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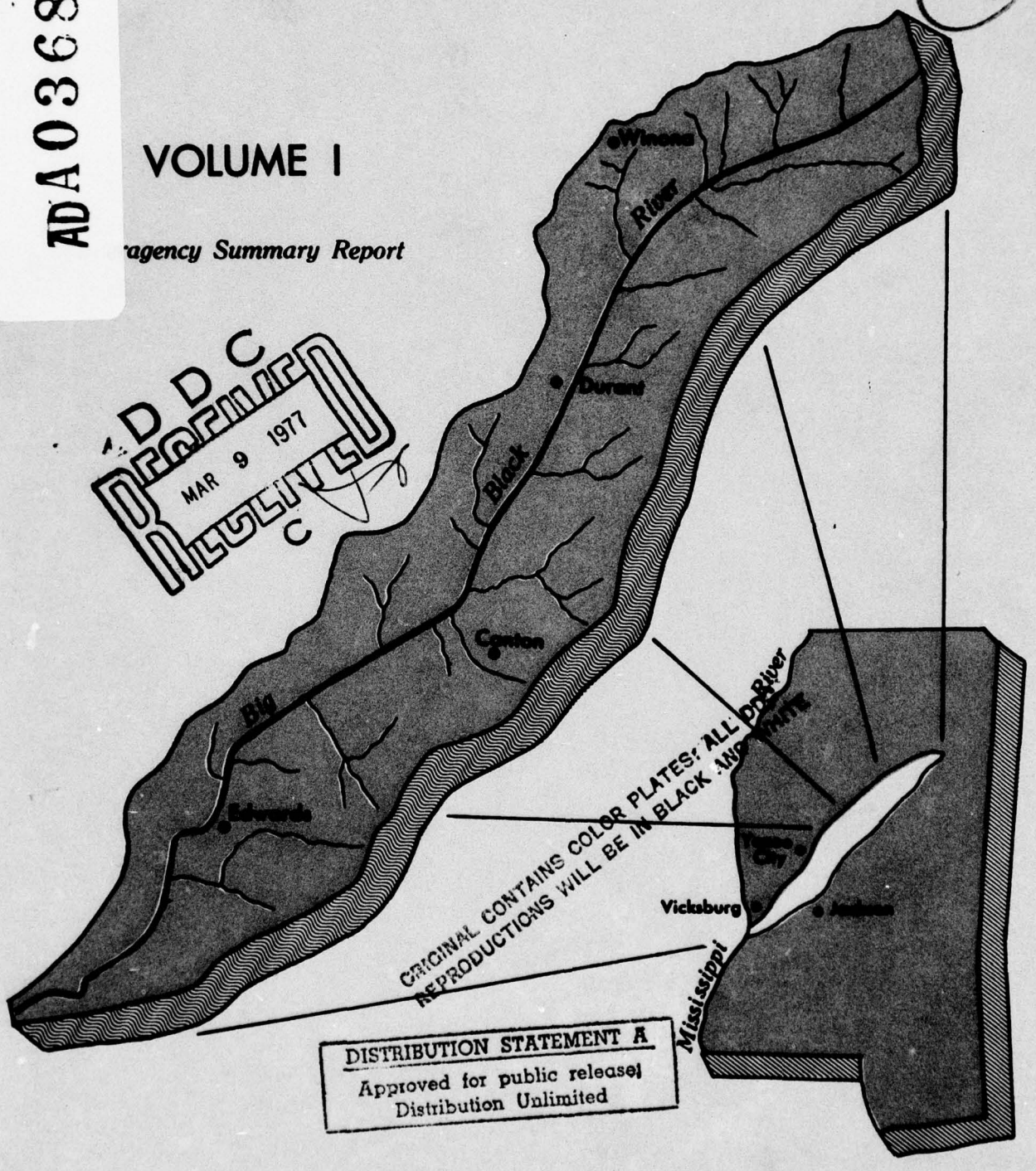
BIG BLACK RIVER, MISSISSIPPI

COMPREHENSIVE BASIN STUDY

VOLUME I

Agency Summary Report

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BIG BLACK RIVER COMPREHENSIVE BASIN STUDY

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BIG BLACK RIVER, MISSISSIPPI

COMPREHENSIVE BASIN STUDY.

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Volume I.

INTERAGENCY SUMMARY REPORT.

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Prepared by

BIG BLACK RIVER BASIN COORDINATING COMMITTEE, Vicksburg, Miss.

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This report of the Big Black River Basin Coordinating Committee was prepared at field level and presents a proposed plan for the development and management of the water and related land resources of the Big Black River Basin. The report is subject to review by the interested Federal agencies at the departmental level, by the Governor of the State of Mississippi, and by the Water Resources Council prior to its transmittal to the President of the United States for his review and ultimate transmittal to the Congress for its consideration in authorizing Federal participation in implementing the plan.

SYLLABUS

This report presents the results of the comprehensive study of the water and related land resources of the Big Black River Basin. The objective of the study was to formulate a plan of development which would provide the best use or combination of uses of these resources to satisfy the immediate and long-range needs within the basin. Analysis was based on a 50-year projection of the basin's economy.

The study revealed that the principal needs are for flood protection on the main stem and tributaries of the Big Black River, recreation facilities throughout the basin, fish and wildlife conservation, and agricultural land and water management. The most practicable means of satisfying these needs is through a comprehensive plan consisting of early-action and long-range programs. The early-action program consists of those projects that are needed and are economically feasible for construction in the next 10 to 15 years.

Features of the early-action plan of development include:

a. Upstream watershed development for 32 of the basin's 37 watersheds and land treatment measures and critical area stabilization in all watersheds. This upstream watershed development includes construction of 186 floodwater retarding structures, 17 multiple-purpose structures, and approximately 900 miles of channel improvement. Total cost of this feature of the plan is $61,000,000, which includes $23,068,000 for land treatment measures and critical area stabilization in all 37 watersheds. Excluding land treatment measures and stabilization of critical land areas, annual charges are $1,667,000 and annual benefits are $3,320,000, giving an overall benefit-cost ratio of 2.0.

b. Expansion of two existing recreational areas, the Holmes County State Park and the Choctaw Lake Recreation Area in the

Tombigbee National Forest, to supplement the recreation facilities provided at the multiple-purpose floodwater retarding structures. The total first cost of this expansion is about $430,000, with an annual charge of $15,000. The annual recreation benefit resulting from these projects is approximately $90,000, giving a benefit-cost ratio of 6.0.

c. The plan of development also includes these nonstructural measures:

(1) Intensive management program for utilizing the existing public wildlife areas.

(2) Coordinated program for utilizing the fishery resources of the basin.

(3) Continuation of the land management programs in the basin.

(4) Enforcement of the water quality control standards proposed by the State of Mississippi and the Federal Water Pollution Control Act.

(5) Support for the Mississippi State Board of Health in developing a program for surveillance and improvement of the basin's public drinking water supplies.

(6) A program of nonstructural flood control measures consisting of the following:

(a) Public information and education through Corps of Engineers flood plain information reports and technical services to the end that management programs for controlling and regulating the economic use of flood plains may be more effectively implemented.

(b) Action, at the State and local level, to fully utilize information relative to flood plain management in the development of plans to guide in the utilization of flood plains.

(c) The continuing improvement of the U. S. Weather Bureau flood forecasting and warning services.

The long-range program consists of those projects recommended for consideration in the future when there is an additional need for water resources improvements in the basin. Features of the long-range plan of development include: a main stem reservoir, tributary reservoirs at selected sites, five tributary upstream watershed projects, a navigable waterway project linking Jackson with the Mississippi River, and the expansion of existing recreational areas.

The Coordinating Committee recommends:

a. That the 1980 Plan of Development, as formulated in this report, be adopted as the Comprehensive Plan for initial development of the water and related land resources of the Big Black River Basin.

b. That the projects presented in the long-range plan of development be given further consideration at such time as the economic development of the basin warrants.

SUMMARY REPORT
COMPREHENSIVE BASIN STUDY
BIG BLACK RIVER BASIN, MISSISSIPPI

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SUMMARY REPORT
COMPREHENSIVE BASIN STUDY
BIG BLACK RIVER BASIN, MISSISSIPPI

1. INTRODUCTION

a. Authority. The Comprehensive Study of the Big Black River Basin, Mississippi, is one of the original 16 Type II Studies of the United States. These studies are in response to recommendation No. 1 of the Senate Select Committee on National Water Resources in its report of 30 January 1961. The recommendation states: "The Federal Government, in cooperation with the States, should prepare and keep up to date plans for comprehensive water development and management for all major river basins of the United States . . ." To coordinate this program, a Water Resources Council was established. Members of the Council are: the Secretary of Agriculture; Secretary of Army; Secretary of Health, Education and Welfare; Secretary of Interior; Secretary of Transportation; and the Chairman of the Federal Power Commission. The program provides for a group of framework studies covering the nation (except Alaska) and a group of detailed basin and subbasin comprehensive studies. These studies will provide a basis for authorization of specific projects or groups of projects. The program, now approved, includes a detailed comprehensive basin report on the Big Black River, Mississippi.

b. Purpose and scope. The purpose of this study is to determine the best plan for developing the water resources of the Big Black River Basin. The aim is to satisfy the 1980 and 2015 needs within the basin for flood control, water supply, hydroelectric power, recreation, pollution abatement, irrigation, and fish and wildlife conservation. To achieve this aim a coordinated planning effort among study participants was needed. This was accomplished through a Coordinating Committee. The Corps of Engineers acted as chair agency for the Committee, which was composed of representatives of the U. S. Departments of Agriculture; Army; Commerce; Health, Education, and Welfare; and

Interior; the Federal Power Commission; and the State of Mississippi. The main functions of the Committee were to assure a full and continuing exchange of views during the study; to help resolve study problems as they arose; to advise participating agencies with regard to objectives, task assignments, and schedules; and periodically to review the progress being made. The participating agencies determined the water resources needs of the basin and the means of satisfying these needs. The detailed results of these studies are contained in the reports of the agencies. These reports are outlined in the following paragraphs and are contained in the accompanying volumes. The purpose of this Summary Report is to summarize the findings of these agencies and to present the proposed plan of improvement.

(1) The U. S. Department of Agriculture conducted investigations in upstream watersheds to determine the extent of flood damages, needs for accelerated land treatment measures and critical area stabilization, potential sites for storage of water for irrigation, recreation and fish and wildlife enhancement, and made feasibility studies of control measures which could economically meet the basin's needs. In addition, an Agricultural Economic Base study was prepared showing present and projected land use, size and number of farms, farm income and other agricultural-economic parameters. The report of the U. S. Department of Agriculture is contained in Volume II, Annex A.

(2) The report of the U. S. Army Corps of Engineers contains hydrology studies concerning previous storms and floods; flood flow frequency and design floods; flood damage studies; detailed engineering studies of alternative plans of improvements; and estimates of costs and benefits for each of the improvement plans investigated. The U. S. Army Corps of Engineers' report is contained in Volume III, Annex B.

(3) The Bureau of Outdoor Recreation, Department of the Interior, investigated the recreational aspects of water resources development within the Big Black River Basin. These studies included:

(a) an evaluation of the demand, supply, and need for recreational areas within the basin; (b) a determination of the recreation benefits that could be expected from each of the improvement plans considered; and (c) the development of a recreational plan of improvement for the basin. The report of the Bureau of Outdoor Recreation is contained in Volume IV, Annex C.

(4) The report of the Bureau of Sport Fisheries and Wildlife, Department of the Interior, contains an inventory of fish and wildlife resources in the basin, the expected benefits and losses to fish and wildlife with the proposed plan of improvement, and recommended measures for developing the fish and wildlife resources of the basin. This report is contained in Volume IV, Annex D.

(5) A water supply and water quality control study of the basin was made by the Federal Water Pollution Control Administration, Department of the Interior. This study included an investigation of the need for surface water storage and an estimate of the minimum stream flows required to maintain an acceptable quality of water in the basin streams. Volume IV, Annex E, contains the results of this study.

(6) The U. S. Geological Survey, Department of the Interior, conducted a study to determine the ground water resources and general geology of the basin. Included in this report is an inventory of water use in the basin and a survey of the existing geologic aquifer systems underlying the basin. Volume IV, Annex F, contains the report of the U. S. Geological Survey.

(7) The National Park Service, Department of the Interior, prepared a report on the archeological and historical resources in the basin. Included in this report is an assessment of the existing areas of historical interest and an inventory of the areas which should be preserved. This report is contained in Volume IV, Annex G.

(8) The Federal Power Commission determined the need for hydroelectric power within the basin. This report includes the past

and estimated future power requirements for the basin, and an inventory of potential hydroelectric projects. Volume V, Annex H, contains the results of the Federal Power Commission's investigations.

(9) The report of the State of Mississippi entitled "State Laws, Policies and Programs pertaining to Water and Related Land Resources," was prepared to coordinate the plan of development for the basin with existing policies and state laws governing water resources. This report is contained in Volume V, Annex I.

(10) The Southeastern Power Administration of the Department of the Interior, the Department of Commerce, and the Department of Health, Education and Welfare through the Public Health Service also participated in the investigation but did not prepare reports. These agencies reviewed the results of the investigation and furnished comments on the final report.

c. Prior reports. Prior basin reports are summarized below.

(1) Reports of 1902 and 1913. The Corps of Engineers investigated the feasibility of navigation improvements on the Big Black River in 1902 and 1913, but submitted unfavorable reports on both occasions.

(2) House Document No. 72, 73rd Congress, 1st Session (1932). This report, dated 1 March 1932, contains the results of studies by the Corps of Engineers to determine the feasibility of providing navigation, irrigation, flood protection, and hydroelectric power development in the Big Black River Basin. None of the projects considered in this study were economically justified at that time.

(3) Condensed report on Big Black River and tributaries, Mississippi, 7 March 1934. This report contains a synopsis of House Document No. 72.

(4) Definite project report, 25 January 1937. This report was submitted by the Corps of Engineers pursuant to the Flood Control Act of 1936. The plan of improvement for the Big Black River included construction of cutoffs, together with clearing and snagging of the river channel.

(5) Letter report, Big Black River and tributaries, 24 June 1939. This report, prepared by the Corps of engineers, presents a study of the conditions and efficiency of the Big Black River tributary channels in Webster, Choctaw, Montgomery, Carroll, and Attala Counties, and includes a recommendation that the improvement of the tributaries be limited to channel clearing and removal of drift, silt, and sand.

d. Improvements desired. Public hearings were held in Winona and Canton, Mississippi, on the 4th and 5th of November 1964, respectively. At these hearings the objective and plan of study was presented and local interests were requested to identify water resource problems within the basin. They expressed a desire for flood control works and improved drainage systems for their agricultural lands, but were not in favor of any improvements which would take cropland out of production. Local spokesmen favored the construction of impoundments in the wooded hill sections of the tributary watersheds with some type of main stem channel work, either cleanout, enlargement, or realignment. Several parties expressed a desire for a main stem reservoir above West, Mississippi, to protect the agricultural bottom land along the main stem below West. Since these hearings, the construction of a waterway linking Jackson to the Mississippi River has been proposed and the Mississippi Legislature has passed a bill creating a Waterway Commission in Hinds, Madison, and Warren Counties to study the feasibility of the waterway.

2. THE NATURAL ENVIRONMENT

a. Location and extent.

(1) The Big Black River is located in the State Of Mississippi. It rises in Webster County, and flows about 270 miles in a southwesterly direction to its confluence with the Mississippi River approximately 27 miles below Vicksburg. (See Plate 1.) The basin is 155 miles long and averages 22 miles in width, thus constituting a drainage area of approximately 3,400 square miles. The valley ranges in width from 1/2 mile to 3-1/2 miles from hill line to hill line, with an average width of approximately 2 miles.

(2) Bottom lands along the main stem of the river comprise one-tenth of the total drainage area. Portions of the flood plain of the Big Black River are characterized by two distinct levels. The area adjacent to the river is relatively narrow, flat, wooded, and is subject to overflow two or three times annually. The remaining area between the low-lying bottom land and the hill line rises to a higher elevation, creating a bottom shelf which is flooded less frequently and is therefore utilized more intensively for agricultural purposes.

(3) To evaluate the natural environment and economy of the basin, a base study area was established. This area, referred to as the "Big Black River Basin Study Area" or "Study Area" comprises the primary area that would be influenced by water resource projects within the basin. Included in this area are Montgomery, Webster, Choctaw, Carroll, Holmes, Attala, Madison, Yazoo, Warren and Claiborne Counties, and the western portion of Hinds County (see Plate 1). The basin's drainage area is referred to in the report as the "Big Black River Basin" or "Basin."

b. Historical and archeological development.

(1) Seventy-nine sites of historical and archeological interest have been located in the Big Black River Basin. Most of the sites occupy small creek valleys and adjoining highlands with very few in the Big Black River valley proper. The areas are primarily open villages or camp grounds with small burial mounds nearby. Many of the sites have been excavated by field parties or destroyed by agricultural activity and sheet erosion. Collections were made from most of the areas in the twenties and thirties, but recent surveys have been unproductive. Current archeological studies of the basin are being made to relocate known sites, and determine the effect of the basin's projected development on the archeological resources.

(2) Historic sites are also scarce in the drainage area. Early settlements and explorations were concerned with the Mississippi valley proper and areas in northeastern Mississippi and northern Alabama rather than the Big Black River Basin. (See Volume IV, Annex G.)

c. Topography. The Big Black River Basin lies within the "Hill Section" of Mississippi. The topography is characterized by belted layers of geologic deposits and ranges from rolling to hilly. Land surface elevations vary from about 60 feet, mean sea level, at the confluence of the Big Black and Mississippi Rivers to more than 500 feet, mean sea level, along the eastern rim of the basin. The highest and most rugged terrain is found in the upper reaches of the eastern tributaries of the Big Black River. Strong relief in portions of the basin has caused rapid erosion and the development of gullies in many places throughout the basin. These areas are presently unsuitable for development.

d. Geology and soils.

(1) The Big Black River Basin is characterized by a belted topography of aligned hills and valleys which parallel the inland border of the Gulf Coastal Plain. This belted topography is a result of the differential erosion of the deposits exposed in the basin. Other sedimentary deposits exhibiting a wide range in geologic age are also found within the basin. Studies of these sediments indicate the accumulation of a seaward thickening sedimentary wedge composed principally of deltaic deposits accumulated upon a basement of older rocks which outcrop in the uplands adjacent to the coastal plain.

(2) The basin is composed of four physiographic divisions which cross the area in a northwesterly direction. These are: North Central Hills; Jackson Prairies; Long Leaf Pine Hills; and Loess or Bluff Hills. These physiographic divisions differ in topography, geology, soils, and type of vegetation present.

(a) The North Central Hills Division is a broad sand hill upland dissected by numerous streams. Outcropping formations consist of irregularly bedded sand and clays, some of which are glauconitic or lignitic. A mantle of windblown silt thinning in an easterly direction covers much of the western area.

(b) The Jackson Prairie is a rolling landscape with wide stream bottoms. The area is covered by a thick mantle of windblown silt with outcrops of calcareous clays containing some sand and marl.

(c) The Long Leaf Pine Hills is a broad upland area located in the extreme southeast portion of the basin. The topography is gently sloping to steep with wide ridge tops that are remnants of an old plateau. Outcropping formations are Forest Hill Sand, Vicksburg Limestone, Clays and Marls of Oligocene age and Catahoula Sandstone of Miocene age.

(d) West of the Long Leaf Pine Hills is the Loess or Bluff Hills. This area is a steep upland dissected by deep gorges. Geologic material consists of windblown silt deposits fifty feet or more thick near the Mississippi Delta bluffs and decreasing in thickness in an easterly direction. Under the silt deposits are outcropping formations of the Cockfield Formation, Jackson Group, Forest Hill Sand, and Catahoula Sandstone.

e. Natural resources.

(1) Land use and cover. The three major land-use distributions in the Big Black River Basin Study Area are forest land, cropland and pasture land. These three categories comprise 93 percent of the study area's land use. Forest lands make up 57 percent of the use. The major forest types are loblolly-shortleaf pine found in the northern part of the study area; oak-pine and oak-hickory in the southern part of the study area; and oak-gum-cypress found on lands adjacent to the Big Black River. Croplands comprise about one-fifth of the total land area. The principal crops are corn, cotton, soybeans, and hay. These crops account for 88 percent of the total harvested land within the basin study area. Other crops found in the basin are sorghum, potatoes, sugarcane, vegetables and fruits.

(2) Fish and wildlife. All game species common to the State of Mississippi are found in the Big Black River Basin. Quail,

squirrels, and rabbits are found throughout the study area in fairly large numbers. Moderate populations of deer are present, while turkeys occur in smaller numbers and in limited areas. Waterfowl habitat is found in overflow bottoms along the major tributaries and the Big Black main stem. A number of oxbow lakes add diversity to the waterfowl habitat and moderate populations of resident and migratory waterfowl make annual use of the area. Fur resources have gone virtually untapped by local trappers over the past several years and populations of mink, raccoon, and opossum are relatively high. Beavers are present throughout the Big Black River system and resulting beaver ponds have created fish and waterfowl habitat, but usually with accompanying drainage problems. Fishery resources consist mainly of catfish taken from the Big Black River and natural lakes, and game fish (principally crappie, bluegill, and bass) from natural and artificial lakes, streams and farm ponds.

