

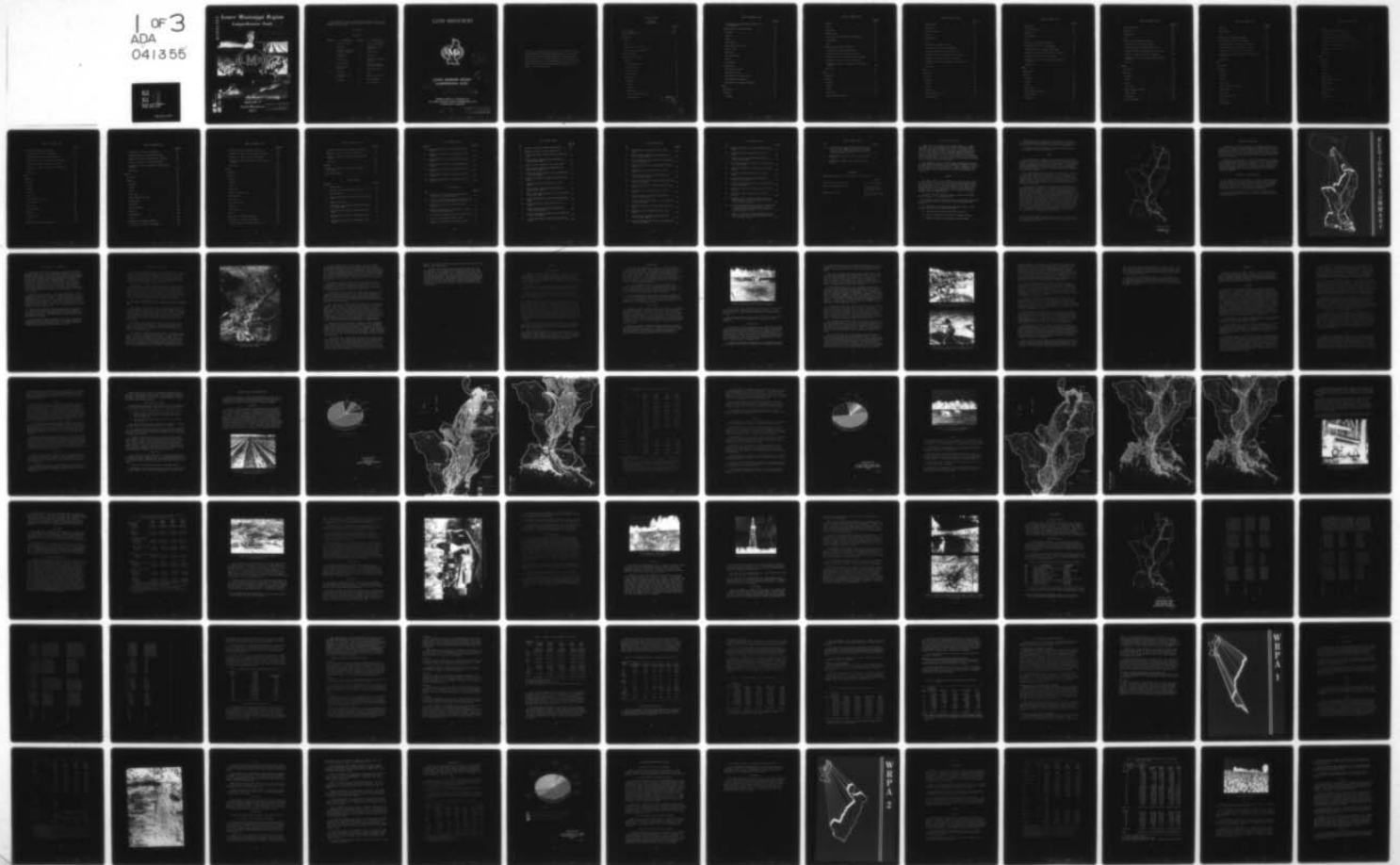
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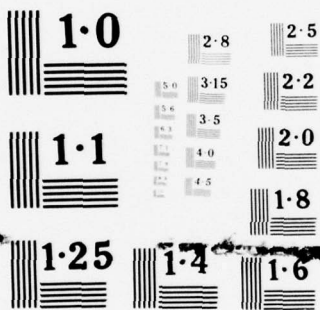
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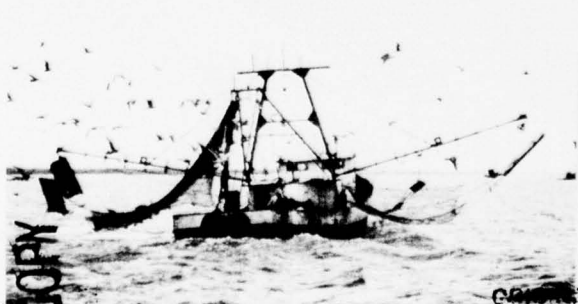
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# Lower Mississippi Region Comprehensive Study

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Main Report

Appendixes

<u>Appendix</u>	<u>Description</u>	<u>Appendix</u>	<u>Description</u>
A	History of Study	K	M and I Water Supply
B	Economics	L	Water Quality and Pollution
C	Regional Climatology, Hydrology & Geology	M	Health Aspects
D	Inventory of Facilities	N	Recreation
E	Flood Problems	O	Coastal and Estuarine Resources
F	Land Resources	P	Archeological and Historical Resources
G	Related Mineral Resources	Q	Fish and Wildlife
H	Irrigation	R	Power
I	Agricultural Land Drainage	S	Sediment and Erosion
J	Navigation	T	Plan Formulation
		U	The Environment

# LAND RESOURCES

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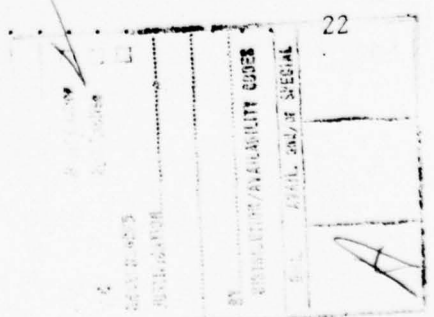


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PHOTOGRAPHS

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	<u>Page No.</u>
NASA, Mississippi Test Facility	9, 176, 177, 189, 198
USDA, Soil Conservation Service	14, 16, 23, 30, 36, 43, 74, 113, 120, 135, 139, 148, 162, 182
USDA, Forest Service	16, 33, 38, 40, 41, 43, 63, 93, 103, 104, 124, 140

## INTRODUCTION

Land is not just acreage, but an integral member of a complex biological system that includes soils, plants, and animals, all of which help make up the continuing life cycle. The status of land takes in urban areas with income-producing industry that shapes the city, and vast expanses of rural areas that encompass an infinite variety of lands and waters. Rural land resources not only provide homes and working space for those who live there, but also needed food, fiber, minerals, timber, and sites for much of the outdoor recreational activity of those who live in the cities.

This appendix is one of five basic data documents used in preparing other functional appendixes, the comprehensive framework plan, and the main report for the Lower Mississippi Region Comprehensive Study. The remaining four basic appendixes are: Economics, Regional Climatology, Hydrology and Geology, Mineral Resources, and Inventory of Facilities.

### PURPOSE

The general purpose of this appendix is to provide land resource information that will facilitate the coordinated and orderly conservation, development, utilization, and management of the region's water and related land resources. The data contained herein shall serve as benchmark guides to the formulation of plans for three objectives; national income, regional development, and environmental quality, or Programs A, B, and C respectively.

In order to fulfill the general purpose stipulated above, the specific purposes of this appendix are to:

- (1) Briefly describe the major historical events that contributed to the settlement and use of the region's water and related land resources;
- (2) Present facts relating to the extent and location of land problems, and productivity of the land resource;
- (3) Describe current land use and land availability;
- (4) Assess agricultural land resource development potential;
- (5) Project land needs for agricultural purposes; ~~and~~

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(6) Portray future single-purpose land needs for the Lower Mississippi Region in the categories of agriculture, urban and built-up, recreation, fish and wildlife, minerals, and environmental; and

(7) Discuss agricultural lands adequately treated and in need of treatment for 1970 for the region.

