

# Chapter Six

# Corps Dollars At Work: New Programs and Continued Benefits



The civil works program of the U.S. Army Corps of Engineers has always had an important and positive influence on the local economies of its districts. This had been particularly true in the Vicksburg District because the states of Arkansas, Louisiana, and Mississippi are relatively under-populated areas that lack a dominant industrial base. More recently, the district undertook a great deal of new construction that resulted in very significant, one-time expenditures. Once they exist, the facilities must be operated and maintained, which results in a smaller but more regular inflow of federal dollars. Local communities and the economy of the area as a whole feel the impact of the Vicksburg District's annual budget.

Corps of Engineers projects play an important role in stimulating economic



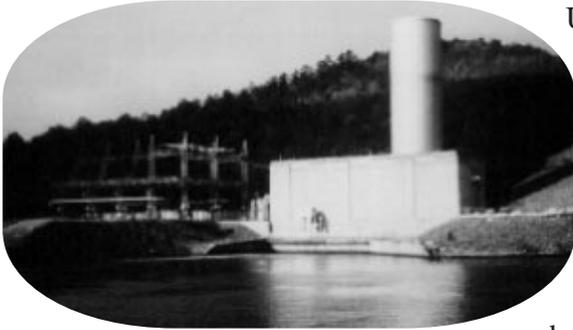
activity by improving



water transportation, by providing recreational sites, and by introducing new forms of technology. They also protect the property of business and individuals from the ravages of flooding. Public investments such as these have been criticized, however, by analysts who claim that these projects speed the conversion of valuable wetlands to agricultural usage. This chapter examines the mixture of economic benefits, technological change, and industrial growth between 1976 and 1991, and the way the mixture affected the lives of people in the district.

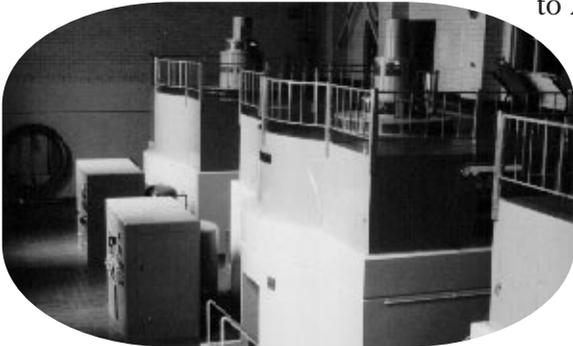
## Water as Power

An important “technology transfer” occurs with respect to hydroelectric power. The U.S. Army Corps of Engineers was the nation’s largest single producer during this period. In 1987, for example, it



operated 73 projects housing 344 turbine-enerators in the United States with a total installed electrical capacity of 20.9 million kilowatts. No new generating capacity was added after the early 1980s. Production from the Corps’ facilities in 1986 was 80 billion kilowatt hours, about 30 percent of the nation’s hydroelectric energy production and 3.5 percent of all electric energy produced in that year. This energy was equivalent to the output of 20 average size plants, which would have been powered by 36 million tons of coal, 1,100 billion cubic feet of natural gas, or 5.7 billion gallons of oil.<sup>1</sup> About two-thirds of this capacity was in the northwestern states, and provided nearly one-half of the region’s electricity.

In the Vicksburg District, the generation of hydroelectric power began in 1952 when the power plant at Narrows Dam came into operation at Lake Greason. Initially it had two generators with a capacity of 17 megawatts, but a third generator added in 1969 increased the capacity to 25.5 megawatts. Blakely Mountain Dam and Power



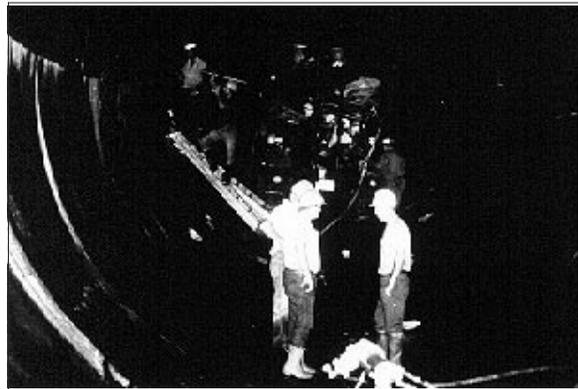
Plant at Lake Ouachita opened in 1955 with a capacity of 75 megawatts. The powerhouse at Blakely Mountain also controls the electricity production of the other two power plants in the Vicksburg system. The third and last hydroelectric facility built in the district was the DeGray Dam and Powerplant, which began operation in 1972 with two generators and a total installed capacity of 68 megawatts.