(3) Mineral resources.

(a) Mississippi's mineral production in 1964 amounted to $212 million. Mineral fuels, petroleum, natural gas, and natural gas liquids were the most important mineral commodities, representing 87 percent of the total value.

(b) The counties within the Big Black River Basin Study Area that contribute substantially to the state's mineral production are Carroll, Hinds, Holmes, Madison, Warren, and Yazoo. These counties produce petroleum, natural gas, sand and gravel, clays, cement, and stone.

(4) Timber resources.

(a) Commercial forest lands cover more than half of the study area. Since 1947, these forest lands have increased in total acreage by 6 percent. This increase resulted from accelerated tree planting under the Soil Bank Conservation Reserve Program and the conversion of marginal lands and croplands to forest.

(b) The wood supply of the basin is derived from trees standing on commercial forest lands. In 1956, these trees contained 897.3 million cubic feet of hardwood and softwood forest-growing stock. This would yield 2.9 billion board feet of sawtimber. Seventy-nine percent of this sawtimber was hardwood species and 21 percent was softwood. The hardwood types include oak-hickory, elm-ash-cottonwood and oak-gum-cypress. The upland forest types include loblolly-shortleaf and oak-pine.

(c) By 1980 the hardwood and softwood species will increase by 60 percent over the 1956 volume. The 2015 volume is expected to be greater than the 1956 inventory but not as large as the 1980 volume. Hardwood will remain the major species but by 2015 will be down to 66 percent of the total inventory volume.

f. Hydrology.

(1) Stream channel characteristics.

(a) The Big Black River Channel ranges in width from approximately 90 feet in the headwater section above Kilmichael, Mississippi, to almost 250 feet in the Mississippi River backwater area below Bovina, Mississippi (see Figures 1 and 2). Channel bottom slopes vary from 2.5 feet per mile above Kilmichael to 1.0 foot per mile below Kilmichael with corresponding low water surface slopes. Bank heights along the river average 15 to 25 feet above the normal low water surface.

(b) Numerous tributaries enter the Big Black River at frequent intervals throughout its length. These tributaries, few of which are over 20 miles in length, vary in width from a minimum of 2 feet to a maximum of 80 feet. Very little maintenance work has been done on the tributaries and as a result many channels are obstructed by fallen trees, brush, and growth in the channel.

(2) Climate. The area in which the Big Black River Basin is located is characterized by long hot summers and short moderate winters. In the summer, temperatures range from 65° F. to above



Figure 1
Big Black River above Kilmichael, Mississippi



Figure 2
Big Black River below Bovina, Mississippi

100° F. Winter temperature readings below zero are uncommon, as are sustained periods of subfreezing weather. Average monthly temperatures range from 50° F. in the winter to 80° F. in the summer. The average annual temperature is 65°.

(3) Precipitation. Rainfall throughout the Big Black River Basin is heavy, averaging about 52 inches annually. Monthly rainfall averages range from 2.1 inches in October to 5.6 inches in March with the period from November to May incurring the highest monthly average of 5 inches. The most intense storm rainfalls occur during the winter and early spring. Snowfall is light, averaging about 2 inches annually and rarely lasting longer than three days.

(4) Runoff. Runoff from the area fluctuates considerably. Depending upon antecedent conditions, rainfall intensity, and season of the year, runoff in the Big Black River drainage area varies from about 10 percent of rainfall in the summer and fall to a maximum of 85 percent during the winter and early spring. Annual runoff from the area averages approximately 17 inches.

(5) Streamflow characteristics.

(a) Gaging stations have been maintained on the main stem of the Big Black River at Kilmichael, West, Pickens, and Bovina since 1936. A fifth gaging station was established approximately 3 miles upstream from Bentonia, Mississippi, in 1939. This station was discontinued when the gage at Bentonia was established in 1947.

(b) Most of the streams tributary to the Big Black River in the upper half of the basin are perennial. In the lower half of the basin, flow in most tributaries normally stops for some period each year. During dry periods, two-thirds of the flow of the Big Black River is from the perennial tributaries in the upper half of the basin. The remaining one-third of the dry-season flow is gained from the flood plain alluvium in the lower half of the basin.

(6) Geohydrology. Large quantities of good quality water are available from several of the geologic units underlying the

basin. At most places, water of good quality may be developed from two or more aquifers, each of which will yield more than 1,000 gallons per minute (gpm) with reasonable drawdown. Well fields in each aquifer will produce more than 10 million gallons per day (mgd). Quality of the ground water is variable, but it is suitable for most needs. Aquifers in the southwestern part of the basin yield a higher content of dissolved solids than in other sections of the basin. Also, the deeper a well at a site the higher will be the dissolved solids content of the water. Shallow ground water (less than 200 feet deep) in the basin contains about 100 ppm of dissolved solids. Ground water in the basin from more than 2,500 feet below land surface contains more than 1,000 ppm of dissolved solids. Brackish water can be found in some sections of the basin at depths of less than 2,500 feet. However, the fresh water base in most sections of the basin is more than 2,500 feet below the surface. (See Volume IV, Annex F.)

(7) Surface water. The Big Black River has a wide range of discharge as shown on Table 1. The period of greatest flow is in the months of January, February, and March during which several overflows occur along the river. The period of lowest flow is during the months of August, September, and October, though some flow is maintained in the river throughout the year. In the lower half of the basin, flow exceeds 100 c.f.s. 95 percent of the time. Most of this flow is from the artesian aquifers which outcrop along the tributaries in the upper half of the basin. These aquifers are full and overflowing, i.e., they receive water in the recharge areas in excess of the amount that will move down the dip of the aquifer. The excess is discharged through seeps and springs in the outcrop area to form the base flow of the tributaries.

TABLE 1
HISTORIC STREAM FLOWS
BIG BLACK RIVER

Gaging station	Drainage area (square miles)	Location (river mi.)	Period of record	Flow (c.f.s.) Maximum	Flow (c.f.s.) Minimum
Kilmichael	549	284	(1936-1960 (1964-1966	37,300	5
West	985	206	1936-1966	47,000	21
Pickens	1,460	160	1936-1966	49,400	27
Bentonia	2,340	106	1947-1966	66,500	39
Bovina	2,810	62	1936-1966	63,500	65

3. PRESENT AND PROJECTED ECONOMIC DEVELOPMENT

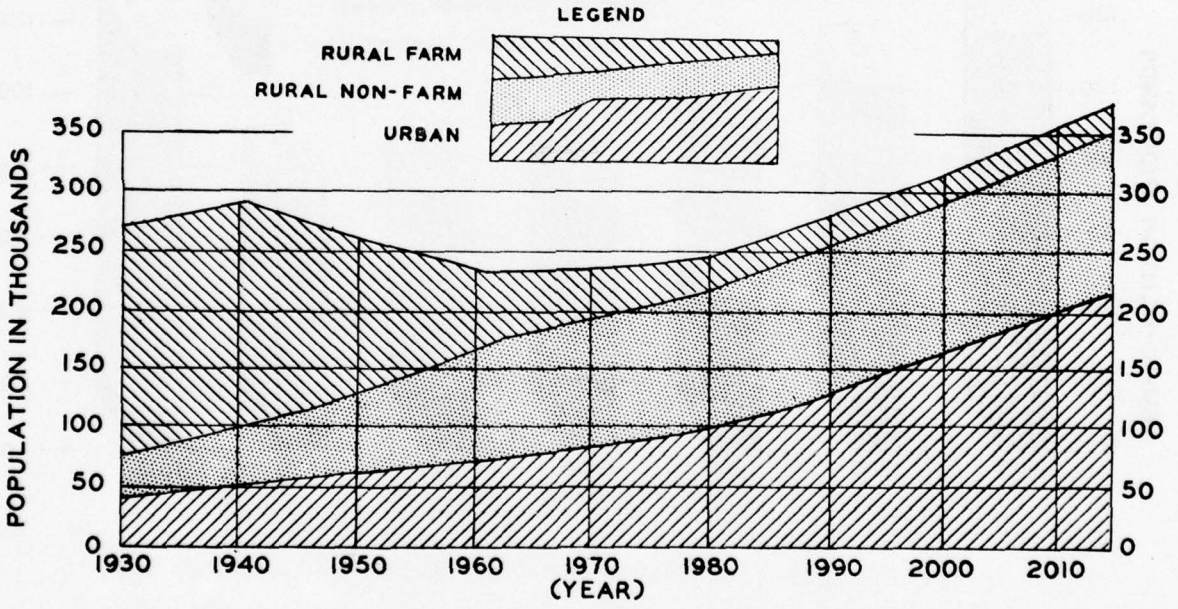
a. Introduction. Prior to commencement of detailed project studies, economic base studies were made to develop pertinent economic indicators for the basin. A general economic base study of the Big Black River Basin Study Area is contained in the "Report of the Economic Base Study for the Pascagoula, Pearl, and Big Black River Basins Study Area." Copies of this report, which was made by a private contracting firm for the Corps of Engineers, can be obtained from the Mobile District, Corps of Engineers. The Department of Agriculture made an "Agricultural Economic Base Study" of the area to analyze present and future agricultural resources and production in the basin. Copies of this report can be obtained from the Department of Agriculture, Economic Research Service, Jackson, Mississippi. Information from both of these reports is summarized in the following paragraphs.

b. Major economic indicators.

(1) Population. The Big Black River Basin Study Area (1960 population, 242,000) is a sparsely populated area averaging 34 people per square mile. The total population of the study area gradually increased until 1940, then began to decrease as agriculture became either mechanized or unprofitable. This trend in population is expected to reverse between 1960 and 1970 when urban growth in Vicksburg and Jackson combines to raise the area's population. The population is expected

to reach a peak of 379,000 by the year 2015. A large percentage of this increase is expected to come from Jackson's future population growth which is forecasted to expand into the Big Black River Basin Study Area. While statistically accounted for in the study area, the majority of these people will be employed in the Pearl River Basin. This provides the Big Black River Basin Study Area with increased population not related to employment within the study area. Population of the study area for the period from 1930 to 2015 is shown in Figure 3 below.

FIGURE 3
POPULATION BY MAJOR CATEGORIES
BIG BLACK RIVER BASIN STUDY AREA



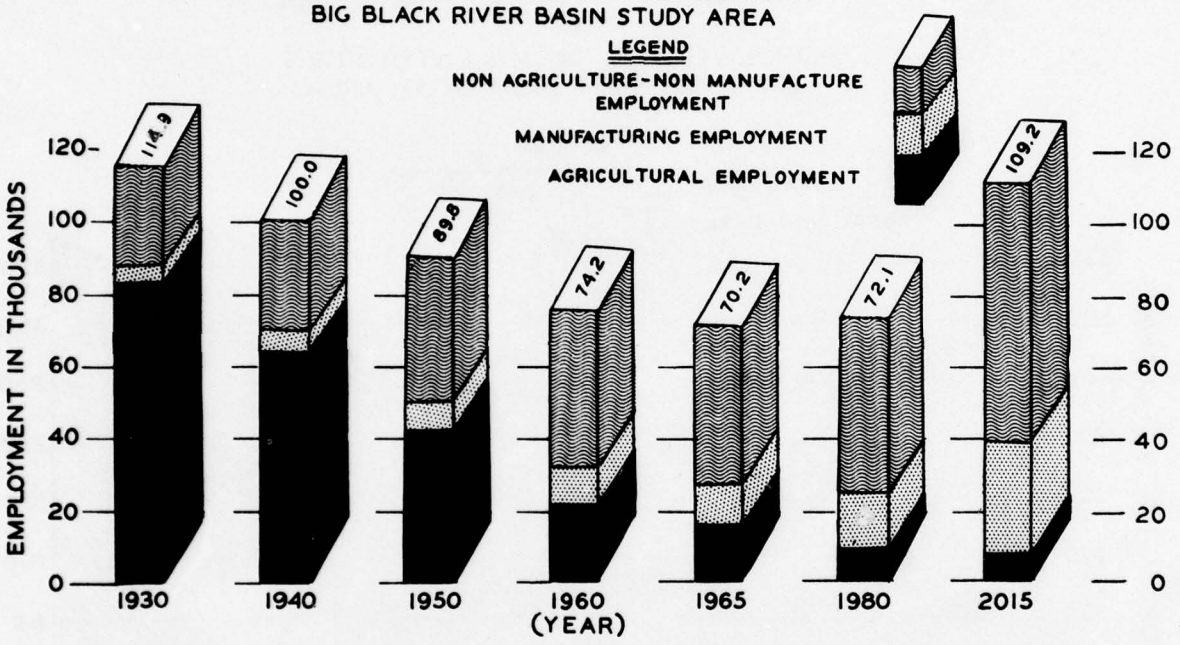
(2) Employment.

(a) The shift to mechanization in farm practices has brought a decrease in the demand for agricultural labor and as a result the total employment has declined. In 1940, there were 100,000 persons employed in the study area and 63 percent of these were in agriculture.

By 1960, the agricultural employment had decreased to 27 percent of the study area's total and the total employment declined to 74,000.

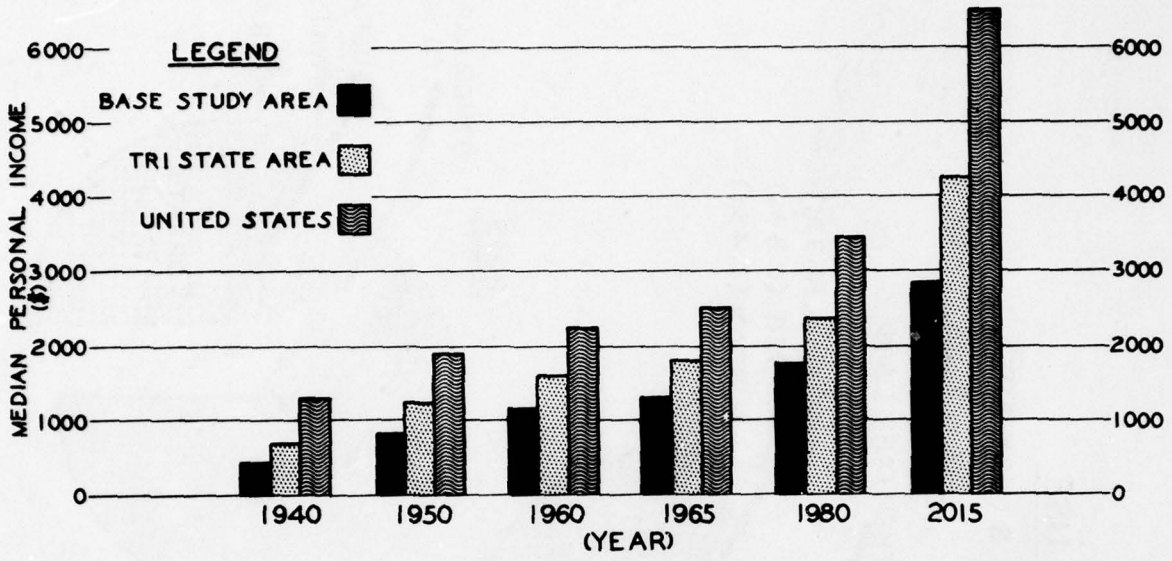
(b) During this same period, the percentage of employment in manufacturing and nonmanufacturing-nonagriculture groups has almost doubled. These two groups are expected to show a continued gain as a percentage of the total employment between 1960 and 2015. The figure below lists the study area's employment by groups.

FIGURE 4
EMPLOYMENT BY MAJOR CATEGORIES
BIG BLACK RIVER BASIN STUDY AREA



(3) Income. Per capita personal income in the study area rose 190 percent from 1940 to 1965, and is expected to almost triple in the 1965 to 2015 period. During this same period the increase in personal income in areas surrounding the study area should be greater. Figure 5 shows the median personal income for the study area, the United States and the tristate area. This tristate area includes the State of Mississippi, 19 counties in western Alabama and 12 parishes in southeastern Louisiana.

FIGURE 5
MEDIAN PERSONAL INCOME



(4) Major land-use categories.

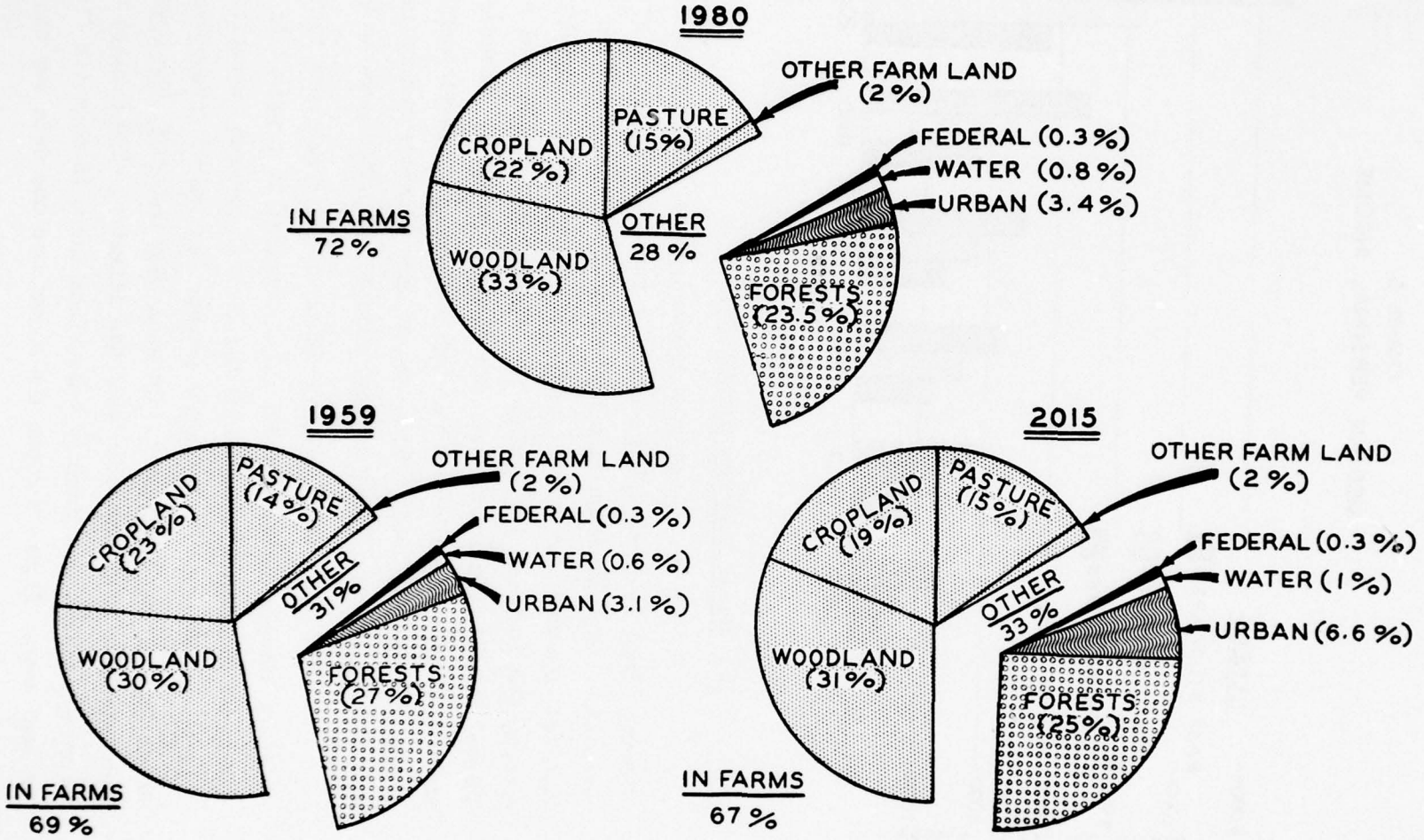
(a) The total land resource base is divided into two classes: land in farms and land not in farms. The land in farms is currently being withdrawn from agricultural use for urban and industrial uses and for related developments required to support the economy and increase in population. Highway development and recreational demand on the land base are notable examples. Reservoirs and other types of water and related land resource developments also require additional land. Urban use of land is projected to increase from 131,640 acres in 1959 to approximately 293,000 acres in 2015.

(b) The farm agricultural base is expected to increase slightly between 1970 and 1980. This increase is a result of farm operators purchasing fringe land adjacent to present operations to improve and expand farm forestry enterprises and to develop additional areas for soybean production. Between 1980 and 2015, the agricultural resource base is expected to decrease slightly. The decline will not adversely affect the farmland base since there is room for flexibility in land uses. Figure 6 shows the major land-use data for the study area.

FIGURE 6

MAJOR LAND USE

BIG BLACK RIVER BASIN STUDY AREA



(5) Agriculture and forestry.

(a) Agriculture.

1. Agricultural land is classified according to its use. The four major categories of use are: cropland, forest land, pasture, and other land.

2. Total cropland (harvested, pastured and idle) has undergone little change in the Big Black River Basin Study Area since 1934. The total acreage in cropland has decreased, but the major change has been the conversion of harvested cropland to pasture land. This trend will continue in the future as lands in pasture will increase and less acreage will be utilized for crops.