SCOPE

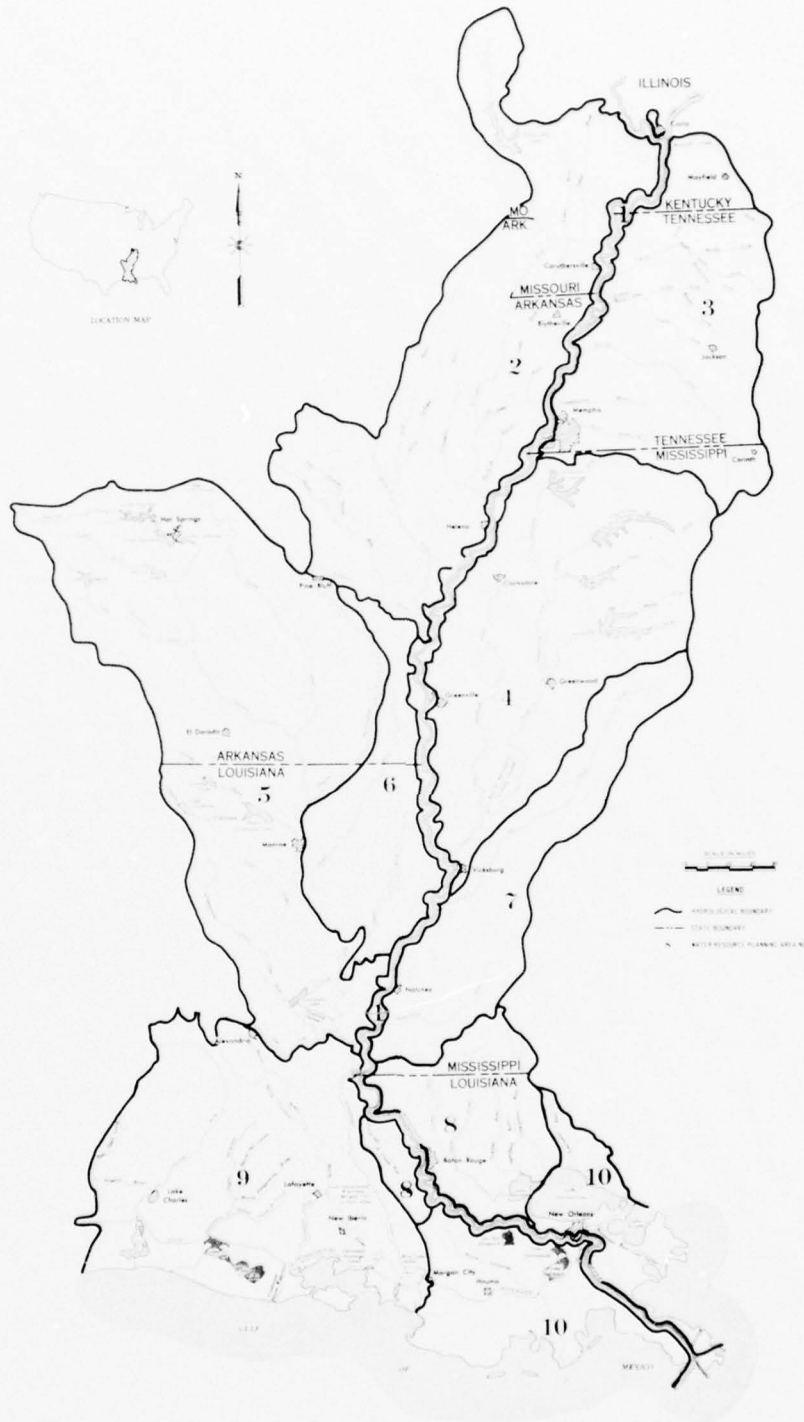
The area within the boundaries of the Lower Mississippi Region exceeds 65 million acres. While some water and land problems and needs in this vast area relate to the entire region, many are too complex to attempt a solution on a regional basis. To provide a practical basis for plan formulation, the region was subdivided into 10 hydrologic areas which are referred to as water resource planning areas (WRPA's) and are shown in figure 1.

This land resources study was divided into two phases - the basic data phase and the projected needs phase. The basic data phase was concerned with collection of data for water resource planning areas and the region. Data were collected on soils, land supply, land use, cropping patterns, crop yields, costs of agricultural production, and quantity of agricultural commodity output including crops, forest products, and livestock.

Soils data were compiled from published and unpublished Federal and State reports. Land supply, or availability, was based on the Conservation Needs Inventory. <sup>1/</sup> Historical and current (1970) land use was based on Agricultural Census data. Cropping patterns were based on Agricultural Census data and information from the Statistical Reporting Service of the United States Department of Agriculture. Crop yields were based on published and unpublished Federal and State reports and correlated with soil productivity groups by the Economic Research Service and the Soil Conservation Service of USDA. Enterprise costs, or crop budgets, were developed using Agricultural Experiment Station data from States comprising the region. Agricultural output (crops, forestry, and livestock) for historical, current, and projected years was based on OBERS data developed by the Bureau of Economic Analysis, U. S. Department of Commerce, and the Natural Resource Economics Division of the U. S. Department of Agriculture.

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<sup>1/</sup> An inventory conducted by the Soil Conservation Service in 1966-67 to develop detailed data on land use and conservation treatment needs on non-Federal rural lands.



LOWER MISSISSIPPI REGION  
COMPREHENSIVE STUDY

**REGIONAL MAP**

FIGURE 1

## PRESENTATION OF MATERIAL

Land needs for major use categories are displayed herein for the National Income Program (Program A) and the Regional Development Program (Program B). Program A is based on economic forecasts made for the Water Resources Council for all sections of the United States. Program B presents the future of the region projected under an assumption that the region will grow at the same rate that the Water Resources Council predicts for the Nation.

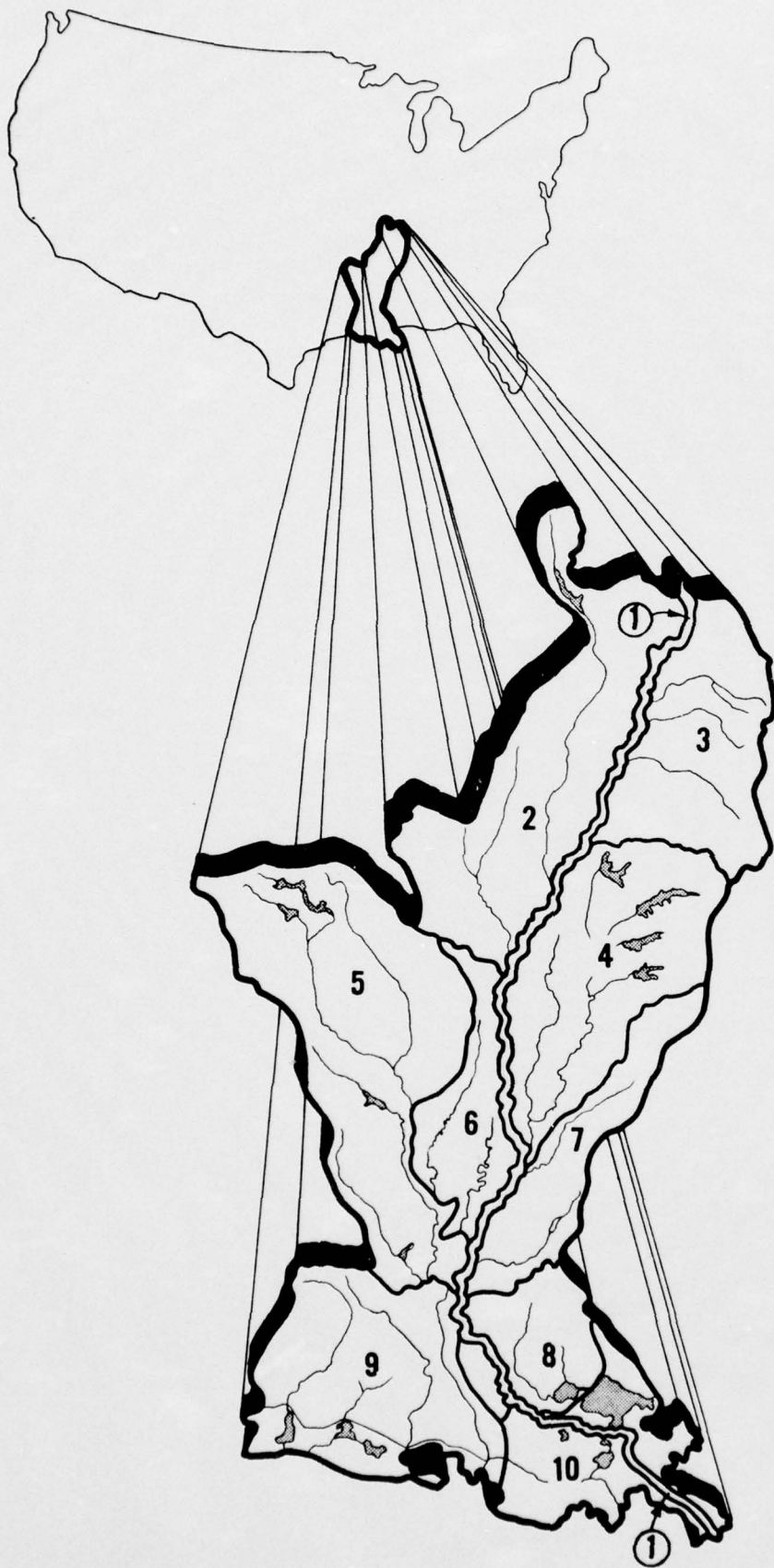
The land area requirements for the Environmental Quality Program are included to the extent that the land areas needed to satisfy natural environmental quality components are summarized. Total land needs for the Environmental Quality Program will consist of those specified for the National Income Program and the area required for the natural environmental components, and are summarized and discussed in the Plan Formulation Appendix.

## RELATION TO OTHER APPENDIXES

This appendix provides information on present and projected agricultural land needs, crop distributions, and yields, which were used in studies related to the compilation of the Economics, Flood Problems, Irrigation, Land Drainage, Water Quality and Pollution, Recreation, Coastal and Estuarine, Fish and Wildlife, Sediment and Erosion, Inventory of Facilities, and Plan Formulation Appendixes.

Current and projected needs for recreation, fish and wildlife, minerals, and environmental land were evaluated in appendixes devoted to those subjects.

REGIONAL SUMMARY



## REGIONAL SUMMARY

The manner in which the land resources of the Lower Mississippi Region are utilized will have a significant influence on the water resources of the region. Conversely, water resource use and management planning requires that land use and development proposals be analyzed in order that a balanced natural resource program be formulated for the Lower Mississippi Region. Urban development, for instance, is dependent on an adequate supply of municipal and industrial water. Because land resources are fixed in quantity, they must permanently satisfy diverse land needs. The way in which the food and fiber (agriculture) needs and living-space requirements (urban and built-up) are met will depend on how well the land can be managed for these and other purposes.