To generate hydroelectric power at any of the dams, water from the “power storage pool” is released through the gate-controlled intake section of the dam. This water rotates the turbines in the powerhouse, and discharges through the draft tubes into the river or reservoir below. The spinning turbines are connected to generators that actually produce the electricity. The power generated is increased in voltage by a transformer for transmission into the regional power grid for use in Arkansas, Texas, and Oklahoma.

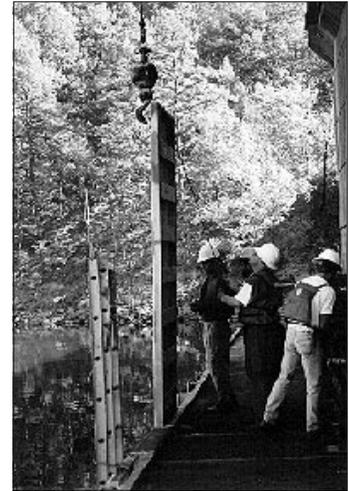
One requirement of hydroelectric power is that, once the stored water is released from a normal reservoir, it must be replenished by rain in the upper watershed. While too little rain is often the cause of discontinuing power production, too much rain can cause the flood-control obligation of the district to override the need for water releases to turn the generators. For this reason, the dam at DeGray Lake uses a proven pump technology to increase the efficiency of water use. Below the dam, a “reregulation” pool was constructed to hold the water that came from the storage pool through the turbines. When not generating electricity, the smaller of the turbines is designed to act as a pump, returning water from the lower pool back into the main storage pool for reuse. During peak periods of demand (e.g. summer evenings), the water is again available for power generation, and the available electricity replaces energy that might have been produced at higher cost.<sup>2</sup>



During the 1970s and 1980s, the United States experienced a dramatic change in the markets for energy supplies. The OPEC oil embargo and the resulting higher energy prices placed a greater emphasis on the search for new energy sources and the use of alternatives to expensive, non-renewable resources. Hydroelectric power from the district’s dams, based on a renewable water resource and traditionally one of the least expensive forms of producing electricity, was increasingly in demand during the first oil price hike in 1973-74. Average production in those two years was 577,000 megawatt hours (mwh), which was 178 percent more electricity from these plants than the average of the three previous years. Although energy supplies and prices stabilized somewhat during the later 1970s, another OPEC-managed price increase occurred in 1979. Energy production from the district’s dams again increased dramatically; the production that year was more than 448,000 mwh, which was an increase of 162 percent over average of the three previous years. After 1979, with the exception of 1980 and 1987, the district’s production of hydroelectric power from the Arkansas dams remained near or above the 10-year moving average, which ranged from 250,800 to 350,000 mwh during the 1976-1991 period.<sup>3</sup>



Hydroelectric power provided considerable economic benefit to the Vicksburg District during the energy crisis of the early 1980s. In 1983, for example, the district's output of about 361,000 mwh of electricity replaced about \$17.3 million in higher cost energy that customers did not have to buy. Although the Corps does not distribute power directly, it makes lower cost hydroelectric power available to the utilities through the U.S. Department of Energy. The customers of Arkansas Power and Light and the Southwest Power Administration experienced lower energy costs as the result of the district's production capability.<sup>4</sup>



The periodic demand for hydroelectric power from the district has encouraged a search for new locations for hydroelectric facilities. In 1984, the district began studying the hydroelectric capability of the four locks and dams on the Ouachita River. The Southwest Power Administration, a major purchaser of electricity during this period, expressed an interest in

increasing its use of power from the river basin as a whole, including additional power derived from the normal flow of the river or increased storage of water in the three present dams.<sup>5</sup> The locks and dams planned for construction on the Red River were also considered by the Federal Energy Regulatory Commission for power generation from the "run of the river" that would be discharged through the spillway.<sup>6</sup> These plans were delayed during the late 1980s, when an abundant supply of electricity in the region diminished the interest in new sources of



production. Other, non-federal concerns also proposed hydroelectric power stations on the Red River during this period, although none were successfully completed.