3. The farm woodland acreage has changed little in the past years. Clearing of the woodland areas has taken place and is expected to continue in the future, but uncultivatable lands on slopes and in eroded areas are being planted in trees to offset the clearing operations.

4. There are numerous types of farms within the study area, but cotton and miscellaneous-type farms have dominated the farm industry. Miscellaneous farms are those with 50 percent or more of the total sales coming from forest products, greenhouse products, and livestock. The cotton and miscellaneous farms have accounted for more than 80 percent of the farms within the basin during the last three census years. Figure 7 shows a typical farm in the basin. Future agricultural production in the basin is expected to emphasize feed crops, livestock products, poultry products, soybeans, and cotton. This will enable the basin to satisfy a part of the increasing demand for these products resulting from the increase in the U. S. population. The expanded demand for agricultural products must be met with fewer farms and farm people on essentially the same land base as presently exists. As a result, many of the basin's smaller farms are expected to be consolidated with the larger farm units.

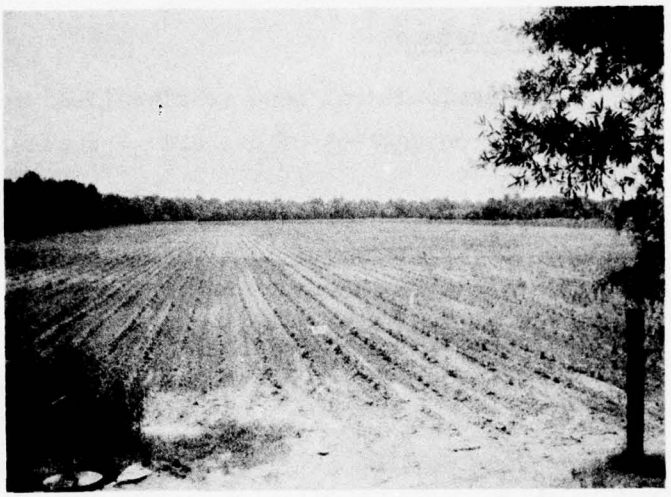


Figure 7
Typical Agricultural Lands in the Big Black River Basin

(b) Forestry. Forest lands occupy 2.5 million acres of the 4.3 million acres in the study area. These lands are 97 percent privately owned, with 57 percent of this in the farmlands sector. The income from these forest lands in 1956 was almost six million dollars. With better forest management and the addition of new timber-based industries in Vicksburg and in counties adjoining the basin, the income from these lands should increase. A part of this increased income will come from additional employment in the timber-based manufacturing industries. The lumber, wood, and furniture groups will increase their operations and employment, which in recent years have been declining. Employment in the pulpwood industries should also increase since the new plants will require 1,500 cords of pulpwood and 70,000 board feet of timber daily. Some of this wood will be taken from company-managed land, but a high percentage will be purchased on the open market.

(6) Manufacturing.

(a) Major water-using manufacturing industries.

1. Industrial employment reported by the 1964 Mississippi Manufacturers Directory shows that with the exception of the Vicksburg area very few water-use industries are currently located within the Big Black River drainage area. Employment in these industries is a small percentage of the study area work force.

2. In 1960, 1,800 workers, or 3 percent of the total study area work force, were employed in the water-using industries. This is projected to increase to 7,000 workers or 7 percent of the work force in 2015. Most of this projected increase will result from a major development of the paper industry in the Vicksburg area. The food, chemical, and petroleum industries are the only other water-using industries which are projected to show any employment gains.

(b) Other. The other manufacturing group includes all manufacturing industries not classified as major water users. This includes the textile, apparel, lumber, wood and furniture, painting, publishing, stone-clay and glass, fabricated metal products, machinery, and transportation industries. These industries employed 10 percent of the 1965 work force in the Big Black River Basin Study Area. One-half of this was concentrated in the lumber, wood and furniture industries. By 1980 and again by 2015, major employment gains will occur in the apparel, nonelectrical and electrical machinery groups. Most of these employment gains are attributable to the growth of manufacturing activity in the Vicksburg and Jackson areas.

(7) Nonagricultural-nonmanufacturing industries. Employment in the nonagricultural-nonmanufacturing industries in the Big Black River Basin Study Area in 1965 was 60 percent of the total 1965 employment. Gains in employment in these industries have occurred in recent decades and will continue through the year 2015 when the non-agriculture-nonmanufacture employment will be approximately 70 percent of the total labor force. These employment gains are a result of

population and income growth. The largest increases have been in wholesale and retail trade, and government employment. These two groups totaled 21,000 employees in 1965 or 50 percent of the area's nonagricultural-nonmanufacturing employment. By 2015, the wholesale and retail trade, government employment, and services employees are expected to comprise three-fourths of all nonagricultural-nonmanufacturing jobs in the basin.

c. Influence of projected economic growth.

(1) Flood control. The flood plains of the Big Black River are used primarily for agricultural purposes. There has been no development of industrial or urban areas within the flood plain in the past, nor are any significant developments expected in the future. Thus, there is not expected to be any additional need for flood control measures to protect industrial or urban development. Flood damages will then continue to be almost entirely agricultural losses. These losses will increase monetarily in the future due to the increase in cost of production and crop yields. If flood control projects are undertaken, production of the agricultural lands could be increased through more intensive use of these areas in and adjacent to the flood plain.

(2) Water supply and water quality control.

(a) The primary requirement of the basin's water resources is to supply domestic, municipal and rural water needs. As population continues to expand, with concurrent increases in living standards, additional emphasis will be placed on the water resources of the basin. Water use in the Big Black River Basin is currently light and is expected to remain light for the next 50 years. Present water supply needs are being satisfied from an abundant supply of good quality ground water. Future requirements are also expected to be met from ground water sources.

(b) Maintenance of water quality and reduction of stream pollution are essential to the future use of water as a natural resource. The increase in population will bring additional raw waste which, if discharged into the streams, would lower the water quality and eliminate the streams as a source of water supply. However, controls presently contemplated in the Federal Water Pollution Control Act and proposed legislation of the State of Mississippi will require secondary treatment of all waste prior to discharge into streams. With these controls in effect, water quality will not become a problem in the future. (See Volume V, Annex I.)

(3) Recreation.

(a) The projected economic growth for the Big Black River Basin Study Area over the next 50 years will increase recreational demands of the study area population and those people living in the adjacent Jackson, Mississippi, Standard Metropolitan Statistical Area. The increasing population will be a major factor in the greater demand for recreation opportunities. There will be more people desiring a place to swim, boat, camp, picnic, fish, and hunt.

(b) The trend of the American population to become more urbanized will also be evidenced in the study area by an increased urban population. The increase will be in the southern area in the vicinity of Jackson and Vicksburg. The larger population will desire outdoor recreation opportunities as a means of relieving the pressures of urban living. A nature walk or hike, a sightseeing drive, a fishing or camping trip will become more important as a means of relaxation. As the population increases and economic growth continues in the study area, the per capita personal income will increase. The greatest increase will be in the Jackson Standard Metropolitan Statistical Area, but the per capita personal income will also increase in the study area by the year 2015. People will have more money to "purchase" outdoor recreation opportunity or buy the necessary items to go on a weekend camping trip, a Sunday picnic, or a sightseeing drive.

(c) The availability of more time for leisure activities will also contribute to the expected increased demand for outdoor recreation opportunities. A work week of less than the present 40 hours is likely within the next 50 years and people will be seeking outdoor recreation to utilize much of their additional leisure time.

(4) Fish and wildlife conservation. The increased urbanization in the study area will also bring about localized needs for fishing and hunting which could be satisfied if the available resources of the basin are utilized. The resources, however, will be in areas removed from the localized urban demand. For this reason, flexibility in planning fish and wildlife developments should be maintained to allow for meeting localized needs.

(5) Navigation. The need for a navigable waterway on the Big Black River is dependent upon sufficient volume of those commodities that can be moved at a savings by barge transportation. The resources and trends of economic development in the basin are not favorable to the generation of large volumes of commerce for waterborne transportation. The exception to this is the need for a navigable waterway into the Jackson, Mississippi, area. Expanding industrial development and increased trade activity in the Jackson area could intensify the need for a navigation channel into Jackson in the future.

(6) Power.

(a) Electric power ranks among the largest industries in the country's economy. The growth of the power industry has brought a reduction in the cost of electricity relative to other goods and services. Load growth has been a factor in cost reduction by providing a steady and growing market for improved utility facilities. Future growth of the electric power industry will depend on the outcome of competition with other forms of energy. There has been no significant industrial or urban development in the Big Black River Basin in the past, nor is any expected in the near future. Therefore, there will

be no major economic expansion which will influence the growth of the power industry. However, general economic growth will increase the overall power consumption in the basin.

4. WATER AND RELATED LAND RESOURCE PROBLEMS AND NEEDS FOR DEVELOPMENT

a. Flood control needs.

(1) Main stem. The Big Black River flood plain is subject to headwater flooding which results from runoff from the flood plain and drainage from the hill section of the watershed. In addition, the flood plain up to approximately mile 60 is subject to backwater flooding from the Mississippi River. Under existing conditions, approximately 211,000 acres (46,000 acres cleared) are subject to overflow along the main stem of the Big Black River. Floods on the main stem occur approximately twice each year during the months of May to October, the major crop-growing season. Flood damages are primarily agricultural losses and are prevalent throughout the entire basin. There are no industrial or residential areas in the main stem flood plain and the improvements which are subject to flooding consist mainly of small farm structures and local roads. Agricultural damage, most of which is to crops, constitutes approximately 90 percent of the total flood damage. Presently, 45,000 acres are inundated annually along the main stem with an average annual flood damage of $236,000. This consists of $152,000 to crops and pastures and $83,700 to fixed improvements. Figure 8 shows a flood scene along the main stem of the river.

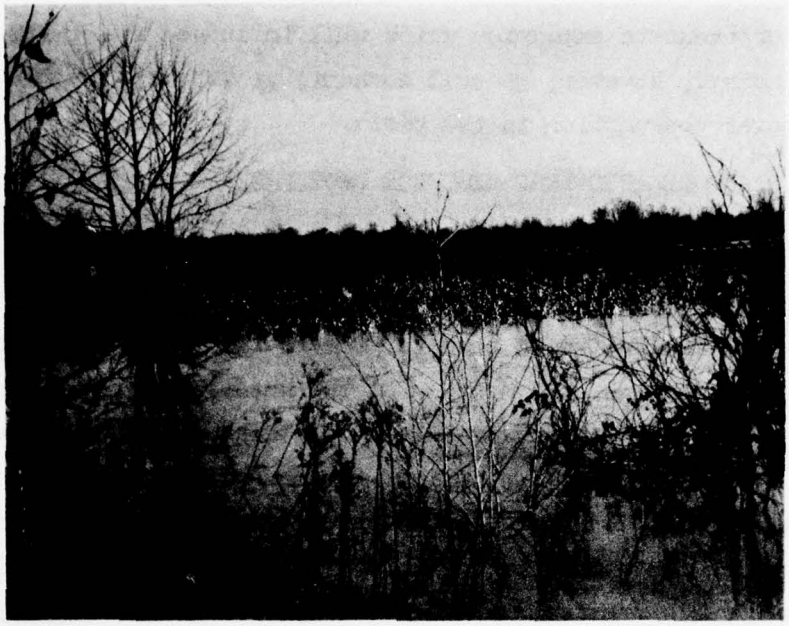


Figure 8
Flooded Cottonfield along Main Stem, Big Black River

(2) Tributary watersheds.

(a) Floods occur throughout the watersheds of the basin and losses are incurred along each of the tributaries. The tributaries overflow three or four times each year during the crop growing season, inundating approximately 276,000 acres. The total annual damage from these tributary floods is $2,337,000. The crops and pasture lands in the basin incur most of this damage, averaging a flood loss of $1,990,000 per year. Damages to fixed improvements on farms is $127,000 per year and the public roads and bridges incur flood damages of $219,000 per year.

(b) The primary cause of the overflows is insufficient channel capacities and obstructed stream beds. Most of the tributaries of the Big Black River are blocked by fallen trees, drift racks and growth within the channel. As a result, runoff from the hill areas of the basin overflows the bottom lands along the tributaries. (See Figures 9 and 10.)



Figure 9
Flood Scene along a Tributary of the Big Black River



Figure 10
Flood Scene along a Tributary of the Big Black River

b. Land conservation and management needs.

(1) Erosion. Change in land use from row crops to pasture and forests has decreased the erosion problem within the Big Black River Basin Study Area. There are 2,414,000 acres of land within the study area that have an erosion problem or are susceptible to erosion. Gully erosion has occurred on 80,000 acres within the basin. Open lands are the primary areas affected, with 60,000 acres having a critical gully erosion problem. The remaining 20,000 acres are in forest lands and have had some gully erosion. (See Figure 11.)



Figure 11
Erosion Scene, Big Black River Basin

(2) Sedimentation.

(a) Deposition of sediment is a minor problem in the basin. It does contribute to flooding by filling stream channels, thus causing added damages to crops, pastures, and fixed improvements. Monetary damages from sedimentation were evaluated and included with those of tributary watershed flood damages.

(b) The annual sediment yields from the various subwatersheds of the basin range from 700 to 2,000 tons per square mile of drainage area. The greater amount of sediment enters the system from gullied areas and from those having a high percentage of row crops. Eroding roadbanks contribute about 15 percent of the total sediment and are responsible for silting roadside ditches and culverts.

(3) Impaired drainage. There are 435,000 acres of land in the Big Black River Basin with drainage problems. Much of this land is located along the main stem of the river where adequate drainage systems have not been constructed because of frequent overflows. There are also areas along the tributary bottoms where complete drainage systems have not been constructed because of the frequency of flooding. An economic analysis of the drainage problems was made to determine the total average yearly reduction in net farm income because of inadequate drainage. The estimated average annual reduction in net income from inadequate drainage of open land is $1.8 million. No analysis was made of drainage problems on forested lands.

(4) Forest protection and management.

(a) Forest protection and management is needed in many sections of the study area to prevent gully and sheet erosion. There are open lands which should be planted in trees, forest lands which need additional treatment to reduce erosion, and undesirable tree species which should be removed. These areas need treatment with

trees, grasses, and cover plants to establish the needed cover on eroding land.

(b) In addition to treatment of these areas, improved forest management is needed on almost 1,000,000 acres within the basin. Practices such as growing the best species on the right site, marketing out the poor quality and poorly formed trees, and tree planting to put all the forest land into production, will increase forest production. Grazing of forest land is another practice within the basin that is detrimental to forest production. It will result in damage to watersheds through soil compaction, increased runoff, and loss of soil. Improved forest management and protection will substantially increase the quality and yield of forestry products.

c. Irrigation and rural water needs.

(1) Irrigation. Supplemental irrigation of crops is not widely used in the Big Black River Basin Study Area. In 1954, 167 farms reported using irrigation as a production practice and in 1959 this had decreased to 30 farms. The acreage irrigated was 6,498 acres in 1954 and 3,176 acres in 1959. A major factor affecting the use of irrigation to crops in the basin is the variation in the climatic conditions. There is sufficient gross annual rainfall in the area each year to support the farming industry, but variation in frequency and distribution of rainfall creates a lack of ample soil water during the growing season. These variations offer possibilities for application of irrigation to some crops in the basin. The extent to which irrigation practices are economical depends on the cost of irrigation. For irrigation to be profitable in the basin, the average farmer must be able to use an irrigation system which has a low development cost and a low operating cost.

(2) Livestock and rural domestic water. There is no need for additional water supply sources for rural domestic household and livestock uses. Adequate water is available from wells, springs, and streams in all parts of the basin. Farm ponds for livestock water

either have been or can be constructed on most of the farms. Water for household use is usually obtained from wells located near the farm or rural residences. Community water systems have been developed that use deep wells as a source of water supply. The quality of the water is good and presents no problem.

d. Municipal and industrial water supply. The water resources of the Big Black River Basin are currently underused, since the region is neither heavily populated nor industrialized. The domestic, municipal, and industrial water is supplied by wells from several geologic aquifer systems underlying the basin. Less than 500 acre-feet of surface water is diverted annually from streams for supplemental irrigation of row crops and practically all cattle in the basin are watered from either streams or ponds. The largest amount of water used in the basin by a single municipality in 1960 was 1.0 million gallons per day (m.g.d.) in Winona. The total ground water withdrawal, including water from many unused flowing wells, was about 10 m.g.d. in 1960 and 11 m.g.d. in 1965. In some areas adjacent to the basin, ground water withdrawal in 1960 was comparatively heavy with Jackson using 10 m.g.d., Yazoo City using 8 m.g.d., and Kosciusko using 2 m.g.d. None of the towns in the study area should experience any difficulty in doubling or tripling their ground water pumpage, which would provide quantities in excess of anticipated needs during the study period. Since there is sufficient ground water to serve the projected needs of the basin and both Jackson and Vicksburg, the major population centers sufficiently near the basin to use its waters are currently served by sources outside the basin, there will be no need within the study period for surface water storage.

e. Water quality.

(1) Surface water.

(a) The Big Black River is a stream of good quality water. A small amount of pollution enters the river and, except in

isolated areas, is not in sufficient quantity to degrade it. During periods of low stream flow, there are isolated areas where the water quality falls below the desired level for swimming or other water contact sports. The controls contemplated in the Federal Water Pollution Control Act and the proposed legislation of the State of Mississippi should help correct the condition in these isolated areas and maintain the good overall quality of the river.

(b) Four tributaries, Hays, Bear, Fourteenmile, and Bakers Creeks, have water quality problems during periods of low stream flow. (See Federal Water Pollution Control Administration Report, Volume IV, Annex E.) These problems result from the discharge of raw municipal waste into the tributaries. Enforcement of the water quality control standards being developed for the State of Mississippi should help correct these conditions.

(c) Prior to development of any improvements which would impound flows on the main stem or tributaries for water supply or recreational uses, additional sanitary studies would be needed to assure that the water would meet all Public Health Service standards for water contact sports or domestic use.

(2) Ground water. Initial water quality analyses have shown that ground waters throughout the basin are acceptable for most uses. In isolated areas of the basin, there are indications that certain chemical constituents of the water might exceed the desired level for domestic or irrigational uses. Thus, before large ground water developments are undertaken, detailed water sampling and analysis should be made to determine if treatment of the water will be necessary.

f. Recreation.

(1) The need for recreation development in the Big Black River Basin Study Area was determined by the Bureau of Outdoor Recreation (see Volume IV, Annex C). Actual per capita participation rates for water oriented recreation were obtained from the Outdoor

Recreation Resources Review Commission's (ORRRC) Study Report 19. Total participation (expressed in activity occasions) in various activities was then determined from the present and projected population of the counties and the SMSA (Standard Metropolitan Statistical Area) in the study area. The demand was further adjusted to reflect the variation in the per capita income of the study area from that of the general section of the country from which the participation rates were derived.

(2) The activities for which a demand was developed were swimming, boating, camping, picnicking, canoeing, and other activities (including nature study, hiking, sightseeing, and incidental fishing). A comparison of the demand for recreation and the supply of recreation resources was made and shows a deficiency of recreation facilities at the present, and an increasing deficiency throughout the study period. The estimated unsatisfied recreation demand (need) for the basin in 1980 and 2015 expressed in annual activity occasions is 3.6 million and 13.9 million, respectively.

g. Fish and wildlife.

(1) Sport fish and wildlife. The Bureau of Sport Fisheries and Wildlife appraised the fish and wildlife resources in the Big Black River Basin to determine the need for additional fishing and hunting opportunities. (See Volume IV, Annex D.) Per capita demand factors were derived from data extracted from the 1960 National Fishing and Hunting Survey. Total demand for the study area (expressed in man-days of activity) was determined from the population age group twelve years of age and older. This demand was then compared with the supply of available resources to determine the basin's net existing and projected need for fishing and hunting. There will be no need for additional fishing opportunities in the basin by 1980 or 2015. A need for 27,000 man-days of hunting is expected by 1980 with an increase to 149,000 man-days by 2015.

(2) Commercial fishery.

(a) The current and projected demand for commercial fishery products in the Big Black River Basin was developed from data provided by the Bureau of Commercial Fisheries. Demand projections are based on study area population increases.

(b) The 1960 harvest of commercial fish in the basin was 200,000 pounds, valued at $35,000. This catch was taken from natural waters, primarily the Big Black River and natural lakes. The projected demand for commercial fishery products will exceed the 1960 harvest by 40 percent in 1980 and 100 percent in 2015. Improved management and utilization of natural water areas and expected growth in fish-farming operations should supply future needs of 82,000 pounds of commercial fish products in 1980 and 201,000 pounds in 2015. Access developments on the Big Black River main stem will also provide for commercial fishery uses.

h. Navigation. There are no records of any considerable amount of commercial navigation on the Big Black River. Even before the development of railroad and highway transportation, few cargo boats used the waterway. At present, there are few commodities which might offer commerce to a navigation project and no prospect of additional need for navigation in the basin. There are commodities in the Jackson, Mississippi, area which are adaptable to barge transportation. Present shipping in and out of Jackson is done entirely by rail and highway transportation. Waterborne shipment into the Jackson area could be provided by either a navigable channel on the Pearl River or a waterway traversing the Big Black River Basin linking Jackson to the Mississippi River.

i. Power.