The value of land resources is frequently measured by the land's potential for economical, intensive-use development (urban), and the management of the land by its owners. Although details are lacking on land ownership in the region, sufficient data are available to provide a general pattern of ownership. Lands owned or leased by the Federal Government are estimated to be in excess of 2.2 million acres, or 3.5 percent of the land resource. These lands are largely national forests, parks, and wildlife refuge areas.

State, county, municipal, and other taxing entities collectively own or manage more land in the region than the Federal Government. This land is spread across the spectrum of major land use from small water areas to cropland. Large water areas, a nonland resource, are owned primarily by states.

Over 90 percent of the land resource of the region is privately owned by individuals, families, large and small farming enterprises, corporations, or some combination of these. The largest single type of privately owned land is miscellaneous forest land.

## DESCRIPTION OF REGION

The Lower Mississippi Region, with a population of over 6 million, includes the drainage area of the Mississippi River below the mouth of the Ohio, except for the White, Arkansas, and Red Rivers above the effects of Mississippi River backwater; the Louisiana Coastal Area between the drainage divides of the Pearl and Sabine Rivers; and the flood-protected area at Cairo, Ill. All of the Louisiana coastal marshes are considered to be within the region.

The hydrologic boundary of the region encompasses approximately 65.5 million acres, or 102.4 thousand square miles of land and water area in the south-central portion of the continental United States. The drainage area stretches over sections of seven states from the mouth of the Ohio River to the Gulf of Mexico. It extends about 600 miles in a north-south direction and varies in width from 100 to 300 miles. The region is entirely within the Central Gulf Coastal Plain except for the Ouachita Mountain area in southeastern Arkansas.

The region's topography varies from rugged features of the Ouachita and Ozark Mountains to the nearly level floodplain of the Mississippi River.

The climate of the region is generally described as subtropical, which means adequate precipitation on an average throughout the year, a mild but definite winter season, and warm to hot summers accompanied by high humidity. The tempering influence of the gulf on the climate is dissipated progressively inland and varies with the topography, ranging from colder winters and shorter growing seasons in the mountainous areas to mild winters and longer growing seasons near the Gulf of Mexico.

The average annual growing season ranges from 222 days at Cairo, Ill., to 277 days at Baton Rouge, La. Normal annual precipitation varies from 44 inches on the north to 64 inches on the gulf coast. Average annual temperatures decrease from 70° on the coast to 58° in extreme southeastern Missouri.

The landscape of the Lower Mississippi Region is dominated by the "big" river, which has helped shape the economy of the central United States, as well as the destiny of the Nation. Drainage areas in 31 states (representing 41 percent of the land area of the continental United States) and two Canadian Provinces contribute to the flow of water in the lower valley. The present length of the lower river is 954 miles; the average width is 1,600 yards; and the average main fall for the entire length of the river is about 3 1/2 inches to a mile.



A high altitude view of a portion of the  
Lower Mississippi Region

The most notable land form of the region, and one of the best defined physiographic areas in the country, is the rich, fertile Mississippi River Alluvial Valley that produced in 1970 more than half of the cotton, soybeans, wheat, and sugarcane harvested in the region. This south-sloped lowland averages 50 to 75 miles in width through most of its 600-mile length from Cape Girardeau, Mo., to the Gulf of Mexico. The alluvium is the old natural overflow area (35,000 sq. mi.) of the Mississippi River and accounts for about 34 percent of the region's total area.

The present course of the lower Mississippi runs close to the eastern wall of the alluvial valley except from Memphis, Tenn., to Vicksburg, Miss., where it swings west in a huge arc. This leaves 4.2 million acres of the Yazoo-Mississippi Delta as the greatest of the eastern alluvial basins of the Mississippi River.

The alluvial valley is defined by steep bluffs along much of its length. The surface is broken by several island-like upland areas, the most prominent of which is Crowley's Ridge, which stretches 200 miles from extreme southeastern Missouri into northeastern Arkansas. The valley is cut into a series of drainage basins by ridges and streams tributary to the Mississippi.

The region possesses three other major land forms of considerable interest. Two of these - the Coastal Plains Uplands and the coastal marshes - like the alluvial valley, are part of one of the major physiographic divisions of the North American Continent--the Central Gulf Coastal Plain. The Central Gulf Coastal Plain is an area of moderate or low relief with elevations ranging from approximately 800 feet m.s.l. to sea level. The 800-foot elevations, though, occur east of the boundary of the Lower Mississippi Region. The Gulf Coastal Plain is characterized by a belted topography of aligned hills and valleys which can be traced as definite units for long distances.

Bordering the Gulf of Mexico and extending inland for distances of more than 50 miles are the coastal marshlands--a very interesting and ecologically important terrain feature. In general, the coastal marshes may be divided into fresh-water, brackish-water, and salt-water marshes as one progresses from high land to the gulf. These marsh belts lie across the coast of Louisiana in varying widths, and may be divided from east to west into the Delta Marshes, the Subdelta Marshes, and the Prairie Marshes.

The Delta Marshes surround the active delta at the mouth of the Mississippi River. They contain about 300,000 acres of predominately fresh-water marsh. The Subdelta Marshes extend from Grand Pass in the Mississippi Delta to Cow Island and Cheniere au Tigre in Vermilion Parish. This large marsh area contains the most productive fur range in the United States, and covers 2.5 million acres. Adjacent to the Subdelta Marshes and extending west to the Texas border are the Prairie

Marsnes. They contain 750,000 acres and are much older and more stable than the other marsh types.

The other major land form is the Ouachita Mountain area. The lower portion of the Ouachita River drainage area enters the Central Gulf Coastal Plain near Malvern, Ark., and enters the alluvial valley near Monroe, La. The portion of the area upstream from Malvern is in the Ouachita Mountains. This major land form includes the headwaters of other drainage basins. The Ouachita Mountains are quite different from the rest of the Lower Mississippi Region. They are formed from folded rocks and range east and west. Elevations extend more than 2,000 feet above sea level and slopes are much steeper than elsewhere in the region.

## HISTORY

### Early Inhabitants

A muddy river meanders toward the ocean. Frequently, heavy storm runoff saturates its waters with the most fertile topsoils from the center of North America. Through millenniums of time, the turbid waters periodically overflow the river's banks and deposit rich productive sediments along its winding course, forming a wide floodplain that supports lush forests.

As long ago as 3,000 years, Indians have farmed portions of the wide floodplain. Indian agriculture was not uncommon by the First Century A.D. They named the river "Mississippi" meaning "Big River."

Hernando DeSoto was the first recorded explorer of the region. His visit in 1541 was followed by LaSalle's French expedition in 1682 nearly a century and a half later. LaSalle claimed the entire drainage basin as a French colony.

A large expedition led by d'Iberville landed on the gulf coast near the end of the 17th Century. This party journeyed upriver and explored some of the Mississippi's tributaries. They also outlined the northern boundary of the Isle of Orleans, the present day south-eastern shore of Lake Pontchartrain. During this same period, Englishmen moved into the region from the Carolinas and settled on the north shore of Lake Pontchartrain. Both French and English were fur traders and each desired to monopolize furs trapped by the Indians. A trade war ensued which continued throughout the French Colonial period. But it was agriculture, rather than fur trading, which encouraged permanent settlement of the region, and in 1718 New Orleans was formally established.

Early American pioneers ventured into the Mississippi region in 1763 after the area east of the Mississippi River came under British rule. They carved farmsteads from forests covering natural levees along the Mississippi River.

Agricultural development grew slowly, primarily because of the large amount of labor required to clear the land. First, the northern portion of the valley began to realize the value of the rich forest-covered delta farmland; and then the southern region began extensive development of this distinctive agricultural resource area.

## Plantation Era

French land rights and family customs were largely responsible for the evolution to plantations. These large farms provided economic advantages that caused their rapid expansion even though they required heavy capital investment, large land areas, and much cheap labor. Three events late in the French Colonial period favored plantation development. These were: the invention of the cotton gin, the process for crystallization of sugar, and the importation of slave labor. Lumbering became an off-season adjunct of agriculture, and plantations evolved to self-contained communities.

The river furnished the means of transporting goods to New Orleans, and by 1800 this city was becoming an important world trade center, supporting three-fourths of the population in the Lower Mississippi River Basin and controlling 85 percent of the wealth. The northern portion of the region was scantily populated.

Single-crop plantations growing mainly sugarcane or indigo multiplied rapidly, but by the mid-1850's most crops were being replaced by cotton. Cotton plantations extended to the mouth of the Ohio River. Steamboats were developed, and river transportation flourished as the primary means of hauling crops to market.

## Land Clearing

Landowners realized a double return from the land as clear-cutting for timber products was followed by cotton, now easily transported to market by the steamboat. Wholesale land clearing ensued, with Irish and Chinese immigrants hired to clear the land. Many died from malaria and the disease threatened to squelch settlement of the delta. The discovery and use of quinine provided some protection and land clearing continued. Farmers from the central United States moved into the area in the early 1900's with visions of creating a second corn belt, but cotton was king.

The rate of land clearing dropped during the depression of the thirties and World War II. The U. S. economy recovered after the war and increased national demands for rice, cotton, and livestock. This generated additional land clearing by large farm enterprises and forested acreages steadily declined through the early 1950's.



Recently cleared land being prepared for pasture

About this same time, ranchers from the drought-stricken Southwest moved to the region. Much of the estimated 900,000 acres cleared during the 1950's is attributed to development of permanent pasture for cattle.

