river flow course, the Two Lakes Plan would insert two weirs into the Pearl River to block the flow of the river and create two lakes from just south of I-20 north to the Ross Barnett Reservoir. The weirs would thus serve two purposes by allowing the Two Lakes Plan to build aesthetically pleasing, developable lakes as well as maintaining the lakes so as to prevent trees and other underbrush from coming back and repopulating the channel.

Since it would be necessary to remove very large amounts of sand from beneath the numerous railroad and highway structures south of downtown Jackson to provide the proper flow course through this area of the river as well as find a home for the dredged river channel material, the East Jackson levee would be moved to the east and the excavated material would then be put in the middle of the newly formed lake.

## The LeFleur Lakes Plan

***In 2001, the Rankin-Hinds Pearl River Flood and Drainage Control District accepted the role of local sponsor for area flood control projects by adopting the LeFleur Lakes Plan, a flood control and economic development plan similar to the Two Lakes Plan, but slightly modified. From 2003 to 2007, the district worked with the Corps of Engineers to study the LeFleur Lakes Plan. In 2007, after several modification attempts, the Corps concluded that the LeFleur Lakes Plan was less effective as a flood control measure than the Comprehensive Levee Plan.***

During 2001, support from local governmental entities for the Two Lakes Plan began. Specifically, the following occurred:

- In July 2001, given the option to consider not only flood control, but also to develop the Pearl River for economic development purposes, the Rankin-Hinds Pearl River Flood and Drainage Control District officially became the local, non-federal sponsor of Two Lakes. At that time, the Rankin-Hinds Pearl River Flood and Drainage Control District officially named the Two Lakes concept "LeFleur Lakes."
- In September 2001, the Corps of Engineers held meetings with the Pearl River Basin Development District and the Rankin-Hinds Pearl River Flood and Drainage Control District "to discuss resumption of studies in Jackson, Mississippi, directed toward developing a compromise plan incorporating aspects of both the levee and lakes plans." Also in 2001, the Rankin-Hinds Pearl River Flood and Drainage Control District accepted the role of local sponsor for area flood control projects, thereby

replacing the Pearl River Basin Development District in the role it had played since the 1980s in attempting to bring comprehensive flood control measures to the Jackson metropolitan area.

- On October 15, 2003, the Corps of Engineers and the Rankin-Hinds Pearl River Flood and Drainage Control District signed a Feasibility Cost Sharing Agreement (FCSA), which the Corps said was necessary to resume investigations of Pearl River Watershed that were suspended in July 1998 after the Comprehensive Levee Plan failed to receive the local support necessary for further pursuit.

### **The Corps Started with the Original LeFleur Lakes Plan, but Hydraulic Investigations Concluded It Did Not Provide Adequate Flood Protection**

*The Corps performed initial hydraulic investigations on the original version of the LeFleur Lakes Plan (basically the Two Lakes Plan) as presented to the Corps. However, the Corps of Engineers concluded that the original LeFleur Lakes Plan was less effective as a flood control measure than the Comprehensive Levee Plan and thus modified the LeFleur Lakes Plan to provide adequate flood control before pursuing further feasibility study.*

In performing the hydraulic investigations on the original LeFleur Lakes Plan (basically the Two Lakes Plan as presented to the Corps), the Corps of Engineers determined the original LeFleur Lakes Plan did not provide adequate flood control for the Jackson metro area. According to the Corps of Engineers' August 11, 2009, letter to the Rankin-Hinds Pearl River Flood and Drainage Control District, when the Corps modeled the original LeFleur Lakes Plan as part of hydraulic investigations using the 1979 record flood as the flood model, the Corps "determined that flood stage reduction for the [LeFleur] Lakes Plan decreased progressively as water moved downstream from the Ross Barnett Reservoir."