(1) The Federal Power Commission developed the present and expected future power requirements in the Big Black River Basin. (See Volume V, Annex H.) The Federal Power Commission Study Area K, which

comprises essentially the area served by the Southwest Power Pool and associated systems, is the power market area for hydroelectric power from the Big Black River Basin.

(2) An analysis of the existing and expected future power supply in Study Area K shows a surplus above reserves for both 1964 and 1970. By 1980 there will develop a need for an additional capacity of 12,763 megawatts, of which 4,240 could be hydroelectric. The amount of hydroelectric power which could be used will increase to 29,640 megawatts by the year 2020. If economically feasible, a portion of this need could be met by developing hydroelectric power projects within the Big Black River Basin. Since determination of the potential hydroelectric power in the basin under modern day criteria is dependent on plan formulation studies involving other project functions, the only purpose here is to define the amount of hydroelectric capacity that could be utilized in the future if available.

5. EXISTING IMPROVEMENTS

a. Corps of Engineers.

(1) Flood control. Flood Control Acts of 1936 and 1937 authorized the Corps of Engineers to construct channel improvements on the Big Black River and certain tributaries. This work consisted of constructing 43 cutoffs, channel clearing and snagging, and removal of log jams along the main stem, and construction of channel clearing on certain tributaries of the Big Black River in Attala, Carroll, Montgomery, Choctaw, and Webster Counties. The work on the main stem of the Big Black River was completed in 1939 and the work on the tributaries was completed in 1941. The total cost of this work was $1,020,000.

(2) Navigation. The original project for the Big Black River, adopted in 1881, provided for high water navigation to Cox's Ferry (mile 102) by removal of wrecks, snags, etc., from the channel.

Snagging operations actually started in 1884 but were suspended in 1894 pending removal of low, fixed bridges. Local interests subsequently decided the bridges were of more value than navigation and work to improve navigation was discontinued.

b. Department of Agriculture.

(1) The first Soil Conservation District in the Big Black River Basin was organized in Claiborne County in December 1938. Since that date, Districts have been organized in all of the other counties which are entirely or partially within the basin. All of the Districts are actively engaged in carrying out soil and water conservation programs with individual farmers.

(2) To date, detail soil surveys have been completed on 69 percent of the agricultural land. Farm plans have been prepared for 41 percent of the farms comprising 40 percent of the agricultural land.

(3) Since 1957, seven watershed districts have been organized and work plans approved. In these watersheds, 21 floodwater retarding structures, 61 miles of channel improvement, and 96 grade control structures have been completed.

c. Drainage districts. Nine drainage districts were organized in the basin between 1911 and 1924. By June 1939, these districts had constructed approximately 70.5 miles of drainage channels. Most of these districts are now dormant and there is little or no channel construction or maintenance underway.

6. IMPROVEMENT PLANS CONSIDERED

a. General. The analysis of the basin's water and related land resources problems and needs (paragraph 4) indicates immediate and long-range needs for flood control, power, recreation, fish and wildlife conservation, and land treatment measures. There is no existing need for navigation within the basin proper; however, a need does exist for a navigable waterway into the Jackson, Mississippi, area

which might be satisfied by a channel traversing the Big Black River Basin. Water quality control improvements may be necessary on Hays, Bear, Fourteenmile and Bakers Creeks if standards now being developed for the State of Mississippi do not correct adverse conditions.

b. Main stem reservoirs. One of the methods investigated for satisfying the basin's needs for flood control, power, and recreation was multipurpose main stem reservoirs. (See Volume III, Annex B.) Three potential dam sites were located along the main stem of the Big Black River. One was upstream from West, Mississippi, one near Durant, Mississippi, and another near Edwards, Mississippi. The Durant and West sites are located in the upper end of the basin and were eliminated during preliminary investigation due to limited flood control benefits, extensive relocation costs, and limited hydroelectric power potential. The Edwards site is located in the lower part of the basin and offers the best potential for the development of a main stem reservoir. Overall, this multipurpose reservoir has a favorable benefit-to-cost ratio. This is due primarily to a large recreation benefit. The reservoir would be located between the urban areas of Vicksburg and Jackson, Mississippi, where the principal recreation demand is expected to develop. Neither flood control nor hydroelectric power is economically feasible as a project purpose. Since local interests are opposed to the construction of a reservoir because it would inundate productive farmlands and recreation is the only project purpose having a favorable benefit-to-cost ratio, no further consideration was given to the development of a multipurpose project on the main stem at this time.

c. Tributary reservoirs. Upon finding that a main stem dam for flood control, hydroelectric power, and recreation was not feasible, attention was given to multipurpose reservoirs on the tributary streams. Seventeen possible damsites were located near the mouths of various tributaries of the Big Black River. For flood control purposes, these dams were evaluated as a unit since no single dam would control enough

drainage area to provide a significant amount of flood control benefits along the main stem. The effect of upstream watershed developments was also considered in evaluating flood control benefits of these dams. These reservoirs would provide water-based recreation sites well distributed over the basin and would satisfy a large portion of the basin's recreational demand. Studies indicated that none of these sites offered potential for the development of hydroelectric power. Overall, the seventeen reservoirs would produce benefits in excess of cost. As in the case of the Edwards main stem reservoir, this results from the large amount of recreation benefits. Incrementally, flood control as a project feature is not economically justified. This can partially be accounted for because the system controls only 28 percent of the basin's drainage area and inundates a relatively large amount of valuable farm lands along the tributary streams. Because recreation is the only project purpose found economically justified, development of multipurpose tributary reservoirs is not a feasible means of satisfying the needs of the basin.

d. Upstream watershed development. Another method investigated which would provide flood protection and recreational facilities in the basin was upstream watershed developments. The developments consist of floodwater retarding structures (single and multiple-purpose), tributary channel improvements, and land treatment measures of the types constructed by the Soil Conservation Service under authority of Public Law 566. To determine the best upstream watershed measures, the basin was divided into 37 tributary watersheds which drain directly into the Big Black River. Each watershed was investigated individually, and a plan of improvement developed for each area. Seven of the watersheds were studied prior to this investigation and a plan of improvement authorized. In 4 of these watersheds, a total of 21 floodwater retarding structures have been constructed and land treatment measures installed. Two hundred and three additional floodwater retarding structures were investigated. The primary purpose of these structures would be to protect the agricultural lands along the

tributaries of the Big Black River. They would also reduce flood stages on the main stem of the river and thereby benefit the adjacent agricultural lands. Recreation facilities were included at 17 of the structure sites to help satisfy a part of the basin's recreational demand. Forest management and land treatment programs were also considered for each of the watersheds. Installation of these upstream watershed improvements would be an effective method of controlling floods and is economically feasible in 32 of the 37 watersheds.

e. Single-purpose flood control. To provide additional flood protection to the bottom lands along the main stem of the river, two types of single-purpose flood control improvements were considered. These were main stem channel improvement and loop levees. A continuous levee system was not investigated because of the basin's narrow valley and numerous tributaries which enter the river. The following paragraphs contain a summary of the channel improvements and loop levee plans considered.

(1) Main stem channel improvement. Five main stem channel improvement plans were investigated as a possible means of reducing flood stages along the main stem of the river. These ranged from clearing and snagging the river channel to enlargement of the existing channel to a capacity sufficient to contain the 3-year (May-October) frequency flows within banks. None of the plans were found to be economically feasible. The benefits for these plans were also determined, assuming the upstream watershed improvements in place. This did not materially change the benefits accruing to the channel improvements.

(2) Loop levees. Loop levees were also evaluated as a possible means for protecting some of the bottom lands along the main stem of the river. Seventeen sites were found at which construction of loop levees tying to the hills would protect areas ranging in size from 1,000 to 2,000 acres. Fifteen of these sites

had inadequate sump areas for interior runoff and the remaining two sites were not economically feasible.

f. Single-purpose recreation projects. After finding that multipurpose reservoirs which would include recreation as a project purpose were not economically feasible, attention was given to the possibility of developing single-purpose recreation projects. Two types of developments were considered. These were: (1) enlargement of existing recreational areas and (2) single-purpose recreational reservoirs. A discussion of these two alternatives is contained in the following paragraphs.

(1) Expansion of existing recreation areas. Two existing recreational areas, the Choctaw Recreation Area in the Tombigbee National Forest and Holmes County State Park in Holmes County, were considered for providing additional swimming beaches, camping units, picnic tables, and hiking trails. These facilities could be economically provided and, if constructed, would satisfy approximately 110,000 activity occasions annually.

(2) Recreational reservoirs. Since recreation as a project purpose was found to be economically feasible in the multipurpose main stem and tributary reservoirs, the reservoirs were investigated as single-purpose recreational projects. For recreational purposes, 5 of the 17 tributary sites and the Edwards main stem site were studied. Construction of recreational reservoirs at these six sites would be economically justified and would provide sufficient recreation opportunities to satisfy 100 percent of the basin's immediate needs for recreation and a large portion of the projected needs. However, there is strong local opposition to construction of such projects at this time. This is due primarily to the fact that the reservoirs would take a substantial amount of agricultural lands out of production. For this reason, these single-purpose recreational reservoirs were eliminated in favor of expanding existing recreational areas and providing facilities for recreation at the upstream

floodwater retarding structures. If in the future local support should develop for the single-purpose reservoirs, consideration should be given to the construction of these projects.

g. Water quality control. Two solutions were studied for the four tributary streams which have a pollution problem during periods of low stream flow. These were (1) low flow augmentation; and (2) additional treatment of the sewage being discharged into the streams. Low flow augmentation could be provided by including additional storage in the headwater retarding structures for release during periods of low stream flow. This storage could be provided if non-Federal interests agree to pay the additional cost. The alternative to low flow augmentation is Tertiary treatment of the sewage prior to release into the streams. The added treatment facilities would consist of finishing lagoons and aeration equipment.

h. Navigation. Navigation studies were made primarily to determine the need for and the feasibility of providing a navigable channel within the Big Black River Basin. Preliminary studies indicated that there is no existing nor prospective need for a navigable waterway within the basin proper. During the course of that study, the Mississippi State Legislature created a commission for the purpose of developing a multiple-purpose waterway connecting the Jackson, Mississippi, area with the Mississippi River. Three possible routes traversing the Big Black River Basin were identified. None of these routes are economically feasible at this time.

7. THE COMPREHENSIVE PLAN

a. General. The Comprehensive Plan of Development is composed of the projects which will best develop the water resources and economic potential of the basin. These projects are divided into two groups: (1) those projects needed for the short range (1980) program; and (2) those needed to meet the needs in the long range (2015) program. Since the 2015 needs of the basin are the same type as the 1980 needs (flood control, recreation, and fish and wildlife), the projects which

were not proposed in the short range program were considered for the long range program. These are projects which are not economically feasible at the present time and are not compatible with the long established or firmly fixed development trends of the basin. These long range projects should be reconsidered and evaluated at some time in the future when the needs of the basin increase. The short range (1980) program is composed of projects which are presently economically feasible; they will return a dollar or more in benefits for each dollar spent on the project; and they are the most practical for developing the water resources potential of the basin at this time. Features of the comprehensive plan are presented in the following paragraphs and on Plates 2 and 3.

b. Plan of development--1980.

(1) Upstream watershed development.

(a) The upstream watershed plan is proposed for implementation in 32 of the basin's upstream watersheds. This plan is the only economical means of providing flood protection to the agricultural lands in the basin. The plan provides for: (1) construction of floodwater retarding structures in 32 of the basin's 37 watersheds; (2) improvement of the tributary stream channels in these watersheds and; (3) implementation and acceleration of land treatment and critical area stabilization measures in all watersheds in the basin. The plan is designed primarily to protect the agricultural lands along the tributaries by impounding runoff in the upstream watersheds of the basin. The tributary channel enlargements are to provide sufficient channel capacities to discharge the releases from the floodwater retarding structures without causing flooding along the tributaries. Land treatment and critical area stabilization measures are beneficial for the reduction of damages from minor floods and for reducing land erosion and sediment accumulation in the streams. The measures consist of conservation cropping systems, pasture planting and renovation, diversion and terrace construction, construction of farm ponds, wildlife

habitat development, tree planting, hydrologic stand improvements, and treatment of critical areas. In addition to the flood protection provided along the tributaries, the plan will also reduce flood stages along the main stem of the river and thereby benefit agricultural lands adjacent to the main stem of the Big Black River. Recreation as a project purpose was planned in 12 watersheds by including 17 multiple-purpose structures. Additional multiple-purpose structures could be provided if local interests desire and are willing to share in the cost. Another feature which could be added to the upstream watershed project is storage for low flow augmentation on the four tributary streams with water quality problems. This storage could be included in impoundments at the appropriate sites if non-Federal interests expressed a desire for it and agreed to pay the additional costs for its inclusion.

(b) Ten of the watersheds are to be, or have been, implemented through the "Watershed and Flood Prevention Act" (Public Law 566). All of the structures and most of the land treatment measures have been installed in four of these watersheds. These are Tackett Creek, Ellison Creek, Bentonia Creek and Persimmon-Burnt-Corn Creek. PL-566 work plans have been prepared for Mulberry Creek, Bear Tilda Bogue Creek and Long Creek watersheds. Work plans are now being prepared for Box Creek, Five Creeks and Apookta Creek. Structural measures to be installed through PL-566 in the 10 watershed projects include 49 floodwater retarding structures, 2 multiple-purpose structures with recreational facilities and 230 miles of channel improvement. Figure 12 shows a typical floodwater retarding structure.

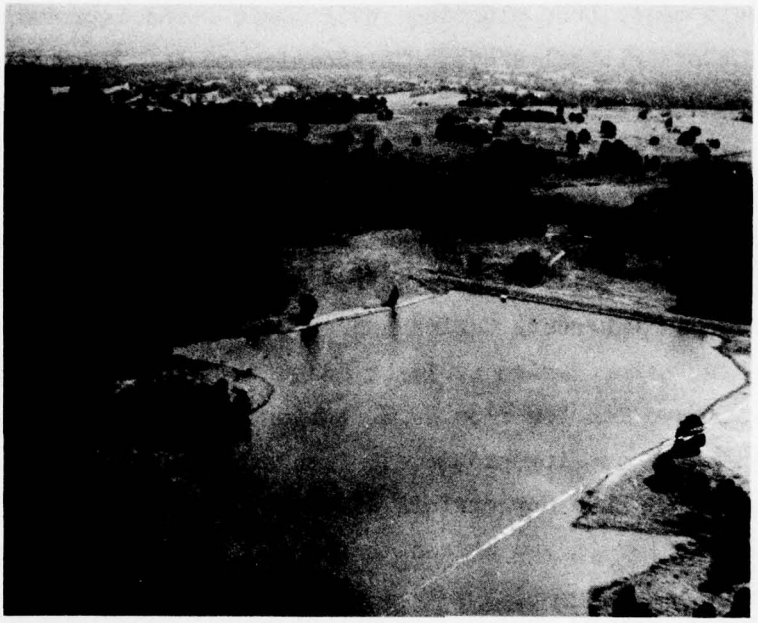


Figure 12
Floodwater Retarding Structure, Ellison Creek Watershed

(c) Special basinwide Congressional authorization will be sought for 22 watersheds and for accelerated land treatment and critical area stabilization for the remaining watersheds in the basin. These are: Spring Creek, Little Black Creek, Big ByWy Creek, Calabrella Creek, Wolf Creek, Poplar Creek, Lewis and Betsy Creek, Hays Creek, Zilpha Creek, Peachahala Creek, Jordan Creek, Durant Creek, Seneatcha Creek, Big Cypress Creek, Love's Creek, Doaks Creek, Panther-Hanging Moss Creeks, Bogue Chitto-Lime Kiln Creeks, Porter Cox Creek, Baker's Creek, Fourteen Mile Creek, and Five Mile Creek. Included in these watersheds are land treatment measures for watershed protection and critical area stabilization, 137 floodwater retarding structures, 15 multiple-purpose structures, 8 of which have recreation facilities, and 707 miles of channel improvement.

(d) Cost--Upstream watershed development. Table 2 is a summary of the first costs and annual charges for the upstream watershed development program in the 32 watersheds. First costs are shown for the 186 floodwater retarding structures, 17 multiple-purpose structures, 10 of which have recreational facilities, 937 miles of channel improvement, and land treatment measures and critical area stabilization in each of the watersheds. The annual costs do not include charges for land treatment measures since an economic analysis is not necessary for this work. Detailed project costs and pertinent structural data are contained in Volume II, Annex A.

TABLE 2
SUMMARY, UPSTREAM WATERSHED DEVELOPMENT
FIRST COST AND ANNUAL CHARGES

Item	10 watersheds (PL 566)	22 watersheds (basinwide authorization)	Total
	$	$	$
First cost:			
Land treatment and critical area stabilization	3,618,000	19,450,000 1/	23,068,000
Floodwater retarding structures	5,061,000	14,704,000	19,765,000
Multiple-purpose structures	366,000	3,701,000	4,067,000
Channel improvement	3,696,000	7,494,000	11,190,000
Basic recreation facilities	183,000	1,655,000	1,838,000
Work plan preparation	0 2/	1,072,000	1,072,000
Total first cost	12,924,000	48,076,000	61,000,000
Annual charges 3/	390,000	1,277,000	1,667,000

1/ Includes cost of $1,041,000 in the five remaining watersheds in the basin for critical area stabilization.

2/ Work plan preparation completed on PL 566 watersheds.

3/ Does not include annual charges for land treatment, critical area stabilization, nor work plan preparation.

(e) Benefits--Upstream watershed development. The proposed floodwater retarding structures and tributary channel improvements were designed to control the runoff in the headwater areas of the basin and thus protect the bottom lands along the tributaries of the river. These improvements will reduce the tributary flood damages approximately 70 percent. The total flood control benefits for the tributary watersheds are $2,675,000. Of this, $717,000 will be realized annually in the 10 PL 566 watersheds and $1,958,000 will accrue in the 22 watersheds proposed for basinwide authorization. In addition to the benefits realized in the tributary watersheds, the proposed improvements will also benefit agricultural lands along the main stem of the river. These benefits which result from a reduction in flood stages are incidental to project justification and were not used in the economic analysis of the project. The 17 multiple-purpose structures will also provide $645,000 in annual recreation benefits. Of this, $66,000 will be realized in the PL 566 watersheds and $579,000 will accrue to the 22 watersheds.

(f) Effects--Upstream watershed development.

1. Proposed feasible upstream watershed projects, when installed, will minimize or eliminate the flood hazard on 268,000 acres of bottom lands of the basin. This action will therefore enable farmers to use the land more profitably. It is anticipated that some land now in forests will be cleared and placed in the production of row crops, close-seeded crops and pasture crops. Some substitution of crops will occur because of higher obtainable net returns with flood protection while others will receive more production inputs with the expectation of higher per acre output and net returns.

2. The production of agricultural products on benefited project lands will contribute to meeting a part of the basin's future food and fiber needs. These are in essence national food and fiber needs translated into reasonable production levels for the Big Black River Basin.

3. The quantity of commodities produced for without and with project conditions are shown in Table 3. The future anticipated production is greater than without project installation--much of the difference is attributed to project action. A part of the increase will accrue from the adoption of yield increasing technology. Not all, but a considerable part of the total production of each commodity in the project area is estimated to result from proposed project action.

4. A comparison of the production of agricultural commodities in the proposed project area with food and fiber needs reveals that benefits derived and used in project justification are reasonable. The agricultural commodities expected to accrue from benefited project lands are well within the framework of national, regional and basin development needs.

TABLE 3
FUTURE NEEDS AND PRODUCTION OF MAJOR CROP AND LIVESTOCK PRODUCTS
FOR WITHOUT AND WITH PROJECT CONDITIONS
32 FEASIBLE WATERSHED PROJECTS, BIG BLACK RIVER BASIN, 1980

Item	Unit	Year-1980		
		Needs	Future without project	Future with project
Cotton	Lbs. lint	110,000,000	6,749,700	12,863,179
Corn	Bushels	3,600,000	1,035,006	1,604,761
Hay	Tons	158,000	23,498	24,271
Soybeans	Bushels	2,717,000	60,960	83,289
Pasture	Lbs. beef	175,705,000	13,779,864	19,285,028

(2) Enlargement of Holmes County State Park and Choctaw Lake Recreation Area. Two existing recreational areas, the Holmes County State Park in Holmes County and the Choctaw Lake Recreation

Area in the Tombigbee National Forest are proposed for expansion to supplement the recreation facilities provided at the multiple-purpose floodwater retarding structures. This expansion would provide additional swimming beaches, camping units, picnic tables, and hiking trails to accommodate 110,000 activity occasions annually. The total first cost of this expansion is about $430,000, with an annual charge of $15,000. The annual recreation benefit resulting from these projects is approximately $90,000. Figures 13 and 14 show existing recreation areas at the Holmes County State Park and Choctaw Lake in the Tombigbee National Forest.

(3) Fish and wildlife.