The average annual forest land cleared since 1960 is estimated at 160,000 acres. Most of this land has been converted to soybean production.

#### Flood Control

Flood control is, and has historically been, the primary catalyst in the economic and physical development of the region. Without flood control the region could not sustain its present population, and those residing in the alluvial valley would be under continuous threat of natural disaster. Without flood control provided by the present system of Mississippi River levees, the entire alluvial valley (about 34 percent of the region), which contains the most productive soils in the region, would be subject to frequent floods.

In 1820 Congress began its long history of influencing the economic development of the region by authorizing the expenditure of \$5,000

for a navigation study of the Ohio and Mississippi Rivers by the Corps of Engineers. This authority was expanded in 1850 and 1851 for topographical and hydrological surveys, plus a Mississippi River Delta Study.

This first concerted flood-control program began with the establishment of the Mississippi River Commission in 1879. Prior to that time, piecemeal protection of floodplains was carried out by levee districts formed by State legislatures. The Mississippi River Commission formed a close working relationship with those levee districts, and many of their flood-control functions were assumed by the Federal government under the 1928 Flood Control Act.

Since 1928 one of the world's most comprehensive flood-control systems has been developed in the Lower Mississippi Basin, and it is continually being enlarged and improved upon. This system includes more than 2,200 miles of levees and floodwalls, and the Birds Point-New Madrid, Atchafalaya, Morganza, and Bonnet Carre floodways. All floodways are operational, though considerable construction remains, especially in the Atchafalaya floodway, to insure sufficient flow-carrying capacity. All except 28.3 miles of the levees and floodwalls are in place, but various reaches of levee totaling over 800 miles are considerably below full grade and section.

To curb upstream flooding, dams have been constructed on several of the tributaries and sub-tributaries to the Mississippi River. These streams are the Ouachita, Caddo, Little Missouri, Coldwater, Little Tallahatchie, Yacona, Yalobusha, and St. Francis Rivers. Dams on the Ouachita, Caddo, and Little Missouri Rivers provide hydroelectric power as well as flood control. Dams on the Tallahatchie, Coldwater, Yocona, and Yalobusha Rivers were constructed by the Corps of Engineers under a comprehensive headwater project on the Yazoo River.

The comprehensive headwater project was initiated due to severe flooding and subsequent loss of topsoil from valuable croplands in the upstream portions of the Yazoo and Little Tallahatchie River Basins. Soil losses exceeded 100 million tons and damages from floods and sediment exceeded 4 million dollars annually. There was little industry in the area and by 1940 the per capita income was the lowest in the nation.

The Flood Prevention Act of 1944 authorized the Department of Agriculture to begin the upstream land treatment phase of the Yazoo-Little Tallahatchie Flood Prevention Project. In 1947, working through established Soil Conservation Districts, the United States Department of Agriculture started the land treatment. The Soil Conservation Service and Forest Service are responsible for providing on-the-ground leadership, technical assistance, and financial help. The land treatment is carried out on private lands through cooperative agreements



Tree planting of the Yazoo-Little Tallahatchie  
Flood Control Project



A flood control structure protects cropland on the  
Yazoo-Little Tallahatchie Flood Prevention Project

with the landowners. At present, over 600,000 acres of badly eroded lands have been reforested; 250,000 acres of forest lands have been improved; 42,000 acres have been restored to crop production; one million acres of pasture lands have been improved; 464 floodwater retarding structures are in place; 1,300 miles of stream channels have been improved; and many other benefits such as streambank protection (2,400 acres), water diversion (3,600 miles), drainage ditches (11,800 miles), and sediment control structures (2,562). Industry has returned to the basin and residents are enjoying a new prosperity that would not be possible without the benefits of the project.

In 1954, the Small Watershed Act, Public Law 566, was passed extending flood control benefits to small watersheds throughout the region. Under this provision, a group of landowners in a subwatershed must form a local watershed management district. This district then assists Soil Conservation Service and Forest Service technical personnel in planning the necessary work and accepts the responsibility for maintenance of installations. Authorized PL-566 projects are described in Appendix D, Inventory of Facilities.

Section 102 of the Food and Agriculture Act of 1962, Public Law 87-703, authorizes the Secretary of Agriculture "to cooperate with Federal, State, territorial, and other public agencies in developing plans for a program of land conservation and land utilization, to assist in carrying out such plans. . ." The cooperation is carried out through Resource Conservation and Development projects as outlined in the Secretary's Memorandum No. 1515.

RC&D projects are applicable where the acceleration of current conservation activities plus the expansion of economic opportunities for the people of an area is desirable. The development and carrying out of a plan of action includes the orderly conservation, improvement, development, and wise use of natural resources. RC&D projects extend flood control protection to many small areas that were unable to qualify under flood control projects or Small Watershed projects.

In addition to the federal projects, many private groups or individuals are involved in flood control, particularly in the southern portion of the Mississippi alluvium. They constructed many miles of levees during the early stages of development of the Lower Mississippi Region. Much of the work was done through established drainage or flood control districts. The need for private flood control installations has diminished greatly since the completion of major flood control structures by the Corps of Engineers.

Many of the cities in the region could not have grown without the economic advantage provided by control of the Mississippi River. Similarly, the Lower Mississippi Region would not be contributing so significantly to the agricultural and manufacturing output of the Nation.

True, the region would be a great habitat for fish and wildlife, with dense forests and more wetlands and swamps. But there would be no great need for hunting or fishing since the population would be drastically reduced, and hunting and fishing are the primary need for the fish and wildlife resources.

The flood of 1973 inundated in excess of 12 million acres and caused damages in excess of \$700 million. Without the protection provided by the Mississippi River and Tributaries project, nearly twice the number of acres would have been under water and damages would have exceeded \$13 billion.

## METHODOLOGY

Projections for two programs designated A, National Income, and B, Regional Development, were made. Program A is based on the forecasts made for the Water Resources Council for all sections of the United States. Program B presents the future of the Region projected under an assumption that the region will grow at the same rate as predicted for the Nation by the Water Resources Council.

### Cropland

Estimates of future cropland needs were based on the following assumptions: (1) as population increases the demand for urban and built-up land will continue to reduce the land available for agricultural purposes; (2) government farm programs, land ownership, and other institutions will not restrict the location of agricultural production within a WRPA; (3) the current random distribution of pasture and miscellaneous crops across all soil groups represents the distribution that will prevail in the future; (4) irrigation of crops other than rice is evaluated as a competing development alternative - no minimum acres of irrigation of crops other than rice are required, but the maximum acres of crops allowed to be irrigated are limited to those presented in the Irrigation Appendix; (5) sugarcane will require 1.4 acres of land for each acre of sugarcane that is harvested; (6) production costs on all soils are approximately the same before and after development, and harvest costs vary with yields; and (7) capital and labor are available in sufficient quantities and do not limit the efficiency of resource use.

The derivation of land needed for the production of crops for future years was determined using linear programming, which is the computer counterpart of the economic budgeting model.

The crops analyzed by use of the linear programming model consisted of soybeans, cotton, corn, and rice. Crops such as sorghum, oats, barley, potatoes, sweet potatoes, rye, peanuts, cowpeas, tobacco, hay, vegetables, and acreage devoted to orchards were accounted for by maintaining a land reserve to satisfactorily take care of the acreage requirements.

The required output of food and fiber from this region to meet the Lower Mississippi Region share of national production was determined by OBERS and was used as a primary input to the model. In addition, production costs, the acreage of the various kinds and qualities of soils, and future crop yields were estimated. These were the basic parameters used in the model to establish future cropland needs. The physical quantity of agricultural production accruing from the region for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

The reader will note what appear to be differences in the 1970 existing cropland use as shown in this appendix and as shown in the Economics Appendix. The 1970 use shown herein (table 1) for cropland consists of harvested cropland and idle cropland (that cropland which is unavoidably neither harvested nor pastured and is a necessary part of the cropland mix). This figure is compatible with the harvested cropland and idle cropland acreages shown in the Economics Appendix after adjustment from economic boundaries to hydrologic boundaries.

A system of soil productivity groups was developed for use in the analysis. The soil groups are combinations of soils that are sufficiently homogeneous to permit a reasonable degree of accuracy in estimating current and projected crop yields and associated production costs. Also, for each soil productivity group (SPG), yields and production costs for each major crop grown in a WRPA were developed. Therefore, the operation of the budgeting model involved the selection of a cropping pattern, among alternative cropping possibilities, that will maximize economic gain within the constraints farmers are likely to be confronted with.

Detailed discussions of the soil productivity groups are found in the publication "Agricultural Land Resources, Their Productivity and Use, Lower Mississippi Region" prepared by the Economic Research Service, U. S. Department of Agriculture, dated January 1972. These discussions of the soil productivity groups contain (1) the land resource area(s) the groups are found in, (2) the land capability classification, (3) a description of the important characteristics and qualities of the soils, and (4) the names of the predominant soil series.

In each WRPA section of this appendix, a statistical table is presented showing the acreage in each soil productivity group by state or states, and by major agricultural land use as determined from the Conservation Needs Inventory. The definition of cropland in the CNI data includes pastured cropland, whereas table 1 and the similar table in each WRPA summary displays cropland as defined above (harvested plus idle). This condition exists in order to allow the use of the CNI data as it is commonly used. Soils were not grouped in WRPA 1 since it was assumed that no additional crop production would accrue from this area in the future.