## Spreading the Wealth

The Army Corps of Engineers has always been an organization that designed and supervised construction that is carried out by private industry. In 1985, for example, the Vicksburg District spent about \$225 million with a work force of only 1,750 people (adjusted to full-time basis); by fiscal year 91, the district budget was \$244 million with only 1,680 employees. A large part of the money went to private contractors hired to build locks and dams, revet river banks, dredge rivers, construct

levees, and carry out myriad other tasks. In the case of certain specialized types of construction, the contractors came from outside the district, but more often they were local people who employed other local people.

During the 1970s the tendency to contract out for services from private industry increased, in part due to the influence of Circular A-76. This federal initiative, which is described in more detail in the next chapter, encouraged governmental agencies to become more efficient by having them cooperate with other agencies and, in some cases, compete against the private sector for the lowest cost on a given project. Its effects can be seen clearly in the recreational program of the district.<sup>7</sup>



For example, the establishment of contracts with local law enforcement agencies resulted in direct payments to 14 counties of more than \$1.1 million in 1984 through 1986. At one location, for instance, the sheriff's department of Montgomery County at Mt. Ida (near Lake Ouachita) earned \$128,000 during this period, which supplemented a regular annual budget of only \$190,000.<sup>8</sup> In addition to law enforcement, the recreational program of the Vicksburg District contracted for maintenance, waste disposal, and other types of work from private operators. Resource-management expenditures of this sort amounted to \$3.2 million during 1984-86. Thus, a total of \$4.3 million in direct payments to contractors just at the seven lakes occurred during this three-year period alone. Other contracting, for such services as architectural, engineering, archaeological, and contract construction have a major impact on the economies of the three states, as discussed in detail in the next chapter.



Understanding where the district's contracting money went is important because the effect of Vicksburg expenditures only began with this amount. The local economies that received this money found their incomes had risen and more jobs were available. These increases meant that the towns could support business and economic activities in other industries, and the new income was spent again in these and other businesses as well. This multiplier effect of the district's direct payment to local economies was



different in various parts of the three states because the amount of industrial development and number of businesses that expanded were not the same.<sup>9</sup> Published estimates of the employment and income multipliers for the counties in this region generally ranged from 1.74 to 2.1.<sup>10</sup>



A study of the effect of employment in the water transportation industry in Louisiana estimated the multiplier at a somewhat higher figure of 2.72.<sup>11</sup> Therefore, the final impact of the district's contracting payments of \$4.3 million at the lakes alone in the 1984-86 period was probably between \$8 and \$11 million, even discounting for the non-local benefits to contractors from out-of-state.

The construction of the nine-foot navigation channel and the system of locks and dams on the Ouachita and Black Rivers was another example of the infusion of dollars by the Corps of Engineers into the local economy. The system was built at a cost of \$220 million over 24 years. Expenditures by the Vicksburg District increased from \$8 million in fiscal year 1975 to about \$20 million in fiscal year 1982, the peak period of construction at Calion and Felsenthal. Even after the major work was complete in 1984, the district had appropriations of about \$4 million annually for work on the system.<sup>12</sup>



The type of work performed by the district was quite different from normal commerce in the area. Timber, oil, and defense contract work have been the main industries in places along the river, such as Camden, El Dorado, and Monroe. In fact, the diversification of industry was one of the primary reasons that local citizens supported the channelization of the river.<sup>13</sup> The prime contractors for the Felsenthal and Calion projects were Hardaway Construction Company of Columbus, Georgia, and Blount International from Montgomery, Alabama, respectively. Although they were from out-of-state, these contractors normally used a good deal of local labor and supplies in the course of the construction.