(a) No single-purpose developments for hunting and fishing were considered in this report. The basin's hunting needs can best be met by better utilizing the existing supply, and the localized needs for fishing will be satisfied by the floodwater retarding structures. The Bureau of Sport Fisheries and Wildlife estimates that the projects will provide 33,000 man-days of fishing use. Valued at $1.00 per man-day, the annual benefit to fishing is $33,000. However, to maintain diversity in the type of fishing water, public access developments are recommended for the main stem of the Big Black River, and some tributaries and natural lakes within the basin. The number of access sites and the location of the developments should be determined when the watershed projects are authorized for planning.

(b) The proposed watershed projects will also provide 400 man-days of waterfowl hunting. Valued at $3.00 per man-day, the annual wildlife benefit is approximately $1,000. This will not offset the 17,000 man-day loss caused by the watershed projects. The losses result from the inundation of 16,000 acres of land, and the project-induced clearing of 22,000 acres of bottom land hardwood habitat for agricultural purposes. The Bureau of Sport Fisheries and Wildlife will make recommendations regarding wildlife during the detailed study of authorized construction projects.



Figure 13
Recreation Area in Holmes County State Park



Figure 14
Recreation Area at Choctaw Lake, Tombigbee National Forest

c. Economic analysis. Table 4 contains the first costs, annual charges, annual benefits, and benefit-to-cost ratio for the 1980 Plan of Development.

TABLE 4
ECONOMIC ANALYSIS
1980 PLAN OF DEVELOPMENT

Item	10 watersheds (PL 566)	22 watersheds (basinwide authorization)	Expansion of Holmes County State Park & Choctaw Lake recreation area	Total
	$	$	$	$
First costs	12,924,000	48,076,000	430,000	61,430,000
Annual charges	390,000[1/]	1,277,000[1/]	15,000	1,682,000[1/]
Annual benefits:				
Flood control	717,000	1,958,000	0	2,675,000
Recreation	66,000	579,000	90,000	735,000
Total annual benefits	783,000[2/]	2,537,000[2/]	90,000	3,410,000[2/]
Benefit-to-cost ratio	2.0	2.0	6.0	2.0

1/ Does not include annual charges for land treatment, critical area stabilization, or work plan preparation.

2/ Does not include annual benefits for land treatment, critical area stabilization, or work plan preparation.

d. Cost sharing.

(1) Upstream watershed development. Table 5 shows the cost sharing for the proposed upstream watershed development. The total estimated first cost of the plan is $61,000,000. The Federal share is $40,448,000 and the initial other cost is $20,552,000. Federal costs are for the engineering, administration, and construction of the floodwater retarding structures and the tributary channel improvements. Other costs include land easements and rights-of-way, and administration of contract. The Federal Government and local sponsors share in the cost of land treatment measures, multipurpose structures, and recreation facilities.

TABLE 5
COST SHARING
UPSTREAM WATERSHED DEVELOPMENT

Item	Federal	Other	Total
	$	$	$
Land treatment measures	9,099,000	13,969,000	23,068,000
Floodwater retarding structures	16,784,000	2,981,000	19,765,000
Channel improvement	9,871,000	1,319,000	11,190,000
Multiple-purpose structures	2,712,000	1,355,000	4,067,000
Basic recreation facilities	910,000	928,000	1,838,000
Work plan preparation	1,072,000	0	1,072,000
Total	40,448,000	20,552,000	61,000,000

(2) Single-purpose recreation. The expansion of the Holmes County State Park could be a joint effort between State and Federal agencies through the Land and Water Conservation Fund. Under this authority, the initial Federal cost would be $95,000 and the non-Federal share would also be $95,000. Expansion of recreation areas in the Tombigbee National Forest would be handled entirely by the U. S. Forest Service in its recreation program. Through this program, the entire initial cost of $240,000 would be borne by the Federal Government.

e. Plan implementation.

(1) Upstream watershed improvement. The proposed floodwater retarding structures, both multipurpose and single-purpose, the channel improvements, and the land treatment measures can be planned and constructed by the U. S. Department of Agriculture using procedures normally followed in constructing projects under authority of Public Law 566. Under this authority plans would be developed by the local sponsoring organizations, the Soil Conservation Districts, water management districts, and the Big Black River Development Association, when it becomes a legally constituted body. The Department of Agriculture would

provide technical assistance. Two or three watershed projects could be planned per year. This would satisfy the basin's needs and requirements within the next 10 to 15 years.

(2) Expansion of Holmes County State Park and Choctaw Recreation Area. The expansion of the Holmes County State Park and the Choctaw Lake Recreation Area should be coordinated with the development of the recreation facilities at the multiple-purpose watershed structures through a non-Federal agency with basinwide authority. Such an agency should possess sufficient legal and financial ability to assume the non-Federal responsibilities of the recreation plan. The Big Black River Development Association is presently being organized in the basin and, when this agency becomes a legally constituted body, it should be given the authority to coordinate the development of the recreation plan. The expansion of Holmes County State Park should be done by the Mississippi Park System. The enlargement of the Choctaw Lake Recreation Area in the Tombigbee National Forest should be the responsibility of the U. S. Forest Service.

f. Future projects--2015.

(1) General. The projects presented in the following paragraphs are recommended for consideration in the future when there is an additional need for water resources improvements in the basin. There may develop needs other than those presently foreseen and projects different from those recommended below would warrant consideration. However, at present the expected future needs of the basin are for flood control, recreation areas, fish and wildlife conservation, and possibly a navigable waterway linking Jackson with the Mississippi River. The following projects are presently the best means of meeting these anticipated needs. These projects have not been studied in detail for their engineering and economic feasibility and are only recommended for consideration in the future. Plate 3 shows the projects considered for the long range development.

(2) Flood control. As the population of the study area and the United States increases, the need for additional areas for agricultural production will increase. Some of these areas can be provided in the Big Black River Basin if additional areas in the basin are given flood protection. There are at present five watersheds in the lower end of the basin which have no flood control improvements and could be developed in the future if flood control measures are undertaken in the watersheds. The bottom lands along the tributaries in the watersheds offer excellent potential for agricultural development and could be protected by constructing flood control improvements in the headwater areas. The improvements could be the same type as those recommended for other watersheds in the 1980 Plan of Development. These consist of floodwater retarding structures, tributary channel improvements and land treatment measures. Additional agricultural or industrial areas could be provided along the main stem of the river if the existing river channel were improved to reduce flood hazards. Such improvements are not economically feasible under present conditions, but warrant consideration again in the future when the needs of the basin increase.

(3) Recreation. Recreation as a water resource need is expected to increase rapidly in the future. The lower half of the basin is located between Vicksburg and Jackson, two rapidly expanding urban areas in Mississippi. These two cities are increasing in industrial development and are expected to extend their suburban areas into the Big Black River Basin. This is the primary source of the basin's future recreation demand.

(a) Main stem reservoir. One means of meeting the demand for recreation is to construct a reservoir in the lower part of the basin. There is an excellent damsite available on the main stem of the river near Edwards, Mississippi, which is centrally located between Vicksburg and Jackson. A reservoir at this site could control 80 percent of the basin's drainage area, pool water upstream for approximately 60 miles, and would be located near the areas of

greatest present and projected recreational demand. A reservoir at this location was investigated for the 1980 Plan of Development and is economically feasible. However, since the immediate impact of a reservoir at this site is the inundation of productive farm lands, the people in the basin have indicated they are not in favor of such a project. But, with increasing recreational demands projected for the future and an expected trend toward more urbanization and more rural nonfarm population, this local opposition might decrease; therefore, construction of a reservoir at the Edwards site should be considered in the future as a means of meeting a part of the long range recreational needs.

(b) Tributary reservoirs. Another means of meeting the future recreation needs of the basin is to construct reservoirs with recreational facilities on the tributaries of the river. Tributary reservoirs could satisfy a large part of the basin's recreational and fish and wildlife needs, and could be well distributed over the basin. As in the case of the Edwards reservoir, strong local opposition presently exists, but might decrease in the future if the basin's economy shifts to more urban and rural nonfarm population. Therefore, construction of reservoirs at selected tributary sites should be considered in the future as alternatives or supplements to a main stem reservoir.

(c) Expansion of existing areas. A third means of meeting the basin's anticipated recreation needs is to expand the recreational projects included in the 1980 Plan of Development. Recreational facilities could be provided at additional upstream floodwater retarding structure sites and at the Choctaw Recreation area and the Holmes County State Park.

(4) Navigation. Any future need for a navigation project in the Big Black River Basin would be for a waterway traversing the basin linking Jackson, Mississippi, with the Mississippi River. The need for additional consideration of such a waterway will be dependent

upon whether or not a navigation project is constructed on the Pearl River to provide waterborne transportation into the Jackson, Mississippi area. If a navigation project is not developed on the Pearl River, future reinvestigation of a project linking Jackson, Mississippi with the Mississippi River should be considered. Such a project could either traverse the eastern half of the basin and utilize the lower half of the Big Black River or completely traverse the basin, linking Jackson to the Mississippi River in the vicinity of Vicksburg, Mississippi.

(5) Fish and wildlife. Long range planning for fish and wildlife conservation should continue the proposed 1980 program. Future projects should include the following provisions for fish and wildlife management: (1) reservoir management practices; (2) stream preservation measures; (3) public access facilities; (4) enlargement of public wildlife areas; and (5) intensive management of public lands and water.

g. Nonstructural measures. In order to obtain full development of the water and related land resources of the Big Black River Basin, the following nonstructural measures should be included as a vital part of the comprehensive plan:

(1) Intensive management program for utilizing the existing public wildlife areas.

(2) Coordinated program for utilizing the basin's fishery resources.

(3) Continuation of the land management programs in the basin.

(4) Enforcement of the water quality control standards proposed by the State of Mississippi and the Federal Water Pollution Control Act.

(5) Support for the Mississippi State Board of Health in developing a program for surveillance and improvement of the basin's public drinking water supplies.

(6) A program of nonstructural flood control measures consisting of the following:

(a) Public information and education through Corps of Engineers flood plain information reports and technical services to the end that management programs for controlling and regulating the economic use of flood plains may be more effectively implemented.

(b) Action, at the State and local level, to fully utilize information relative to flood plain management in the development of plans to guide the utilization of flood plains.

(c) The continuing improvement of the U. S. Weather Bureau flood forecasting and warning services.

8. CONCLUSIONS OF COORDINATING COMMITTEE

a. There is presently and will be in the future a need for flood control on the main stem of the Big Black River and along the tributaries. The only economically feasible means of providing flood control on the main stem and along the tributaries is to construct floodwater retarding structures and related land treatment measures in the headwater areas of the basin and enlarge the tributary channels.

b. Public information and education through Corps of Engineers flood plain information reports and technical services, and the U. S. Weather Bureau flood forecasting and flood warning services offer an opportunity for reducing flood damages in the Big Black River Basin without structural measures.

c. The existing supply of outdoor recreation resources and facilities in the Big Black River Basin falls short when compared with the recreation demands of the basin. This will increase rapidly with the expected economic development and population increases in the basin. At the present time, the best means of meeting this need is to construct recreation facilities at the upstream floodwater retarding structures and enlarge the existing recreation areas.

d. There is a need for hydroelectric power in the market area which includes the Big Black River Basin. At this time it is not economically feasible to develop hydroelectric power in the basin.

e. There is no immediate need for additional surface water storage for municipal and industrial uses in the basin because abundant supplies of good quality ground water are available. Future water requirements are also expected to be met from ground water sources.

f. No storage for water quality control purposes is presently required since the Big Black River is a stream of good quality water and only a few isolated problems exist on the tributary streams. The water quality control standards being developed in connection with the Federal Water Pollution Control Act should help the quality of the streams to remain good and should also help correct conditions on the tributary streams.

g. There is no existing or prospective need for waterborne transportation in the Big Black River Basin proper. A navigable channel connecting the Mississippi River at Vicksburg with the Pearl River at Jackson, Mississippi, might be worthy of consideration in the future.

h. The existing supply of sport fishery resources is adequate to meet the present demands for fishing in the study area. Due to restrictions on the use of resources, needs for additional hunting opportunity exist now and are expected to increase in the future. These needs can best be met by the preservation of high-quality habitat and more intensive management and utilization of existing wildlife resources.

9. RECOMMENDATIONS OF COORDINATING COMMITTEE

The Coordinating Committee makes the following recommendations:

a. That the 1980 Plan of Development, as formulated in this report, be adopted as the Comprehensive Plan for initial development of the water and related land resources of the Big Black River Basin.

b. That the projects presented in the long range plan of development be given further consideration at such time as the economic development of the basin warrants.

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Department of the Army
Chairman, Coordinating Committee

Sam Hailey

SAM HAILEY
State of Mississippi
Member

Donald L. Martin

DONALD L. MARTIN
Federal Power Commission
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W. L. HEARD
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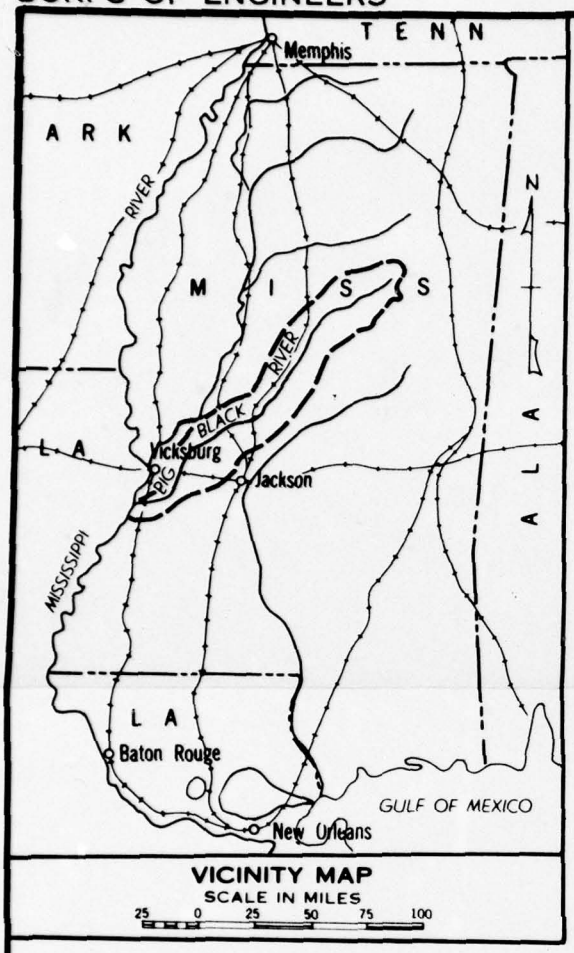
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R. J. MacCONNELL
Department of Commerce
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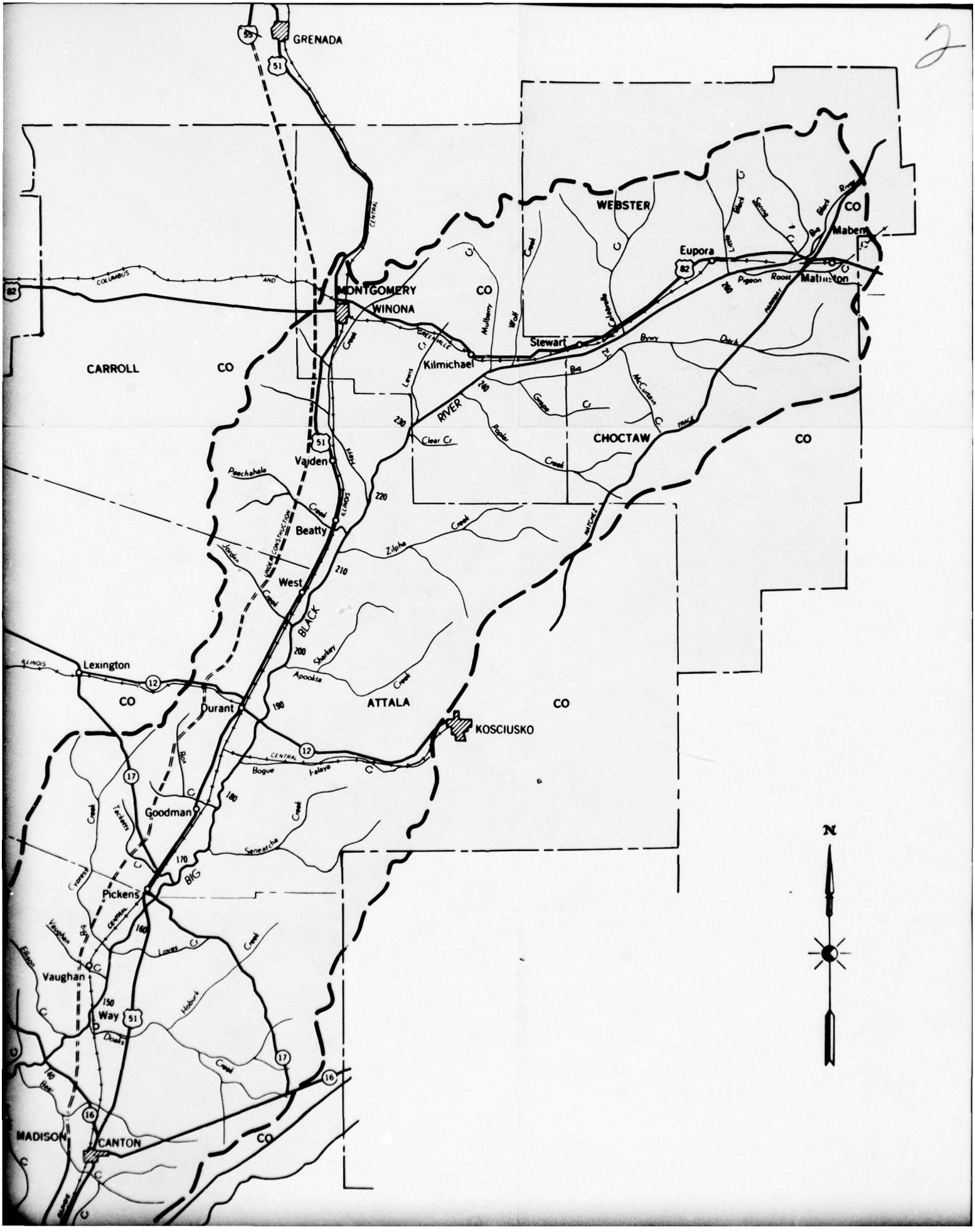
Kenneth D. McCall