#### Pasture

The supply of pasture land as given in this appendix is land that is producing forage plants that could be used for animal consumption. The 1970 use for pasture land was determined from the census of agriculture with proper adjustment to hydrologic boundaries. This source provides the best information available for projecting future pasture land needs. Separate projections for each pasture use, i.e., pasture, pastured cropland, and pastured forest land based upon projected livestock numbers (cattle and calves plus milk cows) resulted in a constant

management level expression of future need by time frame. No pasture need was included for the lesser forage requiring types of livestock because cattle and calves plus milk cows represent in excess of 95 percent of forage consuming livestock. Further refinement was considered unwarranted.

#### Forest

The projections of areas of commercial forest land and needs to the year 2020 are based on the projections prepared for the Water Resources Council by the U. S. Forest Service, and are included in the 1972 OBERS Projections of Economic Activities in the United States. These projections were based on the Series 'C' Projected National Populations by the Bureau of the Census, 1967. The needs projections are based upon the assumption that there will be no significant change in the price of timber products relative to the general price level, and to competing materials from the average of the mid-1960's and no constraints stemming from inadequate timber supplies.

All needs projections were based on the assumption that recent levels of management would continue through the projection period. On National Forests, it was further assumed that projected supplies would approximate the current allowable cut. On non-national forest lands, the projected supplies were assumed to rise from 90 percent of the projected net growth in 1970 to 100 percent of the projected growth in 2000.

The projected acreage needs are based upon the volume of domestic roundwood that would be consumed under the specified or implied assumptions about demand determinants such as population, economic activity, technology, prices of timber products relative to competing materials, imports and exports; these are similar to those prepared by the Office of Business Economics and used in the report to the WRC entitled "Economic Activity in the U. S. by Water Resources Region and Subarea, Historical and Projected, 1929-2020."

#### Other Lands

Present (1970) land use for "Other Lands" was taken from the Conservation Needs Inventory, updated to 1970, and includes farmsteads, farm roads, feed lots, ditch banks, fence and hedge rows, rural non-farm residences, investment tracts, coastal dunes, and marshes not used for grazing.

Projected future needs for "Other Lands" is based upon historical trends, but do not include the category "marshlands not used for grazing." This category is included in future land needs for fish and wildlife habitat.

"Other Land" use is an inverse relationship to population which accounts for the decreased needs for this use over the time frames of the study. Although there is an increase in population from Program A to Program B, the change is too small to warrant adjustment of "Other Land" use between the two programs.

#### Urban and Built-Up Areas

Present (1970) land use for urban and built-up areas was taken from the Conservation Needs Inventory, updated to 1970, and is defined as:

- (a) Cities, villages, and built-up areas of more than 10 acres.
- (b) Industrial sites (except strip mines, borrow, and gravel pits), railroad yards, cemeteries, airports, golf courses, shooting ranges, etc.
- (c) Institutional and public administrative sites and similar types of areas.

Road and railroad acreages were included if significant. Farmland acreages inside the city and village limits were excluded.

Future land use needs for urban and built-up areas were determined from a representative basin-wide sample of present land use which was projected to correspond with future urban and built-up area populations for both Programs A and B.

Two methods of land use predictions were used to project future needs. Method I established a land use projection slope, based upon two observation points: Present land use and future land use for all cities sampled. Method II was a norm prediction line developed by linear regression. A tally of the selection results indicated that Method I was more frequently favored in residential, commercial, industrial, and public land uses, while Method II more accurately assessed the transportation, communication, and utility land uses.

#### Federal Lands

For the purposes of this study, it was assumed that acreage needs for Federal lands would remain constant as a minimum throughout the 50-year period of study. Implementation of the formulated programs may add to the land in Federal ownership, but only to meet other categories of need.

#### Recreation, Fish and Wildlife, Minerals, and Environmental

Methodologies supporting the present use and future needs for land in these categories can be found in the appendixes of the same names.

## PRESENT LAND USE AND FUTURE NEEDS

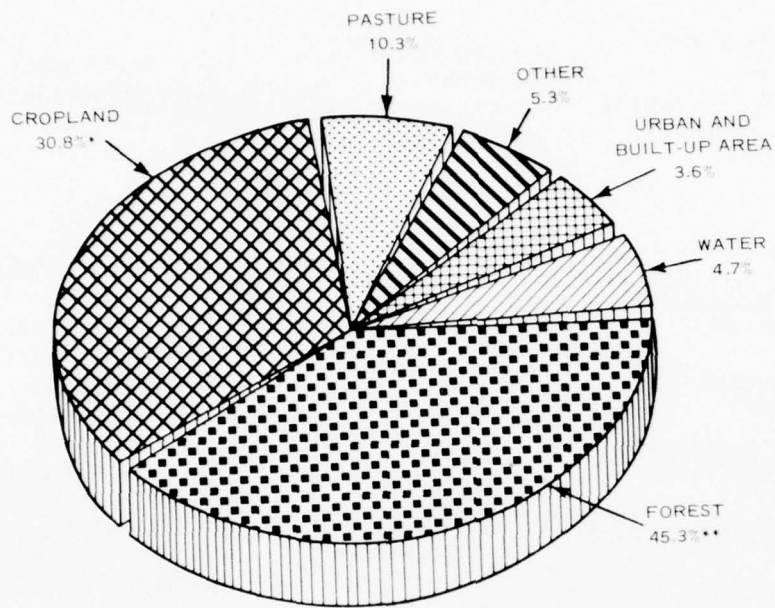
The major categories of land use considered in this study are cropland, pasture, forest, other, urban, recreation, fish and wildlife, minerals, and environmental. The distribution of present land use is illustrated in figure 2. General land use is shown in figure 3.

### Cropland

Good soils, generally abundant precipitation, and a long growing season make the region ideal for a variety of row and close seeded crops. The production of crops is an important part of the agricultural economy. In 1970, 17,343,000 acres (table 1) of the basin's land was needed for crop production, consistent with the assumptions contained in the least-cost budgeting model. It is recognized that the management assumption for cropland used in the least-cost budgeting model is different than that used in other categories of land use where existing management levels are projected to 2020. This was unavoidable in order to allow the use of the already available model and is consistent with the scope of a Type I study. Appendix T, Plan Formulation, compares land use needs after reduction to a constant management base.



Soybeans are the major agricultural crop in the Lower Mississippi Valley



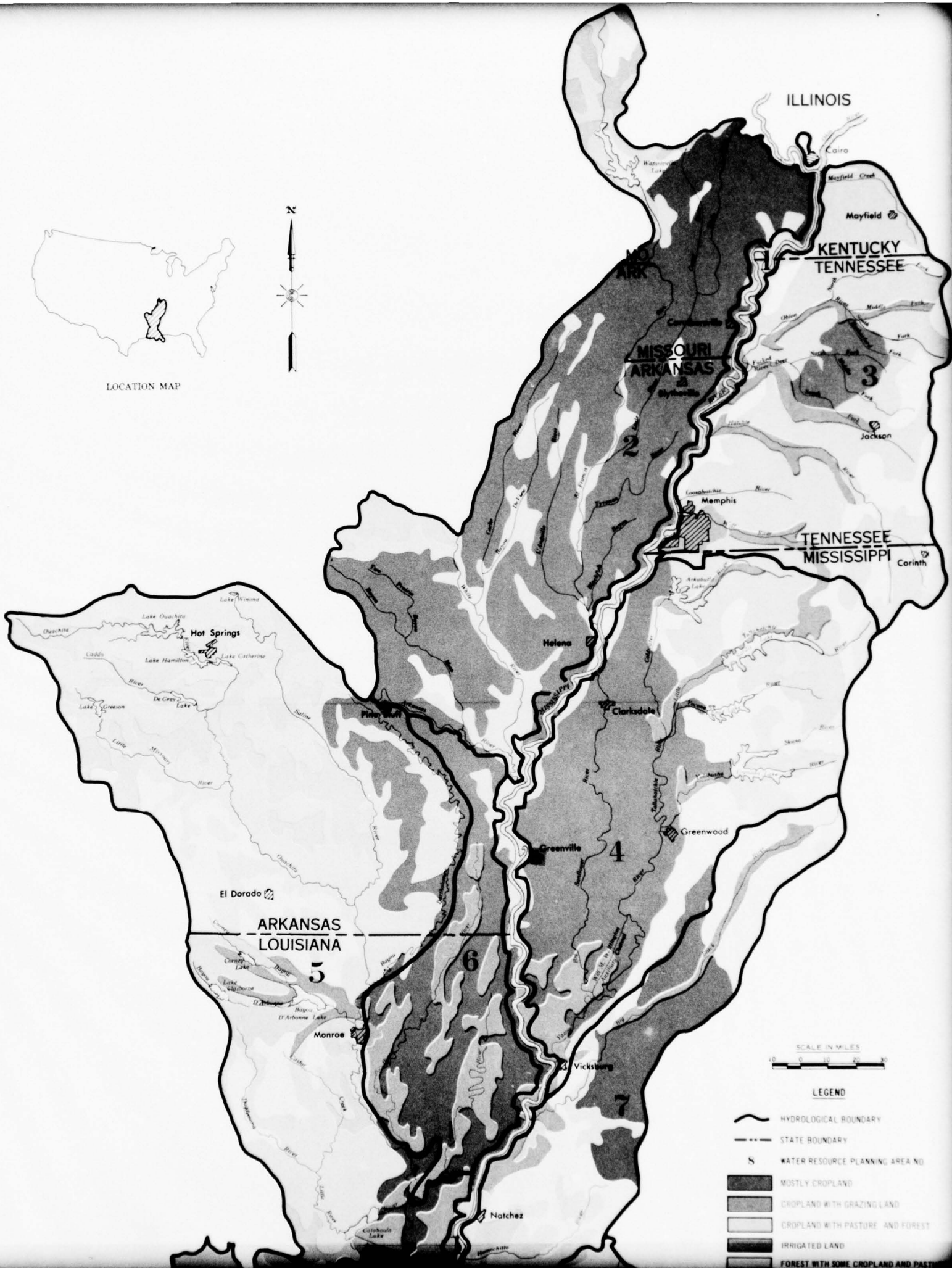
\* INCLUDES PASTURED CROPLAND  
 \*\* INCLUDES PASTURED FOREST LAND

LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND USE IN  
 LOWER MISSISSIPPI REGION  
 1970**