The Corps of Engineers determined the following outcomes from the original LeFleur Lakes Plan (basically the Two Lakes Plan):

- The original LeFleur Lakes Plan (basically the Two Lakes Plan) provided from eleven to twelve feet of flood reduction in the Upper Lake between the Upper Weir and the Ross Barnett Reservoir.
- However, according to the Corps of Engineers' August 11, 2009, letter to the Rankin-Hinds Pearl River Flood and Drainage Control District, as the floodwaters would move south along the Pearl River into the Lower Lake, the flood control benefits would diminish. For example, floodwaters from the Pearl River would still back up into Town

Creek and Lynch Creek, causing significant flooding in Jackson. In its August 11, 2009, letter to the Rankin-Hinds Pearl River Flood and Drainage Control District, the Corps of Engineers also cautioned that LeFleur Lakes Plan could potentially exacerbate flood problems by “large headwater floods meeting the permanent pool created by the lower weir.”

- Also, as the channel improvements ended at the Lower Weir, there were no additional flood control benefits. Both the Richland and South Jackson levee areas (including the Savanna Street Wastewater Treatment Plant that supports Jackson and other localities in the metro area) would still be subject to major flooding, as they were in 1979. In fact, flooding might have been worse in the Richland area under the original LeFleur Lakes Plan (basically the Two Lakes Plan).
- Overall, studies indicated the original LeFleur Lakes Plan (basically the Two Lakes Plan) would provide a 52% degree of flood protection as compared to 79% for the Comprehensive Levee Plan.

Other problems with the original LeFleur Lakes Plan (basically the Two Lakes Plan) were:

- The needed relocation of a portion of the East Jackson levee to the east to make room for the island, which would have also required a remodeling of the manmade Crystal Lake (a manmade flood lake that accepts flood waters from the city of Pearl).
- Inundation of the portion of the LeFleur’s Bluff State Park lying in the Pearl River flood plain, including Mayes Lake, the campgrounds, and the nature trails.
- The need for relocation of the proposed Airport Parkway since the lower corner of the island would go under it.

Since the Corps of Engineers concluded that the original LeFleur Lakes Plan (basically the Two Lakes Plan) was less effective as a flood control measure than the Comprehensive Levee Plan, the Corps modified the LeFleur Lakes Plan to provide adequate flood control before pursuing further a feasibility study as discussed in the following section. Because the Corps had to modify the original LeFleur Lakes Plan (basically the Two Lakes Plan) to provide adequate flood control protection, the Corps did not perform an environmental impact study or economic feasibility study on the Two Lakes Plan.

## **Modifications of the LeFleur Lakes Plan**

*The Corps also considered the LeFleur Lakes Plan with two modifications: a third lake and addition of the levees that were part of the Comprehensive Levee Plan.*

### ***Modification A: LeFleur Lakes Plan plus the Byram Lake***

Since the originally proposed LeFleur Lakes Plan did not provide the necessary flood protection, the Corps of Engineers (as a result of an iterative process with the Rankin-Hinds Pearl River Flood and Drainage Control District's contract engineers) began evaluating the LeFleur Lakes plan to see what could work.

In order to provide adequate flood protection, the Corps' first major remake—the LeFleur Lakes Plan plus the Byram Lake—would have carved and dredged the Pearl River's channel from 250 feet to 1,500 feet wide even farther south, extending from the original LeFleur Lakes Plan from the Lower Weir approximately thirteen miles south to Byram, thus doubling the altered portion of the Pearl River to approximately twenty-seven miles.

While the Corps' initial hydraulic investigations showed that the LeFleur Lakes Plan plus the Byram Lake modification would have provided the required flood protection for the Jackson metro area for the 1979 flood, altering the Pearl River for twenty-seven miles from the Ross Barnett Reservoir to Byram could cause additional adverse environmental losses from the stream channelization. Because of the significance of the potential major environmental impact of altering a twenty-seven-mile stretch of the Pearl River, the Corps projected that the LeFleur Lakes Plan plus the Byram Lake modification would not be environmentally feasible and thus the LeFleur Lakes Plan plus the Byram Lake modification was not pursued (nor was an official environmental impact study performed).