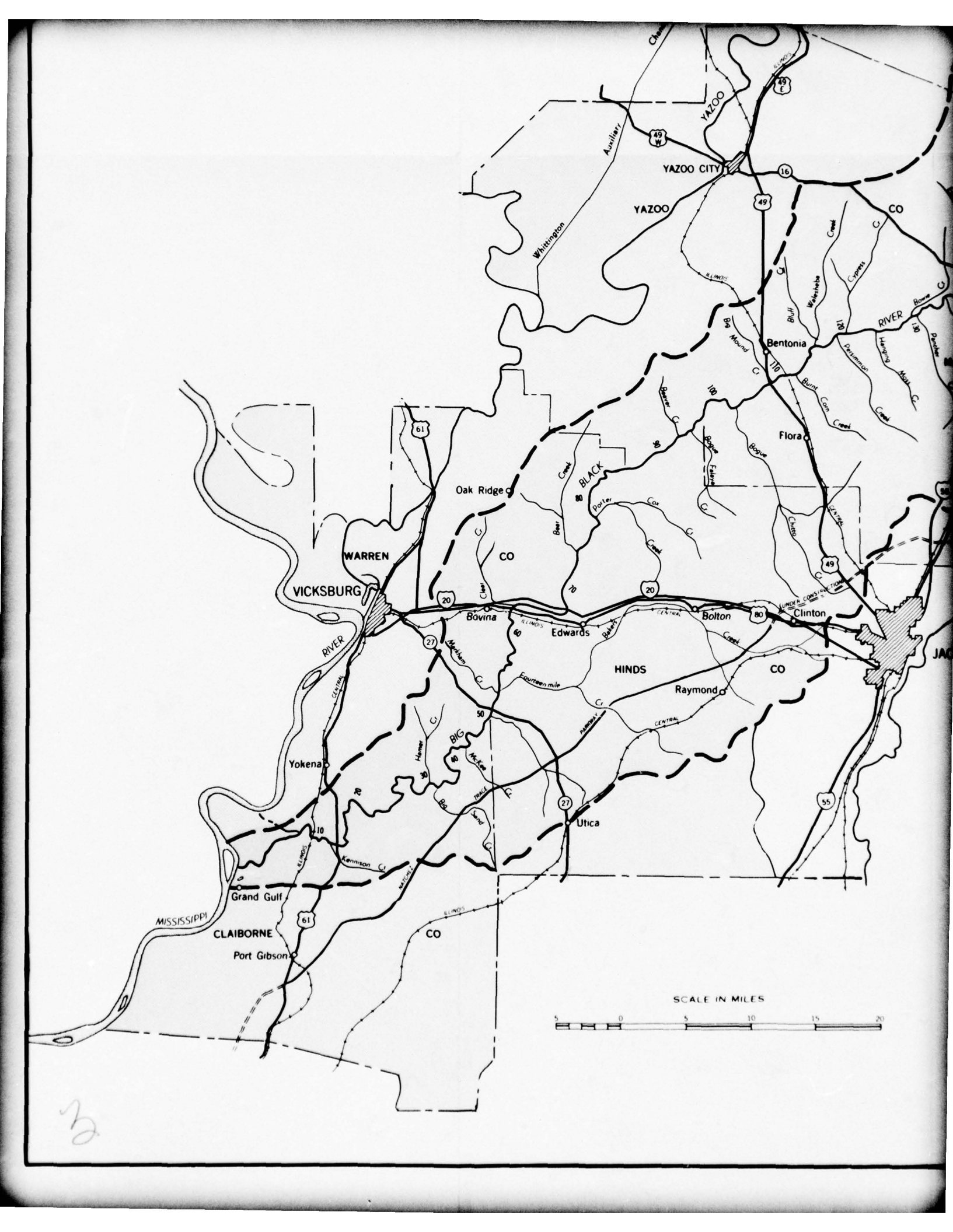
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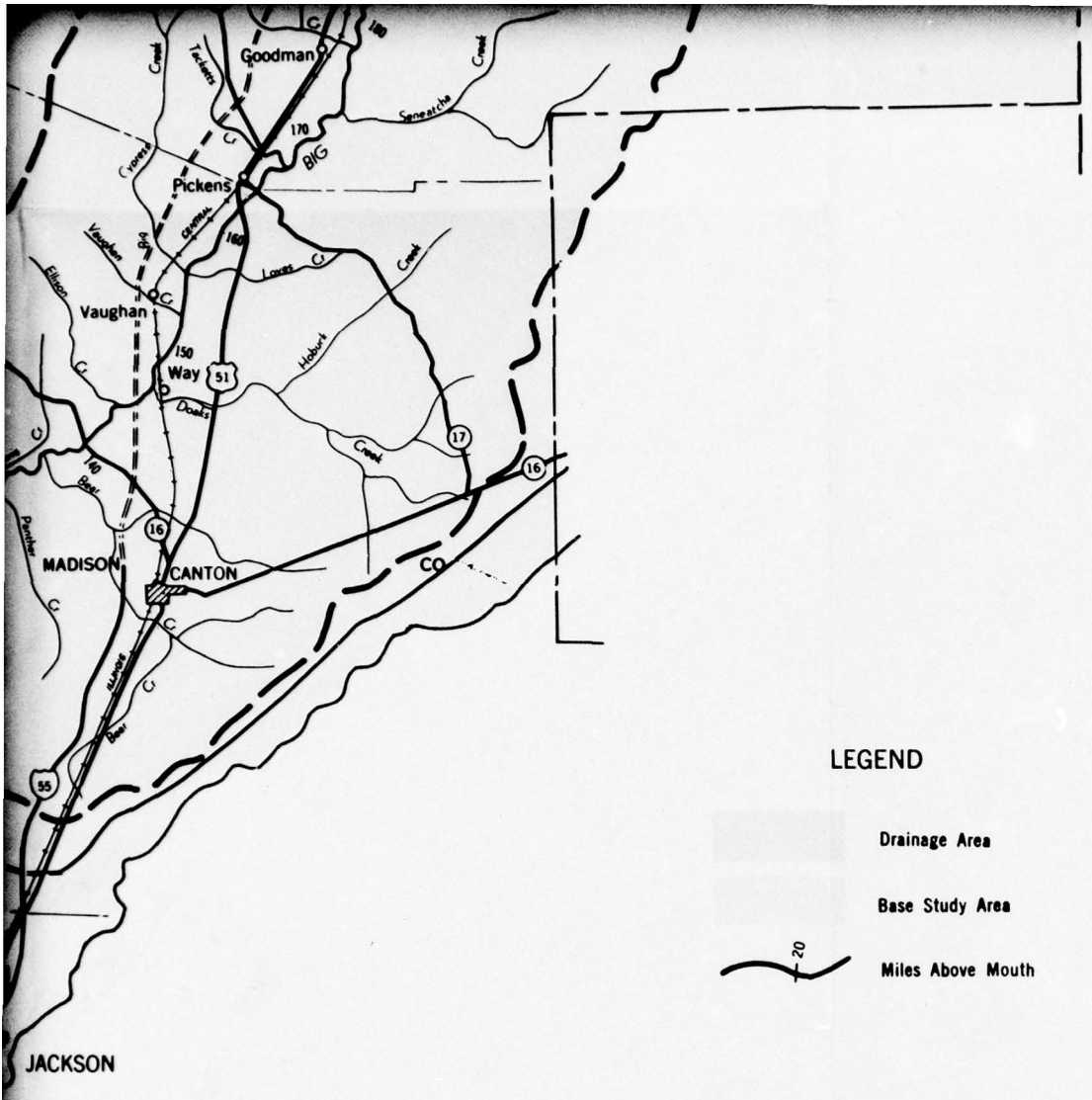
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Durant
ATTALA CO
KOSCIUSKO
Goodman
Pickens
Vaughan
Way
MADISON
CANTON
CO
BLACK
RIVER
N


YAZOO CITY
YAZOO
CO
Bentonia
Flora
Oak Ridge
WARREN
VICKSBURG
CO
Bovina
Edwards
Bolton
Clinton
HINDS
CO
Raymond
Yokena
Utica
Grand Gulf
CLAIBORNE
CO
Port Gibson
MISSISSIPPI
RIVER
Auxiliary
Whittington
Bayou Mound
Bluff
Walnut
Cypress
Creek
Bogue Falaya
Beaver Cr.
Burnt Corn Creek
Hanging Moss Cr.
Panther
Porter Cox
Beer
Clear
Baker
Fourteen mile
Markham Cr.
Hamer Cr.
Big Black
McKee
TRACE
Big Sand Cr.
Kennison Cr.
NATCHEZ
TRACE
CENTRAL
ILLINOIS
SCALE IN MILES
5 0 5 10 15 20



N

LEGEND

Drainage Area

Base Study Area

20 Miles Above Mouth

LOWER MISSISSIPPI RIVER
BIG BLACK RIVER BASIN
MISSISSIPPI
COMPREHENSIVE BASIN STUDY

BASE STUDY AREA

SCALE AS SHOWN

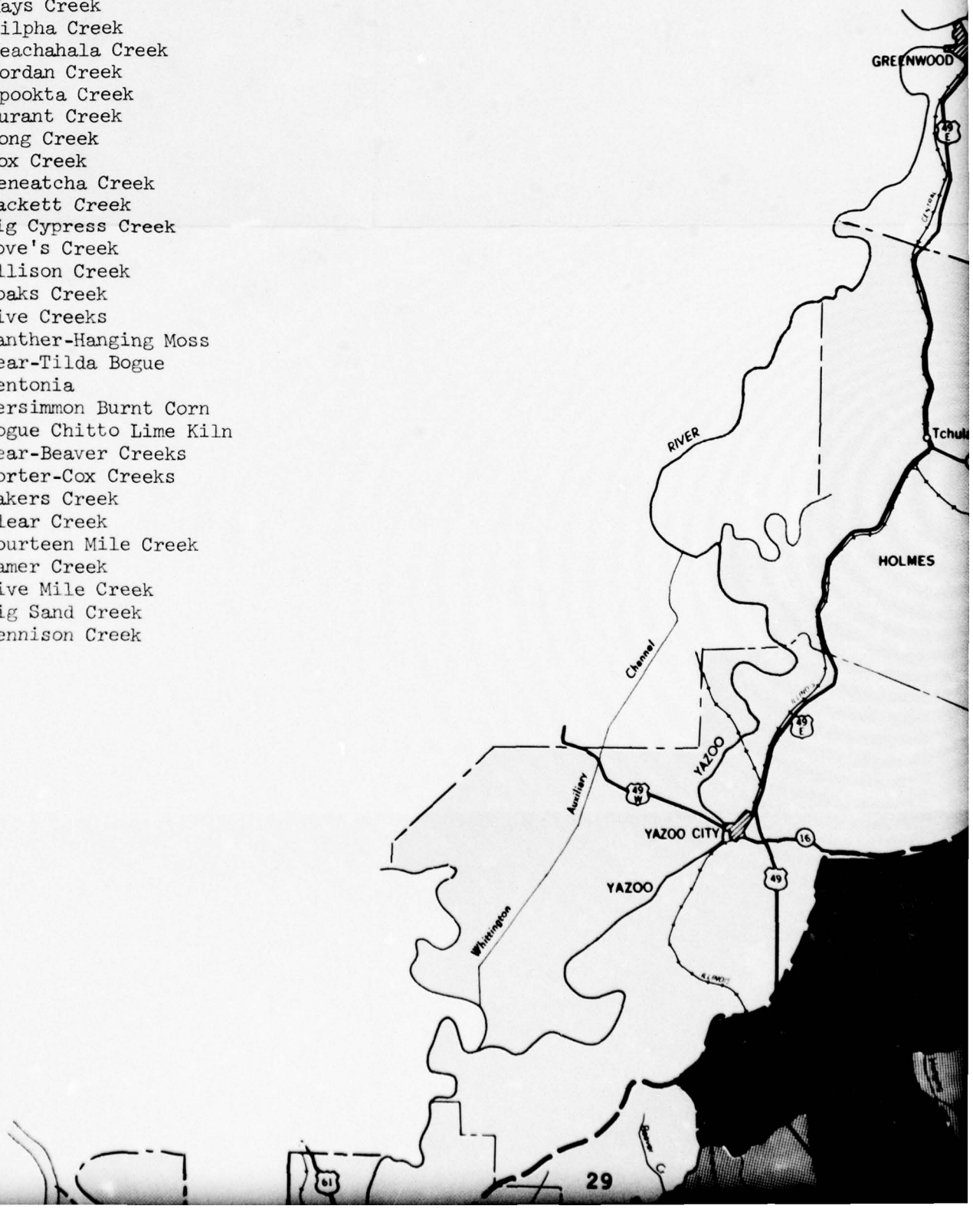
BIG BLACK RIVER BASIN COORDINATING COMMITTEE

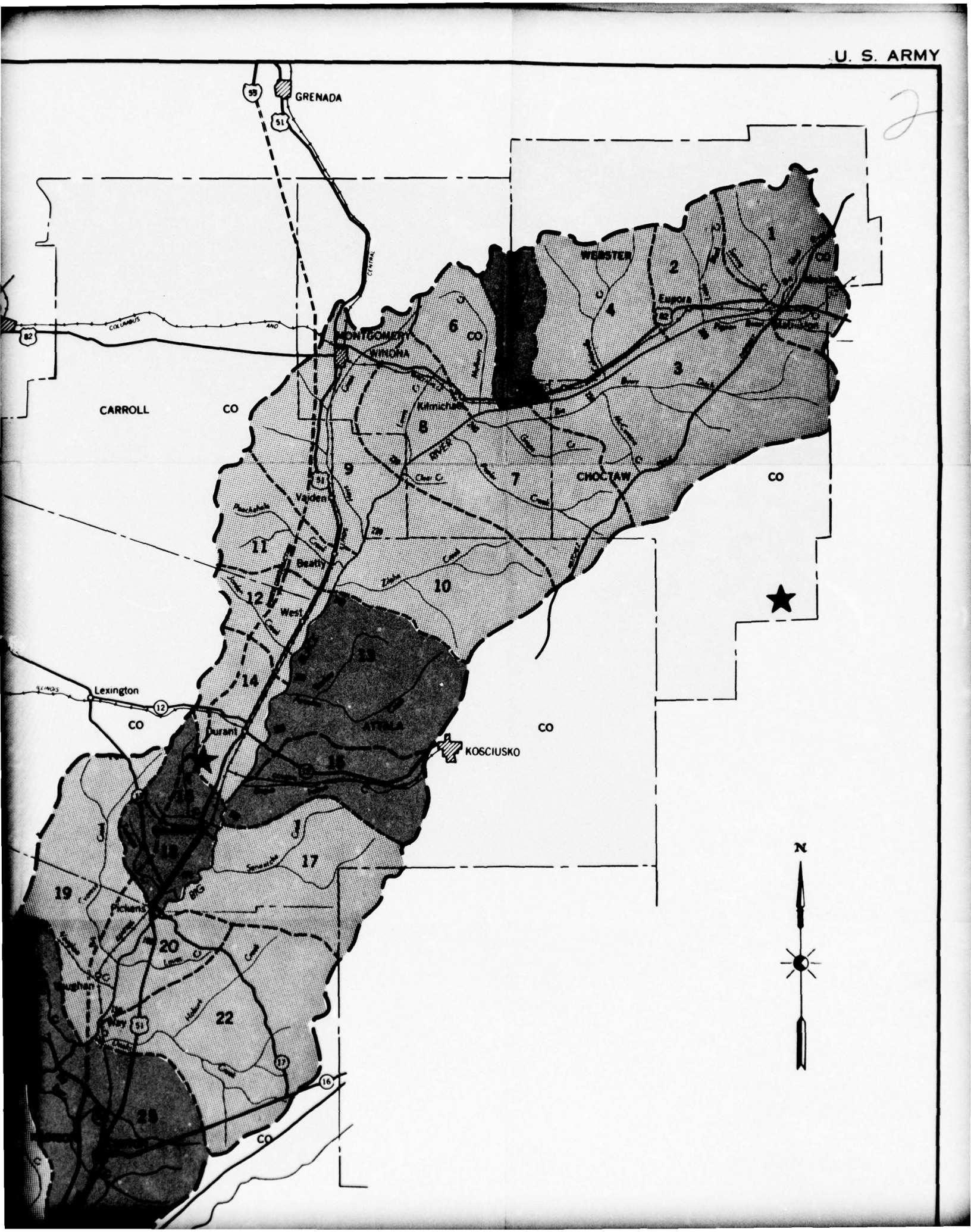
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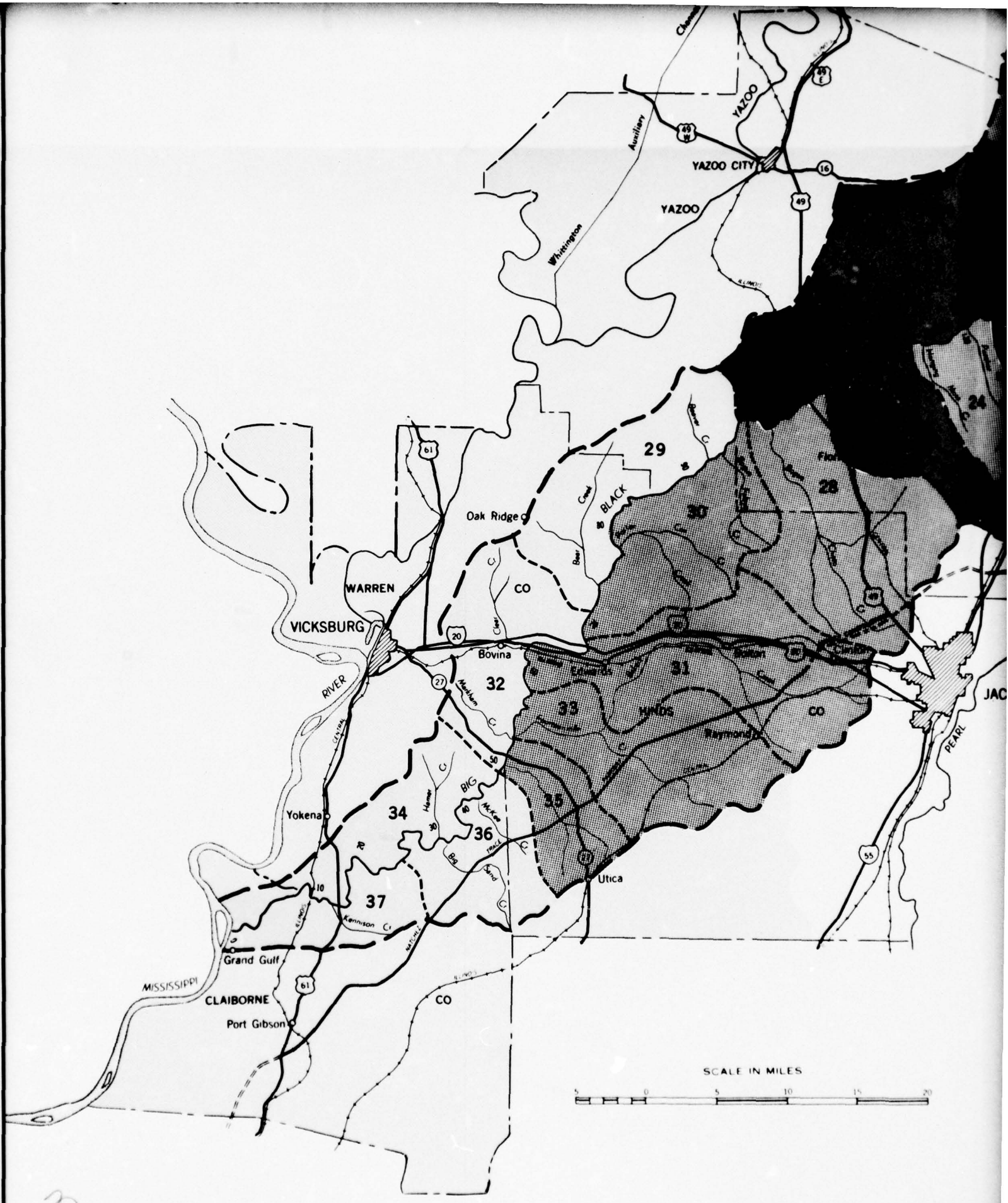
PLATE 1

WATERSHEDS

1. Spring Creek
2. Little Black Creek
3. Big Bywy Creek
4. Calabrella Creek
5. Wolf Creek
6. Mulberry Creek
7. Poplar Creek
8. Lewis & Betsy Creek
9. Hays Creek
10. Zilpha Creek
11. Peachahala Creek
12. Jordan Creek
13. Apookta Creek
14. Durant Creek
15. Long Creek
16. Box Creek
17. Seneatcha Creek
18. Tackett Creek
19. Big Cypress Creek
20. Love's Creek
21. Ellison Creek
22. Doaks Creek
23. Five Creeks
24. Panther-Hanging Moss
25. Bear-Tilda Bogue
26. Bentonia
27. Persimmon Burnt Corn
28. Bogue Chitto Lime Kiln
29. Bear-Beaver Creeks
30. Porter-Cox Creeks
31. Bakers Creek
32. Clear Creek
33. Fourteen Mile Creek
34. Hamer Creek
35. Five Mile Creek
36. Big Sand Creek
37. Kennison Creek




GRENADA
CARROLL
CO
MONTGOMERY
WEBSTER
CHOCTAW
Kilmichael
Valden
Lexington
Durant
ATTALA
KOSCIUSKO
Pickens
Vaughan
N


YAZOO
YAZOO CITY
YAZOO
Auxiliary
Whittington
29
28
24
Oak Ridge
BLACK
Bear
WARREN
CO
VICKSBURG
Bovina
32
31
33
CO
JAC
RIVER
Yokena
34
36
35
Utica
PEARL
37
Grand Gulf
MISSISSIPPI
CLAIBORNE
Port Gibson
CO
SCALE IN MILES
5 0 5 10 15 20



N

LEGEND

- Drainage Area
- Base Study Area
- Miles Above Mouth
- 10 Watersheds Authorized Through PL 566 Program
- 22 Watersheds for Implementation Through Special Legislation
- Expansion of Recreation Areas