FIGURE 2



LOCATION MAP



ILLINOIS

KENTUCKY  
TENNESSEE

MISSOURI  
ARKANSAS

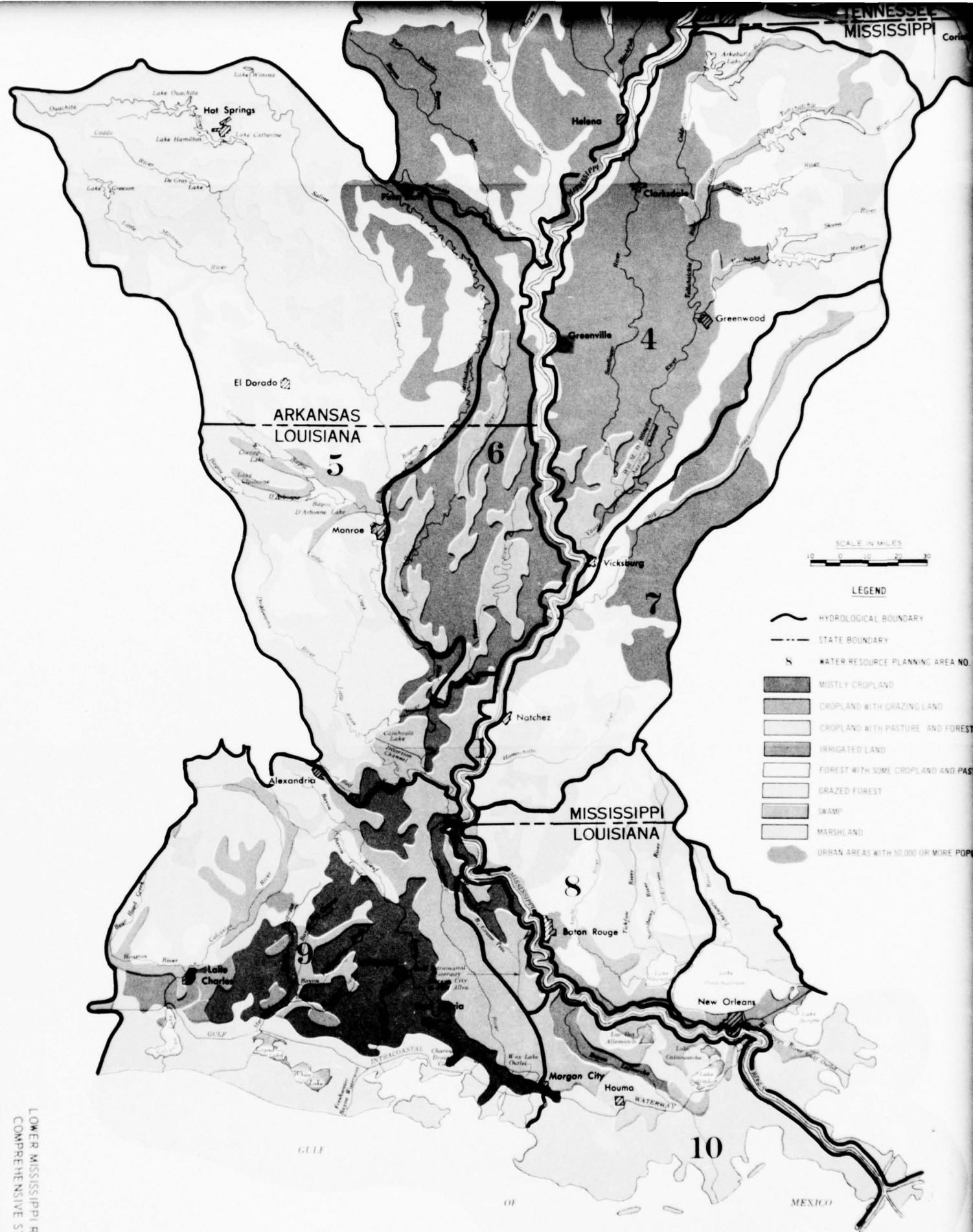
TENNESSEE  
MISSISSIPPI

ARKANSAS  
LOUISIANA



LEGEND

- HYDROLOGICAL BOUNDARY
- STATE BOUNDARY
- WATER RESOURCE PLANNING AREA NO.
- MOSTLY CROPLAND
- CROPLAND WITH GRAZING LAND
- CROPLAND WITH PASTURE AND FOREST
- IRRIGATED LAND
- FOREST WITH SOME CROPLAND AND PASTURE



SCALE IN MILES  
0 10 20 30

LEGEND

- HYDROLOGICAL BOUNDARY
- STATE BOUNDARY
- WATER RESOURCE PLANNING AREA NO.
- MOSTLY CROPLAND
- CROPLAND WITH GRAZING LAND
- CROPLAND WITH PASTURE AND FOREST
- IRRIGATED LAND
- FOREST WITH SOME CROPLAND AND PASTURE
- GRAZED FOREST
- SWAMP
- MARSHLAND
- URBAN AREAS WITH 50,000 OR MORE POPULATION

LOWER MISSISSIPPI REGION  
COMPREHENSIVE STUDY  
GENERAL LAND USE  
FIGURE 3

Table 1 - Current Land Use And Projected Land Needs For Specific Uses,  
REGIONAL SUMMARY

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	17,343,000	18,536,000	18,462,000	18,665,000
	B	17,343,000	18,536,000	19,978,000	20,186,000
Pasture	A	6,782,000 <sup>1/</sup>	5,434,000	7,275,000	9,719,000
	B	6,782,000	5,434,000	7,805,000	10,433,000
Pastured Cropland	A	2,871,000	4,107,000	5,523,000	7,376,000
	B	2,871,000	4,107,000	5,921,000	7,918,000
Pastured Forest	A	4,207,000	4,815,000	6,459,000	8,602,000
	B	4,207,000	4,815,000	6,921,000	9,219,000
Total Pasture	A	13,860,000	14,356,000	19,257,000	25,697,000
	B	13,860,000	14,356,000	20,647,000	27,570,000
Forest	A	29,637,000 <sup>2/</sup>	40,126,000	42,640,000	46,003,000
	B	29,637,000	42,927,000	47,365,000	51,434,000
Other	A	3,506,000 <sup>3/</sup>	3,915,000	3,718,000	3,478,000
	B	3,506,000	3,915,000	3,718,000	3,478,000
Urban	A	2,332,000	2,481,000	2,898,000	3,553,000
	B	2,332,000	2,649,000	3,277,000	4,089,000
Small Water <sup>4/</sup>	A	837,000	-	-	-
	B	837,000	-	-	-
Large Water <sup>4/</sup>	A	2,230,000	-	-	-
	B	2,230,000	-	-	-
Total	A	65,538,000	-	-	-
	B	65,538,000	-	-	-
Recreation <sup>5/</sup>	A	99,000	226,000	326,000	497,000
	B	99,000	240,000	374,000	581,000
Fish & Wildlife <sup>5/</sup>	A	12,874,000	39,729,000	48,704,000	61,701,000
	B	12,881,000	42,942,000	54,823,000	70,369,000
Minerals <sup>5/</sup>	A	67,000	87,000	127,000	183,000
	B	67,000	101,000	166,000	254,000
Environmental <sup>5/</sup>	A	12,404,000	12,404,000	12,404,000	12,404,000
	B	12,404,000	12,404,000	12,404,000	12,404,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest land, forested wetlands, and 2,097,000 acres of Federal forest lands.

<sup>3/</sup> Includes 122,000 acres of Federal non-forest land and lands (predominately marsh) not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories. Also included, however, are primary use lands for fish and wildlife use in 1970 of 2,021,400 acres with Program A needs in 1980 of 2,199,300 acres; in 2000, 2,698,600 acres; in 2020, 3,418,200 acres, and Program B needs in 1980 of 2,377,200 acres; in 2000, 3,040,200 acres; and in 2020, 3,907,400 acres.

The major portion of intensive agricultural row cropping occurs in the wide alluvium belt of the Mississippi River. The principal crops grown are soybeans, cotton, rice, hay, and corn. These five crops account for 93 percent of all crops grown in the study area. Soybeans, cotton, and rice are the principal agricultural exports from the region. Major crops harvested in 1970 are shown in figure 4.

Other crops produced in the region are sorghum, oats, barley, potatoes, tobacco, sugarcane, wheat, rye, peanuts, cowpeas, and hay. Almost all of the tobacco is produced in WRPA 3 and the sugarcane is produced in WRPA's 8, 9, and 10, all within the State of Louisiana.

A variety of fruits and vegetables are grown in the Lower Mississippi Region, but due to the perishable nature of these products, most are handled by local markets.

#### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of the Lower Mississippi Region.