### ***Modification B: LeFleur Lakes Plan plus Additional Levees***

In March 2006, the Corps went back to the original LeFleur Lakes Plan and modified it to study whether the inclusion of levees downstream of the proposed plan's lower weir would be needed in conjunction with the lakes. Initially, this included the addition of levees at Richland and South Jackson, then later at Town and Lynch creeks to prevent flooding in Jackson. All three southern levees (part of the 1996/1997 Comprehensive Levee Plan) were needed to provide flood protection along the Lower Lake to protect downtown Jackson, south Jackson, and Richland. The three additional southern levees totaled 10.1 miles. The

LeFleur Lakes Plan plus Additional Levees modification also kept the two original levees, including the East Jackson levee. The Corps also shifted the entire island slightly upriver and rotated the northern portion of the island northeast to connect to Lakeland Drive.

During the iterative process, the Corps also modified the original LeFleur Lakes Plan to change the type of upper weir that would be used in order to reduce flood damage significantly. However, the lower weir would remain the same.

The Corps estimated a total cost of \$1.4 billion for the LeFleur Lakes Plan plus Additional Levees modification.

## LeFleur Lakes Plan plus Additional Levees Modification or the Comprehensive Levee Plan: The Corps' Position in 2007

***The Corps believed that the Comprehensive Levee Plan was a more cost-effective plan for flood control than the LeFleur Lakes Plan plus Additional Levees Modification.***

In February 2007, the Corps published the following conclusions concerning the efficacy of the LeFleur Lakes Plan plus Additional Levees Modification as a flood control plan:

*The [LeFleur Lakes Plan plus Additional Levees Modification], as the Locally Preferred Plan (LPP), is technically feasible, as formulated in this report, and would eliminate approximately 90% of the existing flood damages in the Jackson Metropolitan Area. The \$1.4 Billion cost estimate includes 25% contingencies (appropriate for a feasibility study), real estate requirements including mitigation, utility relocations, further engineering and design necessary for contract(s) award, construction, and construction management.*

*However, under federal guidelines, the [LeFleur Lakes Plan plus Additional Levees Modification] is economically infeasible with a benefit-cost ratio of 0.2. This benefit-cost ratio, in accordance with Federal water resource policy, is based on flood damage reduction benefits and not on regional/local development benefits, important to local decision makers, which may occur with non-Federal implementation.*

*The [LeFleur Lakes Plan plus Additional Levees Modification], as currently proposed,*

*does not meet environmental policy objectives such as avoiding and minimizing impacts on existing habitat, a requirement when implementing a federal project.*

## The Lower Lake Plan

***The Lower Lake Plan would consist of levees and a lake in a location roughly similar to the lower lake in the LeFleur Lakes Plan.***

*After the 2007 charrette, the Rankin-Hinds Pearl River Flood and Drainage Control District unanimously passed a motion to adopt a resolution supporting the Lower Lake Plan as the Locally Preferred Plan.*

Perhaps because of the continued potential for private development of a two lakes concept, the district continued to study the potential of such a concept. From March 5, 2007, to March 12, 2007, the Rankin-Hinds Pearl River Flood and Drainage Control District sponsored a public planning forum (i. e., charrette) to discuss the development opportunities made possible by the creation of the lakes and a defined architectural design code with the task of melding the flood control plan with an economic development design. The district brought in Andres Duany and his Miami-based firm DPZ to develop a land use plan for LeFleur Lakes.

As part of the charrette, Duany reached the conclusion that the 650-acre island was too large because the Jackson metropolitan area could not support fully developing the island. He then recommended splitting the island into two islands and reducing their combined size to a total of 250 acres. He also recommended utilizing only the Lower Lake and eliminating the Upper Lake.

On July 16, 2007, the Rankin-Hinds Pearl River Flood and Drainage Control District's contract engineer presented the three LeFleur Lake project plans along with the costs and flood control benefits of each. Subsequently, on July 16, 2007, the Rankin-Hinds Pearl River Flood and Drainage Control District unanimously passed a motion to adopt a resolution supporting the Lower Lake Plan as the Locally Preferred Plan.