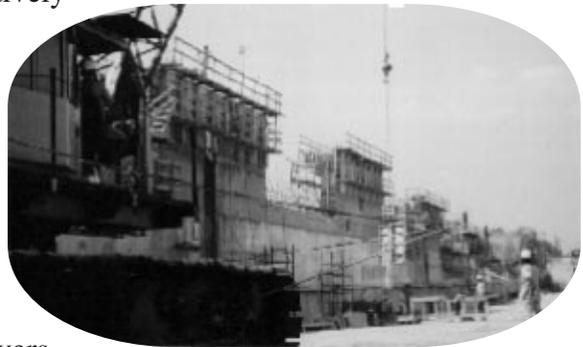
For example, at Felsenthal about 600-700 carpenters, laborers, and machine operators from towns like Crossett, El Dorado, and Huttig worked at the site during the peak years. At



Calion, the state Employment Security Division established a local employment office during the lock and dam construction. Much of the specialized operating equipment for the locks was purchased from places like Houston and Montgomery, but thousands of tons of stone were brought from the Granite Mountain quarries in Little Rock, and aggregate for the concrete was mined in Hampton, Arkansas. In addition, Grady Mitcham, project engineer for the Ouachita River during this period, estimated that 25 to 30 percent of the heavy earth-moving equipment used by the companies was leased from J. A. Riggs Company in Little Rock.<sup>14</sup>



Thus, while the economic impact of the Ouachita-Black Rivers project was more geographically diffused than the relatively more-localized effects of the district's expenditures at the lakes, the region derived considerable economic benefits from the construction of the dams. In areas such as south Arkansas and northern Louisiana where oil-related employment was declining in the early 1980s, these projects offered an attractive opportunity for many workers with oil industry experience. As the district continued its smaller, recreation-oriented construction along these rivers, all the private contractors of recreation areas were using local suppliers and workers whenever possible.<sup>15</sup> Like the development of the seven district lakes, Corps dollars were at work in two ways along the Ouachita and Black Rivers: building important assets for the future growth of the region, and providing employment opportunities for local residents near many sites during economically uncertain times.



## Sorely Needed Payrolls



Employment and income levels for the individual states traditionally have been low by national standards. In 1976, when per capita income in the United States was \$6,441, the figures for Arkansas, Louisiana, and Mississippi were 78 percent, 83 percent, and 71 percent, respectively, of the national average. By 1985, the per capita income for the United States had risen to \$13,876, in no small part due to the effects of high inflation during the period; still, these three states trailed with income figures of 75 percent, 81 percent, and 66 percent of the average, respectively.

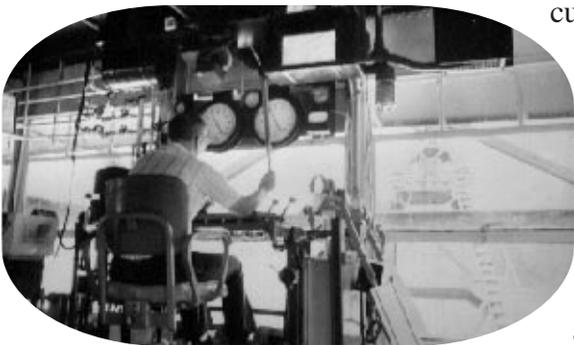
By 1991, the average U.S. income was at \$19,082, while the states had changed to 77 percent, 79 percent, and 69 percent of that figure.<sup>16</sup> In large part, this long-term decline was due to



the decreasing markets for agricultural production during this time. For example, real net farm income in the United States had fallen by 1985 to about 59 percent of its recent high point in 1973.<sup>17</sup>