At the present time (1970), there are 13,860,000 acres of land utilized for the grazing of livestock within the region. Of this, 6,782,000 acres is permanent pasture and range, including grazed marshlands. The remaining acreage is made up of 2,871,000 acres of pastured cropland and 4,207,000 acres of pastured forest land (table 1).

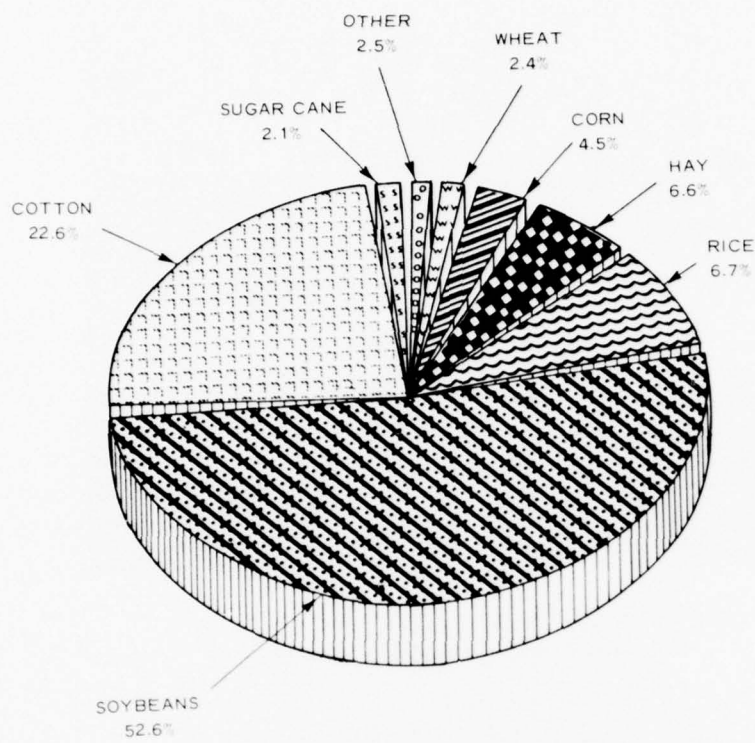
Land management for pasture ranges from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.

Primarily, there are two types of pasture--summer and winter. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue or orchardgrass.

The principal use of pasture is for the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

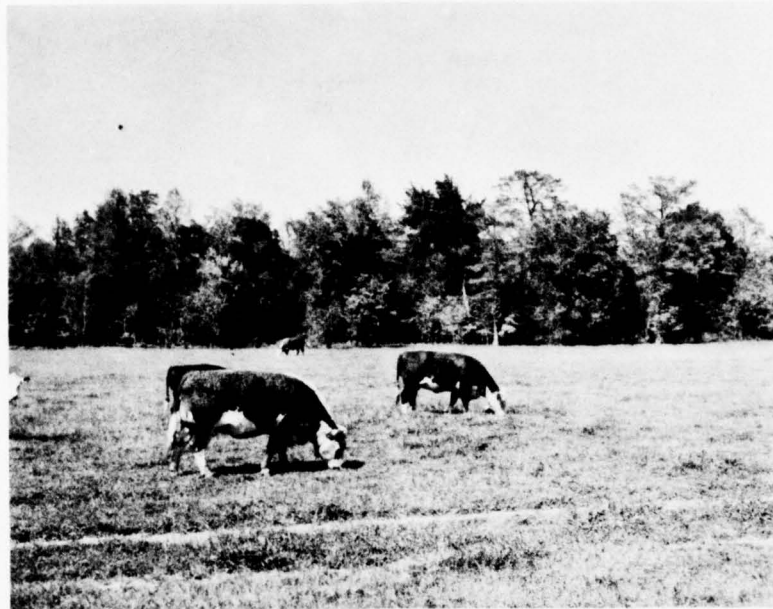
The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 14,356,000 acres; year 2000, 19,257,000 acres; and year 2020, 25,697,000 acres.

For Program B, the projected needs are: year 1980, 14,356,000 acres; year 2000, 20,647,000 acres; and for 2020, 27,570,000 acres (table 1).



LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**MAJOR CROPS HARVESTED  
 IN LOWER MISSISSIPPI REGION  
 1970**

FIGURE 4



Pasture use for beef cattle production in  
the Lower Mississippi Region

#### Forest

At the present time (1970), 29,637,000 acres or about 45 percent of the total land area in the Lower Mississippi Region is classified as forest land. All but 45,000 acres are classified as commercial forest.

There has been a general decline in forest acreage in the Lower Mississippi Region since development began. The rate of loss has averaged 7 percent per year since 1949.

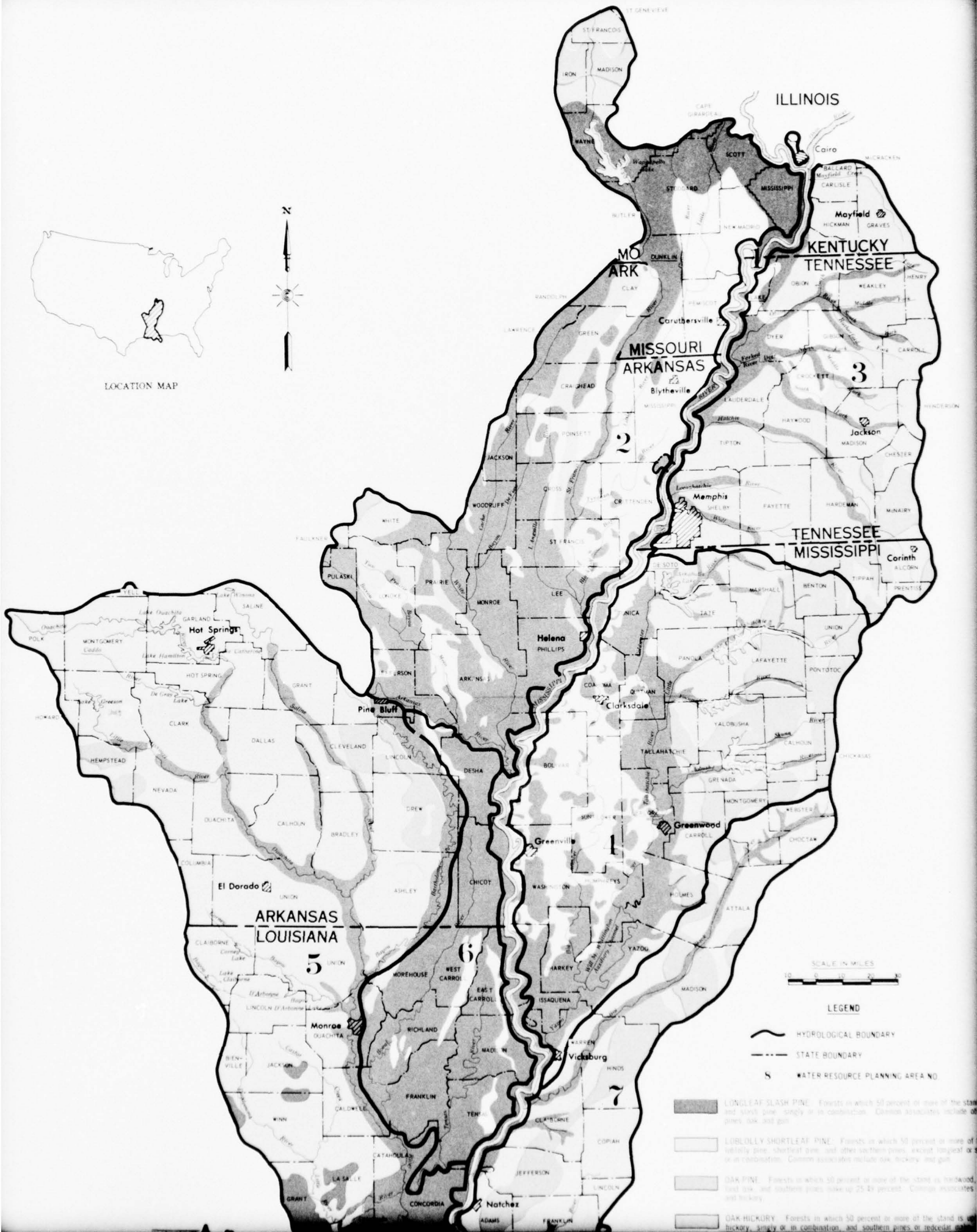
The major forest types of the region are longleaf-slash pine, loblolly shortleaf pine, oak pine, oak-hickory, oak-gum cypress, and elm ash-cottonwood. The oak-gum cypress is the largest single type, followed closely by oak-hickory and loblolly shortleaf (figure 5).

The fertile lands of the Mississippi Delta produce some of the finest hardwood forests in America.

There are five categories of forest land ownership in the Lower Mississippi Region: National forests, forest industry, in farms, miscellaneous private, and other public.