## What Is the Lower Lake Plan?

*The Lower Lake Plan was a combination economic development and flood control plan. It combined the twenty-one miles of levees proposed in the Comprehensive Levee Plan with the development of Town Creek while decreasing the size of the lake impact to include a single lake similar to the lower lake from the LeFleur Lakes Plan.*

Under the Lower Lake Plan, 6.5 miles of the Pearl River channel between Lakeland Drive and a new Lower Weir just south of I-20 would be carved and dredged six feet deep and would span from the eastern levee to the western levee at a height no higher than the bottom of the levee. The Lower Lake would only reach the height of the bottom of the levees. The Lower Lake Plan consists of a significant impoundment, including approximately 1,500 acres in surface area that would stretch 6.5 miles in length. The lake, which would be strategically positioned near Jackson's central business district, would span from near Lakeland Drive to KCS Railroad River Bridge just south of I-20 near Richland.

The Lower Lake Plan would then use the dredged material to create two islands with a developable area of approximately 215 acres. Additionally, the new lake would produce approximately thirteen miles of potential shoreline development consisting of roughly 1,000 acres. The shoreline would be built up to the height of the levees using the remainder of the dredged material.

The Lower Lake Plan also includes the twenty-one miles of additional levees listed in the Corps of Engineers' proposed Comprehensive Levee Plan. These levees include:

- *Northeast Jackson levee:* The proposed Northeast Jackson levee would be five miles long and have an average height of twenty-two feet. The proposed Northeast Jackson levee would extend from Highway 25 south and westward to high ground just east of Eubanks Creek.
- *Eubanks Creek levee:* The proposed Eubanks Creek levee would be 0.3 miles long and have an average height of 24.5 feet. The proposed Eubanks Creek levee would begin at high ground just south of Lakeland Drive and extend south to Eubanks Creek, continuing in a westward direction to high ground.
- *Belhaven Creek levee:* The proposed Belhaven Creek levee would be 0.3 miles long and have an average height of twenty-five feet. The proposed Belhaven Creek levee, which would begin at high ground along the shoulder of the northbound lane of I-55, would be an extension of the existing Fairgrounds levee. The Belhaven Creek levee would

be necessitated by an increase in the level of protection needed for that area.

- *Fairgrounds levee extension:* The proposed Fairgrounds levee extension would be 1,600 feet long and enlarge the existing Fairgrounds levee three to five feet to provide the same level of protection as the proposed new levees. The proposed Fairgrounds levee extension would extend along the Fortification Street Ramp and be connected to the Belhaven Creek levee.
- *Town and Lynch Creeks levee:* The proposed Town and Lynch Creeks levee would be 1.4 miles long and have an average height of seventeen feet. The proposed Town and Lynch Creeks levee would begin on high ground near the Old Brandon Road Crossing on the Pearl River (Woodrow Wilson Bridge) and proceed south along the west bank of the Pearl River crossing Highway 80 and I-20 before tying into high ground just south of Lynch Creek.
- *South Jackson levee:* The proposed South Jackson levee would be 3.8 miles long and have an average height of ten feet. The proposed South Jackson levee would begin at high ground one mile above the Jackson Sewage Treatment Plant and extend south along the west bank of the river until it reaches the disposal pond levees, then extend south from that point and ultimately tie back into high ground just north of the Elton Road/I-55 South interchange.
- *Flowood levee:* The proposed Flowood levee would be 5.3 miles long and have an average height of thirteen feet. The proposed Flowood levee would originate at high ground 0.25 miles west of Fannin Road and 1.25 miles north of Highway 25 (Lakeland Drive), then extend southwesterly around a newly developed residential area. The proposed Flowood levee would then continue parallel to Lakeland Drive before turning southwesterly to follow along the east bank of the Pearl River. The proposed Flowood levee would then cross Lakeland Drive and follow the east bank of the river until intersecting the existing East Jackson levee just west of Highway 468.
- *East Jackson levee extension:* The proposed East Jackson levee extension would be .5 miles long and enlarge 8.7 miles of the existing East Jackson levee two to six feet. The proposed 0.5 mile East Jackson levee extension would be required at the downstream end to tie into the ICGR embankment just north of Childre Road, while the upper limits of the levee enlargement would end near Highway 468.