LOWER MISSISSIPPI RIVER
BIG BLACK RIVER BASIN
MISSISSIPPI
COMPREHENSIVE BASIN STUDY

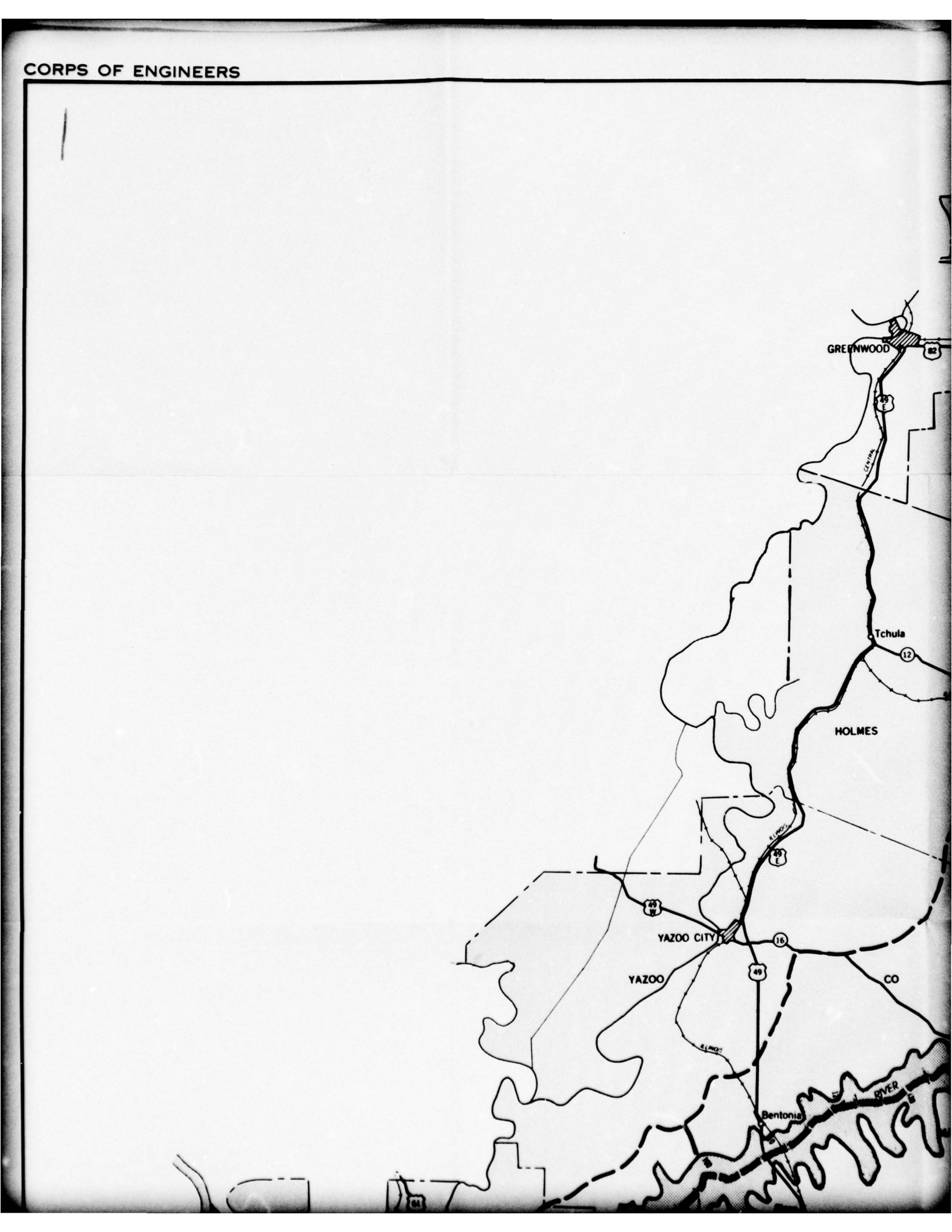
PLAN OF DEVELOPMENT - 1980

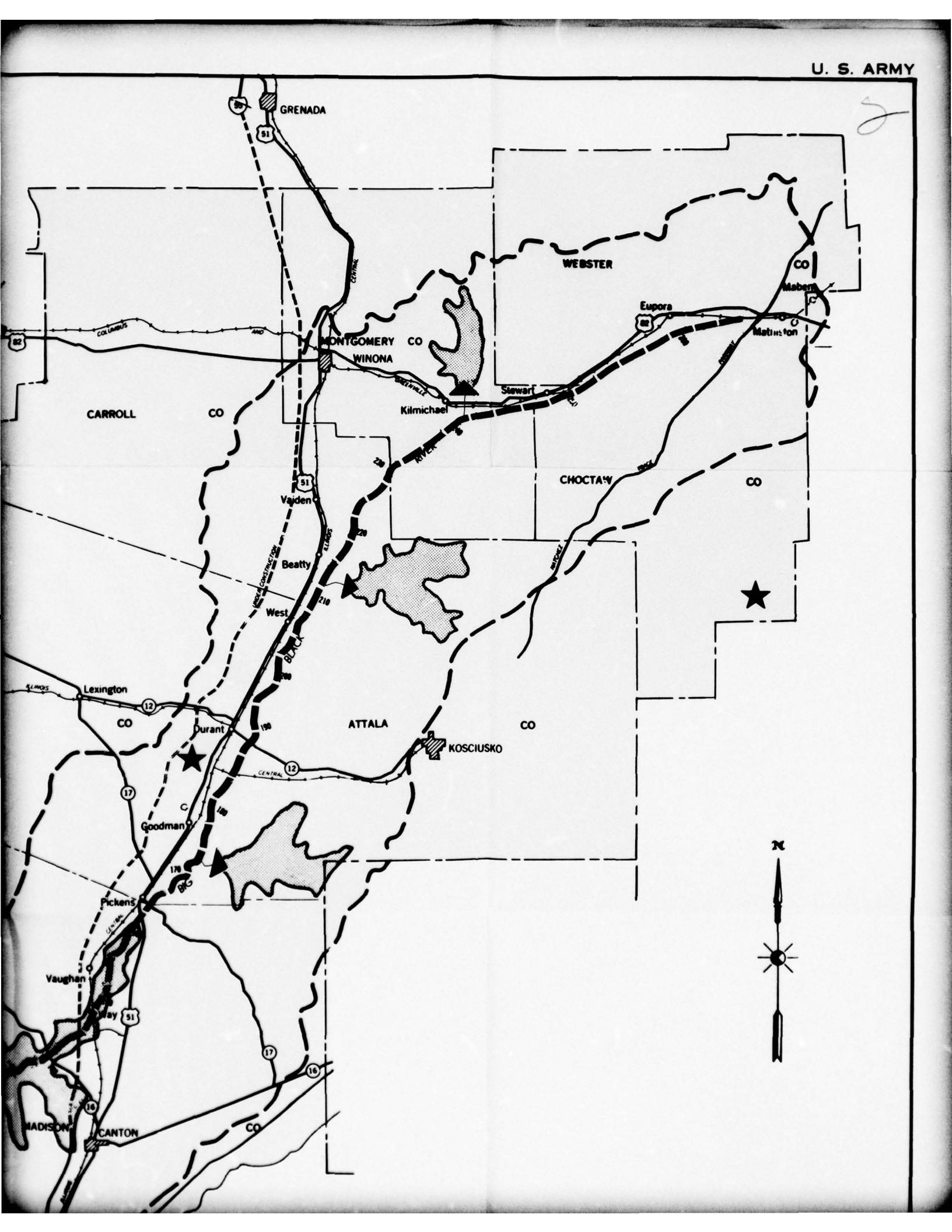
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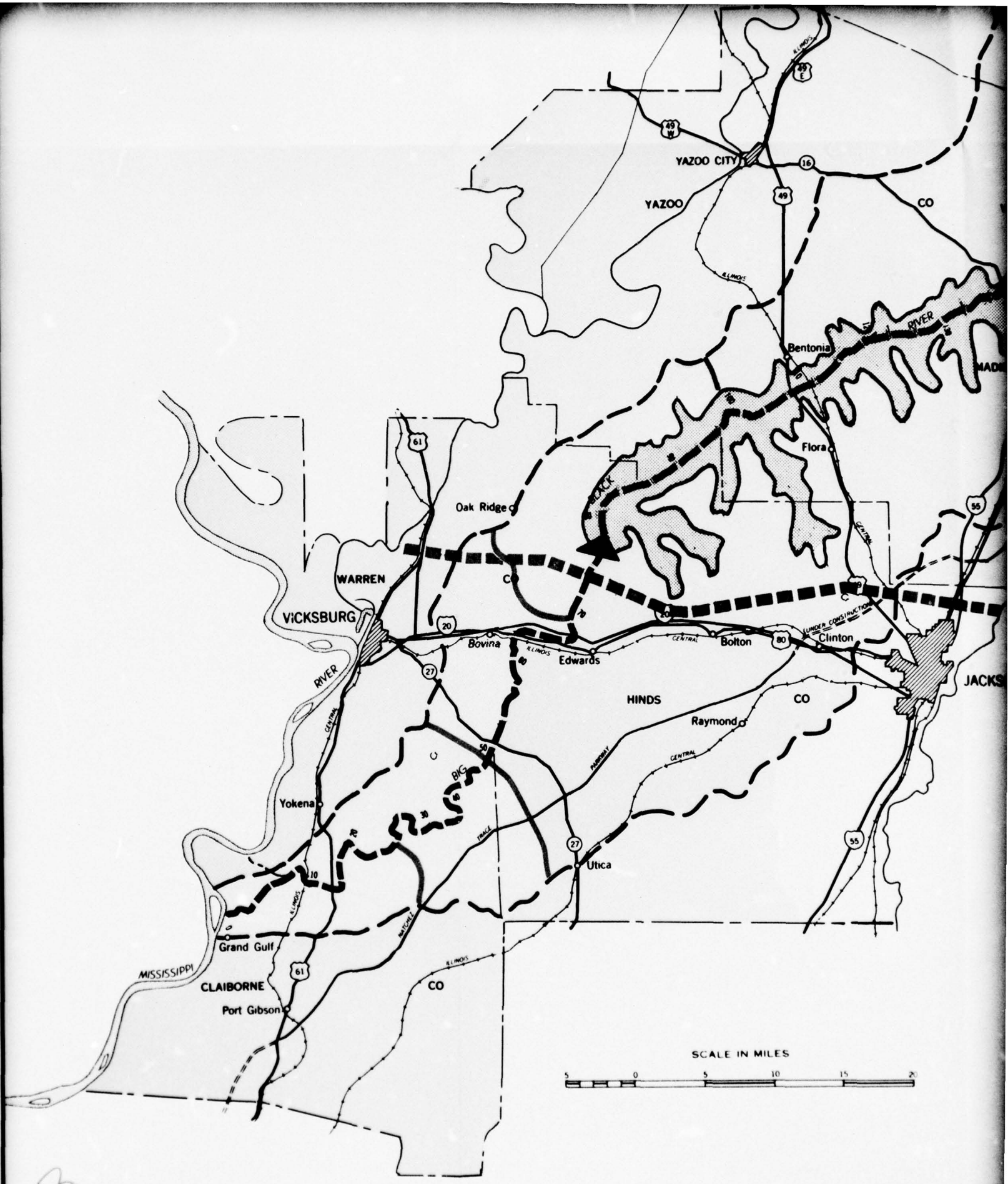
BIG BLACK RIVER BASIN COORDINATING COMMITTEE

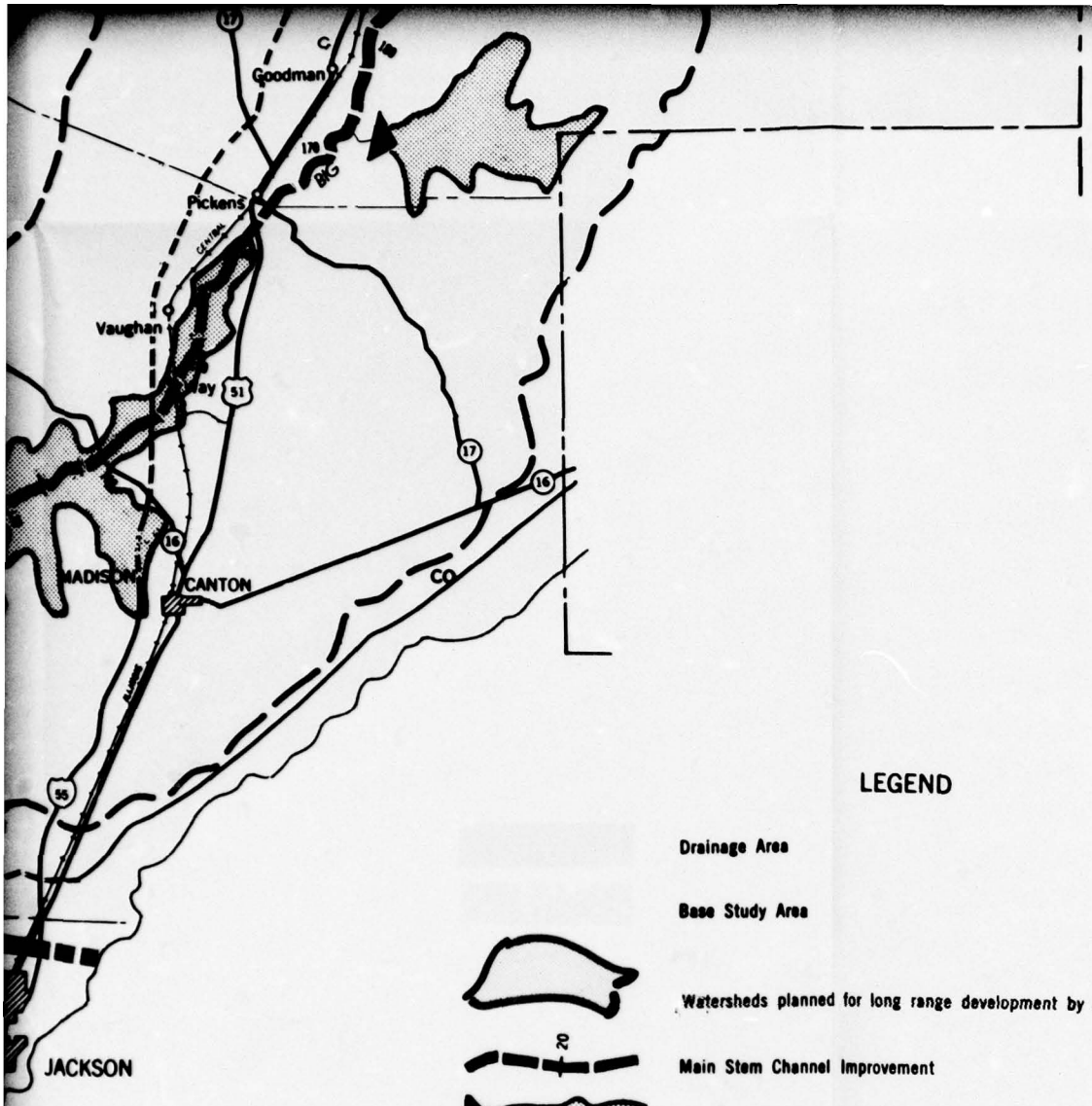
APRIL 1968

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MISSISSIPPI
RIVER
BIG BLACK
ILLINOIS
CENTRAL
PEARL
TRACE
NATCHEZ
UNDER CONSTRUCTION
SCALE IN MILES
5 0 5 10 15 20



LEGEND

Drainage Area

Base Study Area

Watersheds planned for long range development by Soil Conservation Service

Main Stem Channel Improvement

Edwards Reservoir

Jackson Miss. to Miss. River Navigation Channel

Tributary Reservoirs

Expansion of Recreaction Areas

LOWER MISSISSIPPI RIVER
BIG BLACK RIVER BASIN
MISSISSIPPI
COMPREHENSIVE BASIN STUDY

FUTURE PROJECTS - 2015

SCALE AS SHOWN

BIG BLACK RIVER BASIN COORDINATING COMMITTEE

APRIL 1968

BIG BLACK RIVER, MISSISSIPPI
COMPREHENSIVE BASIN STUDY

ATTACHMENT NO. 1

COMMENTS OF PARTICIPATING AGENCIES

ATTACHMENT NO. 1

COMMENTS OF PARTICIPATING AGENCIES

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CANTON, MISSISSIPPI - 39046

May 24, 1969

Colonel John W. Brennan, District Engineer
Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39180

Re: LMKED-BS

Dear Colonel Brennan:

As representative of the State of Mississippi, I have enjoyed participating with the other members of the Coordinating Committee, Big Black River Comprehensive Basin Study in the production of a report that will prove to be of tremendous value in the development of the Big Black River basin.

I hope that it will be possible for this plan to be utilized and kept up-to-date, and will not be allowed to collect dust in the files of the responsible leaders in the area.

The staff of your district is to be commended for the manner in which they coordinated this important work.

Yours very truly,

Sam Hailey

SH/jp

SAM HAILEY
State of Mississippi Member,
Coordinating Committee for the
Big Black River Comprehensive
Basin Study

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
River Basin Survey Staff
P. O. Box 3319
Jackson, Mississippi 39207
August 1, 1968

Colonel Felix Garrett
District Engineer
U. S. Army, Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39181

Dear Colonel Garrett:

Representatives of the USDA Field Advisory Committee and members of the River Basin staff have reviewed the Interagency Summary Report, Volume I, and other annexes of the Comprehensive Report of the Big Black River Basin. Their comments follow:

1. Interagency Summary Report

a. Page 5 - Drainage areas differ with Annex A, page 2-1. This difference is explained on Table 2.1, page 2-2, Annex A. No change is recommended.

b. Page 25 - Flood Control Needs - The acres flooded and cleared used in Item a(1) and 2(a) differ from those on page 12, Annex B.
Summary Report - 210,000 acres - 45,000 acres
Annex B - 211,000 acres - 46,000 acres
It is recommended that these data be corrected by the Corps since Annex B is largely the Corps annex.

c. Page 28 - There are 2,397,000 acres with an erosion problem. Annex A, page 4-1 indicates 2,413,976 acres. The Summary Report figure should be changed from 2,397,000 to 2,413,976 acres.

d. Page 25 - The statements on "Power" are very general and apparently are intended to apply to the entire country, according to the way it is written. This section should address itself more to the influence that the projected economic growth will have on the power aspects in the Big Black River Basin. Statements 8.c on page 55 and others in Annex H indicate this type information is available for the power study area.

e. Pages 17 and 18 - Summary Report - We question the value of using "land in farms" and "land not in farms" as the major land-use breakdown. We prefer the traditional "cropland, pastureland, forest land, other" as on pages 2 through 6 of the USDA Appendix, Annex A. We note that the USDA's (ERS, FS) "blue book" of

August 1967 for use of the Water Resources Council and cooperating agencies employs "cropland, pasture and range, forest and woodland, other agricultural, and nonagricultural." While the "pie charts" do not identify land use exactly as indicated in the above comment, the land use as presented on page 18 does portray the same land use breakdowns. This presentation was revised from the original draft with assistance from the USDA river basin staff. Since it does identify the major land uses, including agricultural and non-agricultural, it is recommended that no change be made.

f. Page 14 - Agriculture's contribution to the total economic base study is not mentioned. The statement implies there were no inputs other than those of the Michael Baker study. Recommendation: If recognition is given to a private firm, also recognize agriculture's input. Actually no credits are needed.

g. Page 46 - The contribution of the upstream watersheds to a reduction in flood damages on the mainstem should be started even if indirect benefits were not considered.

2. Annex A

a. Page 2-11, fourth paragraph - "It would seem logical to expect fewer hunting and fishing camps in areas where accessibility is difficult." This is a local situation. The following statement clarifys this and is included for your consideration.

> "The Basin is comparatively narrow, averaging 15 to 20 miles in width. For the most part, hunter accessibility is not a problem. West of Highway 61, where accessibility becomes difficult during winter months, permanent hunting and fishing camps are established. These camps provide club members a place to stay an extended length of time during hunting seasons once the camps are reached."

b. Page 3-18, Table 3.7 - "The projected yields for corn seem unusually low, especially when considering the potential of the soils and anticipating a continued increase in production costs which should demand more efficiency and higher production." These yields are low; however, much higher yields are obtainable by some farmers but small acreages by many farmers tend to reduce the average. It is not implied that the soil resource is incapable of producing higher yields; the type of farmer and management employed are the more important factors. These yields appear reasonable under these circumstances so no change is indicated.

c. Page 4-1 and 4-4 - "Erosion" on page 4-1, "Sediment" on page 4-4 is somewhat contradictory. On the one hand, erosion is considered a 'serious problem' but on deposition of sediment, is a relatively minor problem; yet deposition does contribute to flooding by filling stream channels." Erosion is less now than in the past. The resultant deposition (sediment) is composed mostly of fine materials and causes no direct sediment damages to crops and pastures. Over a long period of time it would reduce the capacity of existing channels, thereby increasing frequency of flooding. The filling of channels is occurring at a less rapid rate now because of changes in land use that have made the erosion problem, while still serious, less. It is recommended that no change be made on pages 4-1 and 4-4.

3. Other

Comments were received regarding expressions of the National or public viewpoint in evaluating the need for resource development and how projections of economic parameters were used to establish "Needs" in the basin. It is recommended that the Corps of Engineers and USDA work together in answering or satisfying this comment in the report. Perhaps this could be documented in the Introductory of the Summary Report.

We appreciate the opportunity to review these reports and will continue to work with you in expediting the completion of all the comprehensive reports in the Big Black River Basin.

Very truly yours,

W. L. Heard

W. L. Heard, Chairman
USDA Field Advisory Committee

cc: E. C. Buie
Dr. Neil Cook
Don Gerred, FS

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE, P. O. Box 610, Jackson, Miss. 39205

SUBJECT: RB - Big Black River Basin - Annex C and Annex I DATE: May 6, 1969

TO: Colonel John W. Brennan
District Engineer
U. S. Army, Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39181

Agencies of the Department of Agriculture have reviewed the following reports on the Big Black River Comprehensive Basin Study:

Annex C - A Report on the Recreation Aspects of the Big Black River Basin, Mississippi, prepared by the Bureau of Outdoor Recreation

Annex I - Role of the State of Mississippi in the Planning and Development of the Water and Related Land Resources in the Big Black River Basin, prepared by the Mississippi Board of Water Commissioners

We have no comments on Annex I. The following comments will apply to Annex C, Bureau of Outdoor Recreation Report:

It is noted that the early-action plan as proposed by the BOR includes options to modify two multiple-purpose reservoirs in the USDA Plan. These two reservoirs were among seven to be developed primarily to help satisfy the need for boating.