Certain parts of the district were particularly depressed. In the Yazoo Basin, for example, a population that had declined since the 1940s grew only 1.35 percent during the 1970s.<sup>18</sup> In the Boeuf-Tensas basin of Arkansas and Louisiana, there was a severe economic malaise. Average per capita income in that area was \$1,123 below that for Louisiana and \$765 below that of Arkansas. Population also declined in almost all the counties of this basin for most of the last ten years.<sup>19</sup> In the Southwest Mississippi Tributaries Basin, unemployment levels and per capita income were persistently worse than state averages during the 1970s and 1980s. Between 1979 and 1983, for example, this area lost about 5,000 jobs, or about 3 percent of total employment. All of the loss was in the rural areas, and if Hinds County, with prosperous Jackson, were omitted from the analysis, the percentage employment loss for the rest of the area during this period would be almost three times higher. Although personal income rose from 1975 to 1981, it rose more quickly in Hinds and Adams counties than in the more rural areas. Again, if Hinds County was excluded, the average per capita income for the basin was consistently lower than the state's average.<sup>20</sup>

During this period of economic hardship for many of its customers, the Vicksburg District brought a significant amount of money into their economy. Starting at \$113 million in fiscal year 1978, district expenditures rose to \$257.6 million in fiscal year 1987, and leveled off thereafter to about \$245 million in fiscal year 1991.<sup>21</sup> Even when adjusted for the rapid inflation of the period, the increase to 1987 was a real growth rate of 41 percent, an annual average of more than 4 percent.



Much of this dramatic growth of expenditures, however, occurred as a result of the acquisition by the Vicksburg District of the Red River Basin. Construction spending on older projects, such as the Ouachita and Black

river navigation system and four others that were active in 1978, declined rapidly as they came to a close. Expenditures on Mississippi River and Tributaries projects grew slowly during these years, and on a real dollar basis actually declined. By 1991, district expenditures were trimmed to \$244.3 million. Nonetheless, the Corps of Engineers was a very positive force in the regional economy.



Much of the money spent by the district was received in the form of salaries or payments for local services or supplies. Thus, it stayed in the area and provided multiple benefits as it was spent again and again. A study of Adams County in Mississippi and Concordia Parish in Louisiana indicated that 52 percent of normal project expenses were being spent in local markets during this period. The study included all materials and supplies that manufacturing firms in the two counties purchased from suppliers in the nine-county area around Natchez.<sup>22</sup>

Assuming this ratio is approximately correct for the region, by the mid-1980s the Vicksburg District was responsible for providing, both directly and indirectly, more than one-third of a billion dollars in annual income to the economy of the region. Directly, the district had a budget in fiscal year 1987 of \$258 million and, if about one-half of the expenditures went to individuals and firms in the region, indirect income growth based on these expenditures was an additional \$228 million, based on a multiplier of 2.7.



## **A Return on Investment**

Finally, Corps of Engineers projects are only undertaken if they promise economic benefits to the nation that outweigh their costs. The district's Economic and Social Analysis Branch plans and coordinates economic and related studies on a variety of Corps projects. The Corps must be sensitive to appearing to be a project proponent, underscoring the need to give projects a comprehensive, unbiased evaluation.<sup>23</sup>

If the projections are correct, levees, reservoirs, pumping plants, and navigational improvements provide long-range economic benefits to various groups. During the high-water periods of the last decade, farmers and homeowners of the district had occasion to be thankful that a variety

of flood-control projects protected their property. The economic livelihood of a large recreational industry throughout the district is directly tied to the seven lakes built and operated by the Corps of Engineers. Also, hunting and fishing outfitters have a better market as a result of Corps-owned lands and mitigation projects such as the greentree reservoirs.



Somewhat more controversial are the economic benefits associated with navigation. Residents along the lower Pearl argued through the period about the districts' tonnage projections if the old system of locks were brought out of caretaker status. Tonnage on the Mississippi has been off in recent years, a phenomenon that is related to the sluggish nature of the national economy. The Ouachita River Navigation Project, while not fully complete, was the subject of great debate concerning projected shipping and actual use of a half-completed project.<sup>24</sup> The completed portions of the Red River had a similar experience. Although the river was not open in 1986 for year-round navigation upstream above mile 87, towing of construction materials for the project and for state projects was active there, but opposite sides of the issue predicted feast or famine, based on predictions and calculations.