- *Richland levee:* The proposed Richland levee would be five miles long and have an average height of thirteen feet. The proposed Richland levee would be u-shaped around the city of Richland. The proposed Richland levee would begin at high ground east of Highway 49 and extend northwesterly across Highway 49 to a point near the ICGR embankment. The proposed Richland levee would then turn westerly until it crosses the ICGR embankment, then extend south to high ground 0.25 miles southeast of the intersection of Old Highway 49 and the ICG Railroad.

According to the *LeFleur Lakes Economic Impact Evaluation--Summary Report* by the Mississippi Engineering Group (MSEG), “the Lower Lake Plan [also] retains a complementing proposal to develop the potential of Town Creek as a mixed-use amenity and regional attraction similar to that found in other urban areas, such as San Antonio’s Riverwalk.” The Summary Report further adds, “That the Corps of Engineers’ own 1996 Comprehensive Levee Plan of 1996 recognized the opportunity for such development and even included conceptual renderings to illustrate the possibilities.”

## Comparison of Plans that Incorporate Economic Development: The Lower Lake Plan and the Two Lakes Plan

***The costs and environmental impact of the Lower Lake Plan are less than those of the original Two Lakes Plan.***

According to the December 10, 2007, Mississippi Engineering Group memorandum, the major points of distinction with regard to the Two Lakes Plan compared to the Lower Lake Plan include the following:

- The real cost of the Two Lakes Plan appears to exceed financial feasibility. The reported opinion of cost for the Two Lakes Plan of \$190 million is unrealistic in the context of a federally regulated public works project of the magnitude at hand.
- The environmental impact of the Two Lakes Plan would be extensive and, if pursued privately, the project would be seriously challenged to acquire the permits required to construct it.
- The litigation risks of the Two Lakes Plan from environmental impacts are considerably greater and more complex than with the other plans evaluated.
- Construction of a flood control project to protect human life and property is a governmental

function and not that of an undefined private entity.

- There is no apparent definable plan to finance the construction of the Two Lakes Plan.
- The apparent absence of the authority of eminent domain weakens the ability of a private entity to obtain the land necessary to construct such a massive project as the Two Lakes Plan.
- Other issues include the concern over whether the Two Lakes Plan could receive the necessary permits in view of the impact it would have on part of the project above Highway 25 and the fact that the Lower Lake Plan with its levees could provide effective flood control without any changes in the operations of the Ross Barnett Reservoir.

PEER notes that this is one firm's professional opinion and that other firms might share this opinion or might differ on one or more of the above-stated points.

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# The Status of Comprehensive Flood Control for the Jackson Metropolitan Area

Thirty-one years after the 1979 flood, governmental entities have not yet implemented a comprehensive flood control plan for the Jackson metropolitan area. In the last three years, the board of the Rankin-Hinds Pearl River Flood and Drainage Control District has considered plans utilizing levees and lakes and levees alone. Recently, the United States Army Corps of Engineers informed the district that it would resume the feasibility study presented in draft form in 2007 and will consider the Lower Lake plan in accordance with the Water Resources Development Act of 2007, provided that funds are available.

Following the development of the Lower Lake concept, the Rankin-Hinds Pearl River Flood and Drainage Control District has taken varied positions on comprehensive flood control for the area. Since January 2008 the district has considered different proposals for flood control. The district now supports the Lower Lake plan, as was explained earlier in this report.