As indicated on Charts 13 and 18, the modifications of these two reservoirs (Bogue Chitto No. 8 and Fourteen Mile No. 2) are identified as "single purpose projects." Costs of proposed facilities are included to help satisfy additional needs for swimming, picnicking, camping and other activities. Approximately 350,000 activity occasions will be satisfied by these additions.

Another option is to modify plans of the U. S. Forest Service in the Tombigbee National Forests by providing additional facilities for swimming, picnicking, camping and other activities.

It is understood by the Department of Agriculture that the costs of these modifications are to be borne by local groups or from State funds if available. These costs are estimates of total costs; they are not a part of project developments as proposed by USDA and are not included in the benefit-cost analysis. Also, if these options are to be implemented, they would be administered or managed by sponsoring organizations (water management district, city, county or state agency) for the respective watersheds or the U. S. Forest Service, whichever is applicable.

More specific comments include:

1. Page ii - Table in middle of page depicts "Projected Demand in Recreation Days for Four Major Activities." However, these activities are not identified until page 14 of the report. The same situation repeated on page iii.

2. Page ii, last paragraph - Although the condition of inadequacy of existing recreation supply undoubtedly is true under any circumstances, the question arises as to why existing supply should be measured solely in terms of publicly owned land and water facilities. What about the private sector? According to the first three paragraphs on page 21, an attempt was apparently made to identify private facilities available to the public.

3. Page iii - See comment no. 1 above.

4. Page v, fifth paragraph - The costs need to be expressed in terms of annual costs for comparison.

5. Page v, paragraph 5, last sentence - To what single-purpose projects does this statement refer? No mention is made of two single-purpose projects in the Plan of Development on pages iv and v. It is assumed that these are the Bogue Chitto Reservoir #8 and Fourteen Mile Reservoir #2, identified on page 23 and in Chart 18.

6. Page 5, first paragraph, last sentence - Didn't SCS provide information on programmed and potential PL-566 projects? If so, and since they were not previously mentioned, this statement would not be correct.

7. Page 33, Chart 13 - It would seem that the annual cost should be included for the single-purpose projects.

8. Page 37, item 10 - Is this the only way the private sector can contribute? This appears to "short-change" the significant role the private sector can play in helping to meet recreation needs.

9. Page 37, item 13 - Suggest adding "as well as the private sector," on line 2 between the words "agencies" and "to."

We appreciate the opportunity to review these reports.

W. L. Heard, Chairman
USDA Field Advisory Committee

cc:
Dr. Neil Cook, ERS
Carter Qualls, FS

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI 39180

LMKED-BS

20 May 1969

Members
Big Black River Basin Coordinating Committee

I am pleased to report that the Big Black River Basin Study has been completed, and final field level comments have been received from each of the participating agencies. Printing of attachment 1 to Volume I, Comments of Participating Agencies, is now underway. As soon as this attachment is printed we will forward the report to the Water Resources Council.

The comprehensive plan of structural and non-structural measures recommended by the Coordinating Committee constitutes the basic plan for the development and beneficial use of the water and related land resources of the basin. I feel that the early action plan of development is responsive to the immediate problems and needs of the basin, while the long range plan is designed to provide a basis for further development in the future.

While I have served as Chairman of the Coordinating Committee for only a short while, my predecessor, Colonel Felix R. Garrett, gave me a background for the study which indicates that a fine spirit of cooperation has prevailed throughout the course of the study. As Chairman of the Coordinating Committee, I want to thank each of you for a fine effort and commend you for a job well done. Please express my appreciation to every person in your organization who had a part in this study.

Sincerely yours,

John W. Brennan

JOHN W. BRENNAN
Colonel, CE
District Engineer
Chairman, Coordinating Committee
Big Black River Comprehensive Basin Study

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
WEATHER BUREAU SOUTHERN REGION HEADQUARTERS
FEDERAL OFFICE BUILDING
FORT WORTH, TEXAS 76102

July 31, 1968

IN REPLY REFER TO: WFS2

Colonel Felix R. Garrett
District Engineer
Vicksburg District, Corps of Engineers
Department of The Army
Vicksburg, Mississippi 39180

Dear Colonel Garrett:

With reference to your letter LMKED-RS dated 25 June 1968.

I have no further comments concerning the Big Black Basin Comprehensive Report, but I wish to express my appreciation for your fine leadership and the efforts of your staff and the other federal, state and local officials who contributed to the preparation of this report.

Although the participation as Department of Commerce representative was minimal due to limited staff and resources, I want you to know that this afforded an opportunity for coordination that will benefit the agencies of Commerce who have an interest and responsibility in water resources in general; namely, Business and Defense Services Administration, Economic Development Administration and Environmental Scientific Services Administration (Coast & Geodetic Survey, Environmental Data Service, Weather Bureau and Maritime Commission).

I wish to especially thank the members of the numerous Work Groups and Ad Hoc Committees which spent many hours preparing the necessary detailed supporting documents in order that a comprehensive basin development program could be presented for consideration by higher authority in the Departments of Agriculture, Army, Commerce; Health, Education & Welfare; Interior, Power Commission and the state of Mississippi.

Sincerely yours,

R. J. MacConnell

Richard J. MacConnell
Regional Hydrologist

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
WEATHER BUREAU SOUTHERN REGION HEADQUARTERS
FEDERAL OFFICE BUILDING
FORT WORTH, TEXAS 76102

April 15, 1969

IN REPLY REFER TO: WFS2

Colonel John W. Brennan
District Engineer
Vicksburg District, Corps of Engineers
Department of The Army
P. O. Box 60
Vicksburg, Miss. 39180

Dear Colonel Brennan:

Thank you for your letter LMKED-BS dated 2 April 1969 enclosing for our review copies of Annex C, Bureau of Outdoor Recreation Report, and Annex I, State of Mississippi Report, of the Big Black River Basin Comprehensive Report.

These reports have been reviewed in this office and the Weather Bureau has no suggestions or comments. We appreciate very much the privilege of reviewing both of these reports.

Sincerely yours,

John P. McCallister

John P. McCallister
Regional Hydrologist

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGIONAL OFFICE
REGION IV

PUBLIC HEALTH SERVICE
50 Seventh St., N. E., Room 404
Atlanta, Georgia 30323

July 15, 1968

Colonel Felix R. Garrett
District Engineer
Vicksburg District
Corps of Engineers
Department of the Army
Vicksburg, Mississippi 39180

Dear Colonel Garrett:

The comprehensive study and plan for the Big Black River Basin incorporates sound measures for effecting environmental control over water and related land use. As detailed plans are formulated we encourage the responsible agencies to seek advice on acceptable public health practices as a part of their plans.

Health guidelines for water resource management are now being prepared. These guidelines will assist planners and developers in providing safe water supplies, solid waste disposal, disease vector control, recreation area development, marine food sanitation, and other environmental control practices related to water resource development. We look forward to working with interested agencies which may use these guidelines.

As Department of Health, Education, and Welfare member of the Big Black River Basin Coordinating Committee, I fully endorse the comprehensive plan. The Department considers promotion of a healthful environment an important ingredient for any comprehensive river basin plan and will cooperate with any continuing organization that may be established for implementation of the plan.

Sincerely,

Howard W. Chapman

Howard W. Chapman
Associate Regional Health Director
Bureau of Disease Prevention and
Environmental Control

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGIONAL OFFICE
REGION IV

PUBLIC HEALTH SERVICE
50 Seventh Street, N. E., Room 404
Atlanta, Georgia 30323

RE: LMKED-BS

April 21, 1969

Colonel John W. Brennan
District Engineer
Department of the Army
Vicksburg District, Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39180

Dear Colonel Brennan:

This is in reply to your letter of April 2, 1969, requesting review comments on Annex C, Bureau of Outdoor Recreation Report, and Annex I, State of Mississippi Report, of the Big Black River Basin Comprehensive Report.

Annex C - Bureau of Outdoor Recreation Report

Please refer to our previous letters of November 9, 1967, and July 15, 1968, concerning the health aspects of Big Black River Basin recreational development. We have no additional comment at this time.

Annex I - State of Mississippi Report

State and local health departments play an important role in providing guidance and leadership for design, construction, operation and maintenance of recreational sanitary facilities and other health protection measures. Annex I, State of Mississippi Report, makes no mention of the State and local health departments' role in these important health matters. To be truly comprehensive, the report should present a clear account of the surveillance and other services these agencies will provide to protect public health.

Please contact us if we can provide additional assistance.

Sincerely,

Gary D. Hutchinson
Acting Water Hygiene Representative
Environmental Control Administration

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
SOUTHWEST REGION
FEDERAL BUILDING, P. O. BOX 1467
MUSKOGEE, OKLAHOMA 74402

April 15, 1969

Colonel John W. Brennan, District Engineer
Department of the Army
Corps of Engineers, Vicksburg District
Vicksburg, Mississippi 39180

Dear Colonel Brennan:

This is in response to your letter of April 2 inviting comment on Annex C, Bureau of Outdoor Recreation Report, and Annex I, State of Mississippi Report, of the Big Black River Basin Comprehensive Report.

Since Annex C was prepared within the Department of the Interior I have not reviewed it critically. It was prepared by our recreation specialists.

Annex I is a well written summary of Mississippi's laws and regulatory bodies relating to water management. It is interesting to note that it is the first state outside of the Arid West to establish an administrative procedure for regulating water uses.

The first sentence under 2 REGULATORY AUTHORITY on page 6 seems to be incomplete. Also in that paragraph there is an opportunity to mention the increasing importance of quality control so that water once used can again be available to others.

Sincerely,

Kenneth D. McCall
Regional Coordinator

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF OUTDOOR RECREATION
SOUTHEAST REGIONAL OFFICE
810 NEW WALTON BUILDING
ATLANTA, GEORGIA 30303

IN REPLY REFER TO:

July 11, 1968

District Engineer
U.S. Army Engineer District,
Vicksburg
Post Office Box 60
Vicksburg, Mississippi 39181

Dear Sir:

The Southeast Regional Office, Bureau of Outdoor Recreation, generally concurs with the plan of development and management for the Big Black River Basin as presented in the summary report.

The study presents an analysis of the needs for the study area and a plan for developing the water and related land resources to satisfy an acceptable level of these needs.

The plan provides a basis for future planning and development, consistent with public needs and desires and gives a framework for project analysis on a project-by-project basis.

The opportunity to review and comment on this summary report is appreciated.

Sincerely yours,

Roy K. Wood
Regional Director

United States Department of the Interior
BUREAU OF OUTDOOR RECREATION
SOUTHEAST REGIONAL OFFICE
810 New Walton Building
Atlanta, Georgia 30303

IN REPLY REFER TO:

APR 11 1969

District Engineer
U.S. Army Engineer District,
Vicksburg
Post Office Box 60
Vicksburg, Mississippi 39180

Dear Sir:

We have reviewed Annex I entitled "Role of the State of Mississippi in the Planning and Development of the Water and Related Land Resources in the Big Black River Basin" prepared for the Big Black River Basin Comprehensive Study.

We did not note any mention in this report of the State agency or agencies authorized to participate in the cost-sharing provisions of the Land and Water Conservation Fund Act, Public Law 88-578, or the Federal Water Project Recreation Act, Public Law 89-72. We believe that this information should appear in the report.

The opportunity to review and comment on Annex I is appreciated.

Sincerely yours,

Roy K. Wood
Regional Director

The $7 Annual Golden Eagle Passport admits carload of people year long to all designated Federal recreation areas

AD-A036 816 BIG BLACK RIVER BASIN COORDINATING COMMITTEE VICKSBU--ETC F/G 8/6
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APR 68

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UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
PEACHTREE-SEVENTH BUILDING
ATLANTA, GEORGIA 30323

July 17, 1968

Colonel Felix R. Garrett
Chairman, Coordinating Committee
Big Black River Comprehensive Basin Study
U.S. Army, Corps of Engineers
P.O. Box 60
Vicksburg, Mississippi 39181

Dear Colonel Garrett:

This is in reply to your letter of June 25, 1968, transmitting Volumes I through V of the Big Black River Comprehensive Basin Study.

We have reviewed the volumes pertinent to fish and wildlife, and have no objections to release of the reports as presented.

The courtesy and cooperation extended by your staff during the study, and the opportunity to review and comment on the final reports are greatly appreciated.

Sincerely yours,

W. L. Towns
Acting Regional Director

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
PEACHTREE-SEVENTH BUILDING
ATLANTA, GEORGIA 30323

April 29, 1969

Airmail

District Engineer
U.S. Army, Corps of Engineers
P.O. Box 60
Vicksburg, Mississippi 39181

Dear Sir:

In response to your letter of April 2, 1969, we have reviewed Annex C, A Report on the Recreation Aspects, and Annex I, Role of the State of Mississippi in the Planning and Development of the Water and Related Land Resources in the Big Black River Basin.

We concur with Annex C as presented. We also concur with Annex I, except that it does not mention the authority, if any, which would permit State and/or local agencies to participate in the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 4601-4--4601-11) and the Federal Water Project Recreation Act (79 Stat. 213; 16 U.S.C. 4601-12--4601-21).

The opportunity to review and comment on these reports is appreciated.

Sincerely yours,

C. Edward Carlson

C. Edward Carlson
Regional Director

UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION
SOUTH CENTRAL REGION
1402 ELM STREET, 3RD FLOOR
DALLAS, TEXAS 75202

July 18, 1968
Your Reference:
LMKED-BS

Col. Felix R. Garrett
District Engineer
U. S. Army Engineer District, Vicksburg
P. O. Box 60
Vicksburg, Mississippi 39180

Dear Sir:

This office has reviewed the report entitled, "Big Black River Basin Comprehensive Report" and find that there are no apparent conflicts or contradictions in the report.

It is pointed out, however, that the provisions of Executive Order 11288 are to be complied with.

Sincerely yours,

John P. Lucas

WILLIAM C. GALEGAR
Regional Director

cc: SE Region, Atlanta, Ga.
Federal Activities
Coordination

UNITED STATES
DEPARTMENT OF THE INTERIOR
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION

SOUTH CENTRAL REGION
1402 ELM STREET, 3RD FLOOR
DALLAS, TEXAS 75202

April 22, 1969
Your Reference:
LMKED-BS

Col. John W. Brennan
District Engineer
Department of the Army
Vicksburg District, Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39180

Dear Sir:

Reference is made to your letter of April 2, 1969, to Mr. John Wakefield of the Southeast Regional Office, FWPCA, which enclosed Annexes C and I of the Big Black River Basin Comprehensive Report. These reports were forwarded to this office.

We have reviewed the subject reports and find that there are no apparent conflicts or contradictions in the reports relative to our program.

The Big Black River basin and all other watersheds in the Lower Mississippi region, which drain into the Mississippi River, are now included in the South Central Region of our Administration. Any further correspondence concerning projects within this area should be directed to this office.

We appreciate the opportunity to review your reports prior to the final publication.

Sincerely yours,

for WILLIAM C. GALEGAR
Regional Director

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 2052
Jackson, Mississippi 39205

July 12, 1968

District Engineer
U.S. Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39180

Dear Sir:

We have examined the Big Black River Basin Comprehensive Report and find it to be in good order. One item that evoked some discussion in our office is the material in the second paragraph under Tributary Runoff on page 2-8 of Volume II. The data are given to a considerably greater degree of refinement than seems warranted.

My staff joins me in expressing appreciation for the pleasant working relations we have had with your office during the project that has resulted in this report. Please call upon us if we can be of further assistance.

Yours sincerely,

for Wm. H. Robinson
District Chief

RN/fb

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Water Resources Division
P. O. Box 2052
Jackson, Mississippi 39205

April 16, 1969

District Engineer, Vicksburg District
U. S. Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39180

Refer to: LMKED-BS

Dear Sir:

We have reviewed Annex C, Bureau of Outdoor Recreation Report, and Annex I, State of Mississippi Report, of the Big Black River Basin Comprehensive Report and find them to be in good order.

In our review of draft copies of these reports in November 1967, we made one suggestion on the recreation report and note that it was followed. We had no suggestion for changes in the Annex I on the earlier review and have none now.

Yours sincerely,

Lamar E. Carroon

Lamar E. Carroon
District Chief

RN/fb

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
SOUTHEAST REGION, P. O. BOX 10008
FEDERAL BUILDING, RICHMOND, VA. 23240

IN REPLY REFER TO
L7423 SER(CA)

JUL 10 1968

District Engineer
Vicksburg District, Corps of Engineers
Vicksburg, Mississippi 39180

Dear Sir:

As requested in your letter of June 25, 1968, we have reviewed the final copies of the Big Black River Basin Comprehensive Report which came to us under separate cover.

We wish to commend the Big Black River Basin Coordinating Committee, the participating agencies and their personnel, for the excellence of the report as a whole.

The Inter-Agency Summary Report is, in our judgement, a model, in briefness, of an entire basin study, and still includes pertinent data furnished by the participating agencies for inclusion in the final report. Its format is well organized, and most interesting, in content, which facilitates review of the entire report. Particularly impressive to us is the use of the heading "The Natural Environment" on page 5, of the Summary Report, which locates and enumerates the various resources in this basin.

We appreciate the adequate recognition of National Park Service interest in this study, which includes archeological and historic values, the Natchez Trace Parkway, a portion of which is within the study boundary, and Vicksburg National Military Park, which is slightly outside the basin boundary. On Plates 1-2-3, Base Study Area, Plan of Development, and Future Project 2015, inclusion of the alignment of Natchez Trace Parkway on each plate is noted with interest.

We concur in the Coordinating Committee's conclusion f, on page 56 of the Summary Report on the Jackson, Mississippi to Mississippi River navigation channel as shown on plate 3 of the Summary Report, and in Volume III, page 25, paragraph 6, Navigation. This proposal, if authorized, would have a definite effect on the Natchez Trace Parkway.

We have reviewed with interest all volumes and have no comments on other technical aspects of this report.

Two additional copies of the report, when available, will be appreciated.

The opportunity of reviewing this final report is appreciated. When we may be of further assistance, please let us know.

Sincerely yours,

Jackson E. Price

Jackson E. Price
Regional Director

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
SOUTHEAST REGION, P. O. BOX 10008
FEDERAL BUILDING, RICHMOND, VA. 23240

IN REPLY REFER TO:
L7423 SER(CA)

APR 11 1969

District Engineer
Vicksburg District
Corps of Engineers
Vicksburg, Mississippi 39180

Dear Sir:

We have reviewed the copies of Annex C, Bureau of Outdoor Recreation report and Annex I, State of Mississippi report of the Big Black River Basin Comprehensive report which were enclosed with your letter of April 2, 1969.

In Annex C of the Bureau of Outdoor Recreation report the brief historical resume on page 9, appears to furnish adequate data for the purposes of this report. On page 10, under Historical Areas, we note with interest that Natchez Trace Parkway and Vicksburg National Military Park are recognized as being part of the basin plan. The text under each of these areas indicates their historic interest and the extent of their visitation.

We have no comments on the balance of this Annex which pertains to demand, supply, need, and the development of the Outdoor Recreation plan for the Basin.

We have no comments on Annex I, State of Mississippi report.

The opportunity of commenting on Annexes C and I is appreciated.

Sincerely yours,

Robert N. McIntyre

Robert N. McIntyre
Assistant to the Regional Director

FEDERAL POWER COMMISSION
REGIONAL OFFICE

819 Taylor Street
Fort Worth, Texas 76102
July 2, 1968

In reply refer to:
PWR-FW

Col. Felix R. Garrett, District Engineer
Vicksburg District, Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39180

Dear Sir:

The final copy of the report on the Comprehensive Study of the Big Black River Basin, received with your letter of June 25, 1968, has been reviewed and our comments follow.

The Federal Power Commission's primary interest in the study, as in all its river basin studies, is to determine the role of hydroelectric power in the sound and orderly development of the Nation's water resources. The results of our own research and of our cooperative study with the Vicksburg District of the Corps of Engineers are recorded in Volume V, Annex H, of the report on the Big Black River Basin.

Briefly, it was found that the market area available to any hydroelectric capacity developed in the Big Black River Basin could accommodate such capacity by the year 1980. There is one site in the basin (Edwards) which has a potential for the inclusion of hydroelectric power as part of a multiple purpose development. However, there are insurmountable obstacles to the construction of such a project during the early-action period of development and, a single-purpose hydroelectric plant at this site would not be economically feasible. This site should be given further consideration at such time as the long range plan of development is warranted.

We feel that these facts have been adequately presented in this report.

Sincerely yours,

Donald L. Martin
Regional Engineer

FEDERAL POWER COMMISSION
REGIONAL OFFICE
819 Taylor Street
Fort Worth, Texas 76102
April 15, 1969

In reply refer to:
PWR-FW

Col. John W. Brennan, District Engineer
Vicksburg District, Corps of Engineers
P. O. Box 60
Vicksburg, Mississippi 39180

Reference: LMKED-BS

Dear Sir:

The copies of Annex C and Annex I of the Big Black River Basin Comprehensive Report, received with your letter of April 2, 1969, have been reviewed. We have no comment except to acknowledge that we found these two annexes, Bureau of Outdoor Recreation Report and State of Mississippi Report, to be very informative in regard to their subjects.

Sincerely yours,

Donald L. Martin
Regional Engineer