Outside the Vicksburg District, for example, the Kerr-McClellan Inland Waterway on the Arkansas River was carrying only about half the anticipated tonnage, and the Tennessee-Tombigbee was doing much less.<sup>25</sup> It remained to be seen if an improved



economy and changes in transportation costs would make waterborne commerce more attractive. In any case, within the district, cities like Alexandria, Louisiana, and Camden, Arkansas, were readying themselves to take advantage of the economic possibilities provided by the Ouachita and Red River systems; Shreveport, Louisiana, was anxiously awaiting the same opportunity. For example, studies have indicated that billions of dollars in industrial investment and millions of dollars in other related benefits have occurred as an improved waterway matures.<sup>26</sup>

Even the most faithful projections can go awry because of the economic assumptions that are the necessary basis for the Corps' calculations, economist Jeffrey Karrenbrock of the Federal Reserve Bank of St. Louis observed, in looking back at the estimates of river traffic on these tributaries. The anticipated boom in demand never materialized, however,

as agricultural and coal exports fell and the U.S. economy entered a recession in the early 1980s. For various reasons, including the grain embargo of the Soviet Union and slow economic growth abroad, U.S. agricultural and coal exports fell 20 percent and 30 percent, respectively, between 1981 and 1983.<sup>27</sup> However, he made clear that, for several reasons, this trend will probably change by the next century.



First, cargo carried on the inland waterways system is expected to slowly increase through the year 2000. The expected average annual growth of tonnage to be carried on different segments of the system between 1986 and 2000 is [between 3 and 4 percent] . . . a second factor is the ongoing improvement of the system's locks and dams [and ] the Inland Waterways Trust Fund, . . . available for construction and rehabilitation expenditures for navigation on the inland and coastal waterways.<sup>28</sup> These factors require the Corps to take a "big picture" approach when studying navigation benefits, rather than a strictly local "plus or minus" computation.

Despite the recent decline in river traffic, other aspects of the district's water resources have become much more valuable than predicted. Flood control, hydroelectric power, channel stabilization, improved water-supply systems, fish and wildlife, recreation, related economic development, and redevelopment of riverfront areas are all responsible for benefits that have increased since the projects were planned.



However, some environmentalists and researchers have pointed out that flood-control and water drainage projects encourage future depletion of wetlands. For instance, a recent economic study offered "evidence which contrasts sharply with the accepted wisdom among policymakers . . . public investments in wetlands create major incentives to convert these areas to alternative uses." Policy analyst Robert Stavins and economist Adam Jaffe gave two main reasons: First, construction of federal flood-control and drainage projects caused a higher rate of conversion of forested wetlands to croplands than would have occurred in the absence of projects. [And] federal projects had this impact because they made agriculture feasible on land where it had previously



been infeasible, and because, on average, they improved the quality of feasible land.<sup>29</sup>

Nonetheless, the location in the region of completed water projects has enhanced the economic development prospects for many towns and communities. For example, former Mayor Richard Darby of Sardis, Mississippi, said that “Sardis Lake is a big drawing card for industrial development. We recently had a group of Koreans visit, and they were interested to locate an industry in our area. I [took] them out to see the lake.”<sup>30</sup>

## Chapter Six Notes

<sup>1</sup>Data from Civil Works Operations Branch, USACE, Nov. 4, 1987; “Hydropower” (Office of the Chief of Engineers: Washington, 1987), EP 1165-2-317, pp. 1-3.

<sup>2</sup>George E. Halford, “Hydropower and the Vicksburg District,” PAO News Release, Oct. 3, 1984.

<sup>3</sup>Calculations based on data provided by James Colwell, Superintendent, Blakely Mt. Dam and Power Plant, Feb. 3, 1987 and Oct. 6, 1991.

<sup>4</sup>Halford, “Hydropower,” p. 2.

<sup>5</sup>George E. Halford, “Corps Involvement In South Arkansas Up To \$135 Million, Part III,” PAO News Release, Apr. 6, 1984.

<sup>6</sup>Vicksburg District, “Data For Testifying Officers On FY 1987 Civil Works Budget, Red River Waterway-Mississippi River to Shreveport, Louisiana,” Program Development Office, Jan. 1, 1986, p. 15.