## Actions of the Rankin-Hinds Pearl River Flood and Drainage Control District, January 2008 to Present

*The Board of the Rankin-Hinds Pearl River Flood and Drainage Control District has changed its position several times regarding what it would prefer the Corps of Engineers to review and consider for flood control in the Jackson metropolitan area. However, these changes in the district board's position could have been influenced by several factors, including aggressive advocacy of the original Two Lakes Plan, the Corps' stated preference for levees, and the belief that levees would not be beneficial to the Jackson area.*

*The district's board has changed its position regarding the flood control plan it would support.*

Beginning in January 2008, the board of the Rankin-Hinds Pearl River Flood and Drainage Control District commenced a series of actions to adopt proposals that it wanted the U. S. Army Corps of Engineers to study. During the period between January 2008 and May 2010, the board changed positions several times regarding the plans it wanted to support.

In January 2008, the board adopted a motion to request that the Corps complete its feasibility study with consideration of the Lower Lake Plan. In March 2008, the board voted to proceed with the Comprehensive Levee Plan with the proviso that a lakes plan could be considered. By April 2008, the board returned to a

decision that the Comprehensive Levee Plan with a lower lake as presented in the DPZ study would be the locally preferred plan.

The board considered motions in later meetings which, had they not been tabled, would have added both LeFleur Lakes and Two Lakes back into the mix of proposals that the district wanted to have considered. By August 2009, the board had moved away from the Lower Lake concept and rescinded its April 2008 endorsement of the Comprehensive Levee Plan with a Lower Lake.

In December 2009, the board supported the Comprehensive Levee Plan, with the contingency that there might be some economic development within the levee system, particularly in the Town Creek area, and that the levees might be designed to permit the inclusion of a lake at a future date if the district could obtain necessary permits for the addition of a lake. This represented a withdrawal from the earlier position supporting a Lower Lake as the locally preferred alternative to levees.

Approximately six months later, the board made its most recent modification of its position regarding the option that it would pursue for flood control. On May 20, 2010, the district's board voted to re-engage the Corps of Engineers to complete the feasibility study dated February 2007 to include an impoundment feature (i. e., a lake) with a weir south of the Gallatin Street landfill. The district believes that the impoundment should be considered with or without levees as required for flood protection and should be evaluated to optimize flood protection without adversely impacting LeFleur's Bluff State Park. The plan would also include specific economic development and recreational features, with particular focus on the Town Creek area. This plan meets the description of the Lower Lake Plan.

*The changes in the district board's position could have been influenced by several factors, including aggressive advocacy of the original Two Lakes Plan, the Corps' stated preference for levees, and the belief that levees would not be beneficial to the Jackson area.*

During the two and one-half year period when the district's board wrestled with the issue of selecting a locally preferred alternative, several factors may have caused the above-cited changes in position. These include:

- *Aggressive advocacy of the original Two Lakes Plan:* PEER notes that local businessman John McGowan and engineers made efforts to present modified versions of the original Two Lakes plan and offered cost estimates in an effort to show that the Two Lakes plan was a viable alternative for local flood control as well as economic development.

- *The Corps' stated preference for levees as a flood control plan for the area:* While the 2007 draft study showed that the Corps of Engineers believed that the National Economic Development Levee Plan (i. e., the Comprehensive Levee Plan) was economically superior to the LeFleur Lakes plan, correspondence received by the district from the corps in November 2009 made clear that the Corps did not believe that any of the lakes plans would pass muster as a viable flood control plan or would be environmentally acceptable under further analysis.
- *The belief that levees would not be beneficial to the Jackson area:* At least one member of the board who has been a proponent of lakes plans offered the belief that levees would actually make flooding in the downtown Jackson area worse than it would be if the levees were not further developed. PEER obtained information showing that during the 1980s, the Mobile District of the Corps of Engineers had doubts about the efficacy of levees alone for flood protection in the Jackson area.

## The District's Choice: the Lower Lake Plan

***The Rankin-Hinds Pearl River Flood and Drainage Control District believes that the Lower Lake Plan is less expensive, would have less environmental impact than the LeFleur Lakes Plan, and would provide effective flood control. Also, the district believes that the Lower Lake Plan offers development benefits.***

The Rankin-Hinds Pearl River Flood and Drainage Control District believes that the Lower Lake Plan offers many benefits in excess of those offered by the Two Lakes Plan or Comprehensive Levee Plan. These benefits include the following:

- The Lower Lake Plan is estimated to cost \$500 million, which is considerably less than the \$1.4 billion LeFleur Lakes plan but considerably more than the \$200 million Comprehensive Levee Plan.
- The Lower Lake Plan has a minimal environmental impact since it would only alter the portion of the Pearl River between Lakeland Drive and the Lower Weir just south of I-20, which was altered and channeled by the Corps when building the levees.
- According to the *LeFleur Lakes Economic Impact Evaluation--Summary Report* by the Mississippi Engineering Group (MSEG), "the [U.S. Army Corps of Engineers] agreed to evaluate the hydraulic function of a single lake plan" at the request of the Rankin-Hinds Pearl River Flood and Drainage

Control District and “concluded that [the Lower Lake Plan], when combined with levees, would provide flood protection in excess of that provided by the levees.”

The Lower Lake Plan also offers some of the economic benefits of the LeFleur Lakes Plan. These include:

- The Lower Lake Plan offers 1,000 acres of developable shoreline between Lakeland Drive and I-20 as well as two developable islands totaling 215 acres. The northern island would connect to Lakeland Drive and go southward. The southern island would be in the Pearl River, across from Jackson’s central business district.
- The Lower Lake Plan also recommended developing Town Creek into an area similar to the Alamo Riverwalk. As a result, Town Creek would be five feet deep at the Convention Center and would allow someone to boat from Town Creek to the Lower Lake on the Pearl River, then northward up the natural (i. e. unaltered) portion of the Pearl River from Lakeland Drive to the Ross Barnett Reservoir.

## What Will the Federal Government Assist in Funding?

***The Water Resources Development Act of 2007 authorizes the NED Levee Plan (i. e., Comprehensive Levee Plan) or a Locally Preferred Plan. Federal funding participation is limited to the amount necessary to pay the federal share of the NED Levee Plan.***

As noted previously, in November 2007, Congress passed the Water Resources Development Act (WRDA) of 2007, PL 110-114, 121 Stat 1041, which contains Congressional authorization for a Pearl River Basin comprehensive flood control plan for the first time since Shoccoe Dry Dam was authorized in 1986. WRDA 2007 also contained specific provisions related to Pearl River flood control and the LeFleur Lakes Plan, including authorizing federal cost participation in the amount of \$133,770,000, if the project can be shown to be technically feasible and environmentally acceptable.

The WRDA notes that before initiating construction, the federal government would compare the level of flood damage reduction provided by the plan that maximizes national economic development benefits of the project and the locally preferred plan to that portion of Jackson, Mississippi, and vicinity located below the Ross Barnett Reservoir Dam. If it determines that the locally preferred plan provides a level of flood damage reduction that is equal to or greater than the level of flood damage reduction provided by the National Economic Development

Plan and that the locally preferred plan is environmentally acceptable and technically feasible, the federal government could either construct the National Economic Development Plan, the locally preferred plan, or some combination thereof.

Until recently, the Corps of Engineers showed a pronounced preference for a levee plan as opposed to plans utilizing lakes. While the Corps of Engineers has championed levees, PEER was informed that the Corps has agreed to resume the above-discussed feasibility study and consider the locally preferred one-lake alternative, provided that funds are included in the Corps' appropriation. At this time, no mention of the amount of local funds for participation has been announced.

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## Conclusions on Comprehensive Flood Control Efforts and Planning, 1979 to 2010

**Many of the plans for flood control in the Jackson metro area mix flood control with economic development. The plans incorporating economic development cost more than levees.**

As is evident from the material presented in this report, the first comprehensive flood control measures for the Jackson metro area that received consideration were Shoccoe Dry Dam and the Comprehensive Levee Plan. These plans were aimed at providing flood control to the metropolitan area without consideration for other development efforts.