<sup>7</sup>Interview with Bob Butler, resource manager at DeGray Lake, 27, 1987.

<sup>8</sup>Interview with Sheriff James Carmack, Montgomery County, Apr. 28, 1987.

<sup>9</sup>J. E. Metzger and E. J. Stenejhem, *A Framework for Projecting Employment and Population Changes Accompanying Energy Development, Phase I, ANL/AA-14* (Chicago: Argonne National Laboratory, 1976), pp. 26-35.

<sup>10</sup>*Ibid.*, pp. 85-95; see also *The Multiplier Aspects*, Technical Report N-35/ADAO57936 (CERL, 1977).

<sup>11</sup>Donald R. Andrews, “An Export-Base Analysis of Louisiana’s Petroleum Driven Economy,” *The Annals of Regional Science* 21 (1987): 72.

<sup>12</sup>“Data for Testifying Officers,” p. 9.

<sup>13</sup>Interview with Ms. Eunice Platt, Director, Ouachita River Association, June 8, 1987.

<sup>14</sup>Interview with Grady Mitcham, Project Engineer, June 9, 1987.

<sup>15</sup>*Ibid.*

<sup>16</sup>*U.S. Department of Commerce, Statistical Abstract of the United States* (Washington: GPO, 1977, 1987, and 1992).

<sup>17</sup>Michael T. Belongia, “The Farm Sector in the 1980s: Sudden Collapse or Steady Downturn?,” *Review*, Federal Reserve Bank of St. Louis, November 1986, pp. 17-25.

<sup>18</sup>*Yazoo River Navigation Project, Volume I — Economic Base* (Wilbur Smith and Associates, 1982), pp. 2:3-19.

<sup>19</sup>*Economic Base Study, Boeuf-Tensas Basin, Arkansas and Louisiana* (Vicksburg: U.S. Army Engineer District, 1980), pp. 44-63.

<sup>20</sup>*Economic Base Study: Southwest Mississippi Tributaries Basin* (Baton Rouge: Gulf South Research Development Corporation, 1984), pp. 41-53.

<sup>21</sup>“Data For Testifying Officers, FY 1976 to FY 1991 Civil Works Budgets,” appropriation histories for various projects, Program Development Office, Vicksburg District.

<sup>22</sup>*Economic Land Use Analysis of the Natchez Area, Mississippi* (NY Associates, 1976).

<sup>23</sup>“Analysts’ job has varied challenges,” *Mainstem*, Vol. 9, No. 91-4, 1991, p. 8.

<sup>24</sup>“Data For Testifying Officers On FY 1987 Civil Works Budget, Ouachita and Black Rivers,” Program Development Office, Jan 1, 1986, p. 14.

<sup>25</sup>“It’s a boon, not a boondoggle,” *Russellville Daily Courier Democrat*, June 5, 1983; “Ten-Tom Prosperity,” *The Washington Post*, Dec. 26, 1986, p.1.

<sup>26</sup>See, for example, *Industrial Growth in the Arkansas River Region in Arkansas, 1968-1977* (Little Rock: U.S. Army Engineer District, 1979); "Taming the Arkansas: A Pork Barrel Pays Off," *U.S. News and World Report*, July 30, 1979, p. 46-47; and Lloyd G. Antle, "Waterways as Catalysts for Economic Development" (Unpubl. MS., Oklahoma State University, 1979), p. 6.

<sup>27</sup>Jeffrey D. Karrenbrock, "The Mississippi River System and Barge Industry," *Pieces of Eight*, The Federal Reserve Bank of St. Louis, Dec. 1990, p. 7.

<sup>28</sup>Karrenbrock, p. 8.

<sup>29</sup>Robert N. Stavins and Adam B. Jaffe, "Unintended Impacts of Public Investments on Private Decisions: The Depletion of Forested Wetlands," *Amer. Econ. Rev.*, June 1990, 80(3), p. 349.

<sup>30</sup>"Sardis facility put to good use," *Oxford Eagle* (Miss.), Aug. 10, 1990.