Beginning with the Two Lakes Plan, in all subsequent plans, economic development opportunities have been combined with flood control. While it is evident that some of these plans could provide effective flood control, the possibility for their implementation is problematic.

### Lower Lake Considerations

***The Lower Lake Plan would require more funds than would be needed to complete the Comprehensive Levee Plan.***

The district would need to develop a scheme for financing such a plan if it is ultimately found to be acceptable to the Corps of Engineers. Because the current language of WRDA of 2007 caps the federal financial participation at \$135 million, the district would have to establish a plan for financing the local share of the project. PEER would assume that this would include the possible expansion of the district boundaries to include more territory in Rankin and Hinds counties that would be subject to ad valorem taxation to retire bonds, projections of private fees that could conceivably be utilized for land leases, and possible in-lieu payments from state sources for the added protection that a flood control plan could provide to the state fairgrounds.

While PEER sees potential benefit in the development opportunities that a Lower Lake plan offers, the Committee would note that the actions that would be necessary to implement the plan would take time and additional resources above what might be required to build a levee system such as that contemplated in the Comprehensive Levee Plan.

As noted on page 15, efforts to obtain legislative authorization for local participation in a comprehensive

levee plan failed in 1995 and 1996. Concerns over the impact on downriver flooding that a levee plan would have were at least in part responsible for the failure of legislation.

PEER suggests that these concerns might continue to have an impact on any proposal for levees or impoundments should any such plan require the adoption of amendments or revenue measures by the Mississippi Legislature. Should the Rankin-Hinds Pearl River Flood and Drainage Control District require any amendments to its enabling legislation making amendments to its authority, the same interests that successfully defeated the Comprehensive Levee Plan might again mobilize to influence flood control plans for the Jackson metropolitan area.

## Other Plans' Considerations

### ***A Comprehensive Levee Plan would be less expensive than a lake plan.***

The merits of a Comprehensive Levee Plan are that the local share would be considerably less than the cost of a lake plan. In 2007, the approximate local share would have been near \$65 million, with the federal government paying \$135 million. However, the Comprehensive Levee Plan will not bring in private investment (or new development opportunities) and thus must be paid for in full by local and federal taxpayers. In contrast, a more expensive lake plan has the potential to generate new development and subsequently, increased property tax revenue, ad valorem tax revenue, and sales tax revenue.

### ***Completing the feasibility study issued in preliminary form in 2007 would mean that more time would elapse before the district could begin to implement a flood control plan.***

Assuming that the district re-engages the Corps of Engineers to complete the feasibility study, the district will receive consideration of its Lower Lake Plan. While Lower Lake offers the benefits discussed above, the time for study means further delay in the implementation of a flood control plan for the area.

### ***Completion of the feasibility study does not guarantee that the Corps will favorably report on the Lower Lake Plan's environmental impact.***

While the Corps is stating that the feasibility study can continue if funds are made available for such, this is only an offer of further analysis focusing on environmental impact and feasibility. There is no guarantee that the Corps will conclude that Lower Lake is environmentally acceptable or technically feasible.

*The ultimate responsibility for sponsoring a plan and proceeding with it rests with the district.*

PEER understands the difficulties in bringing flood control to fruition in the Jackson metropolitan area and notes that the district, as the only viable local sponsor, must proceed with the plan it believes will generate the greatest benefit to the metropolitan area. PEER raises the concerns regarding timeliness of completion and costs only because they would appear to be relevant to the discussion of any plan for providing flood control to the area.

## Recommendation

In view of the complex regulatory environment, as well as the likely need for future legislation on the subject of flood control district authority, the Rankin-Hinds Pearl River Flood and Drainage Control District should report by December 31 of each year to the Secretary of the Senate, the Clerk of the House, and the PEER Committee on any actions it has taken or progress toward completion of a comprehensive flood control program for the Jackson metropolitan area.

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