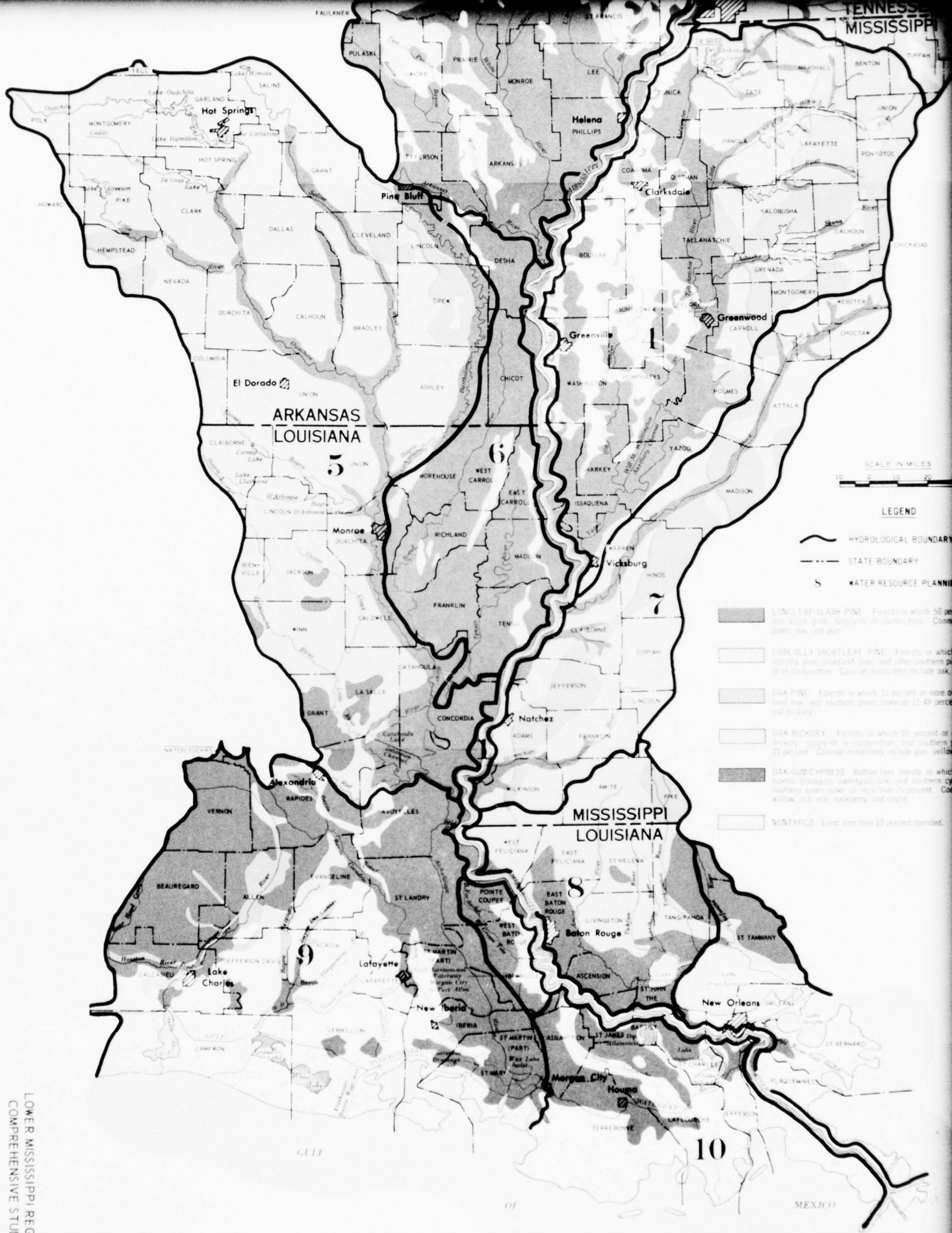
LOCATION MAP

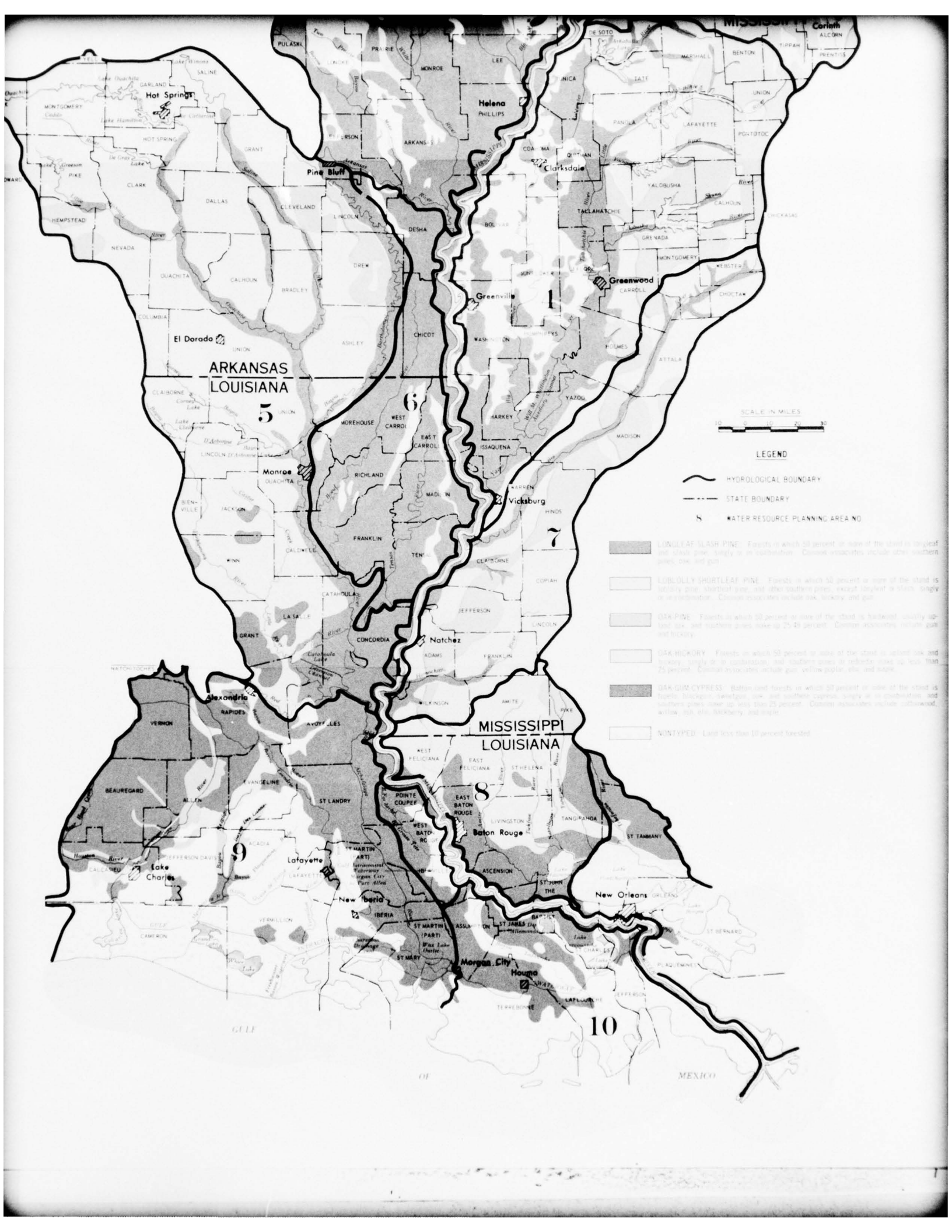


LEGEND

- HYDROLOGICAL BOUNDARY
- STATE BOUNDARY
- WATER RESOURCE PLANNING AREA NO.

- LONGLEAF SLASH PINE: Forests in which 50 percent or more of the stand and stands pine singly or in combination. Common associates include oaks, hickory, and gum.
- LOBLOLLY SHORTLEAF PINE: Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, and other southern pines, except longleaf or slash pine, singly or in combination. Common associates include oaks, hickory, and gum.
- OAK PINE: Forests in which 50 percent or more of the stand is hardwood, long oak, and southern pines make up 25 to 49 percent. Common associates include hickory.
- OAK HICKORY: Forests in which 50 percent or more of the stand is oak, hickory, singly or in combination, and southern pines or redcedar pines.





ARKANSAS  
LOUISIANA

MISSISSIPPI  
LOUISIANA



LEGEND

- HYDROLOGICAL BOUNDARY
- STATE BOUNDARY
- WATER RESOURCE PLANNING AREA NO.

- LONGLEAF SLASH PINE. Forests in which 50 percent or more of the stand is longleaf and slash pine, singly or in combination. Common associates include short southern pine, oak and gum.
- LOBLOLLY SHORTLEAF PINE. Forests in which 50 percent or more of the stand is loblolly pine, shortleaf pine, and other southern pines, except longleaf or slash, singly or in combination. Common associates include oak, hickory, and gum.
- OAK-PINE. Forests in which 50 percent or more of the stand is hardwood, usually upland oak, and southern pines, more up to 25-40 percent. Common associates include gum and hickory.
- OAK-HICKORY. Forests in which 50 percent or more of the stand is upland oak and hickory, singly or in combination, and southern pines or redbeech more up to less than 25 percent. Common associates include gum, yellow poplar, pine, and maple.
- OAK-GUM-CYPRESS. Bottomland forests in which 50 percent or more of the stand is loblolly, blackgum, sweetgum, oak, and southern cypress, singly or in combination, and southern pines more up to less than 25 percent. Common associates include cypresswood, willow, oak, pine, hickory, and maple.
- UNTYPED. Land less than 10 percent forested.

GULF

OF

MEXICO

10

Seven National forests account for 5 percent of the ownership and other public lands account for 3 percent. Twenty-seven percent of the forest land is in farm ownership. Forest industries own 21 percent and the remaining 44 percent falls into the miscellaneous private ownership category.

Lumber is the region's major forest product. There are now 562 sawmills in the region producing 378 million cubic feet of lumber annually and 15 pulpmills with a capacity of over 8,000 tons a day. There are 39 veneer plants in the region producing over 42 million cubic feet of plywood and related products yearly. The remaining wood production for the region falls into the category of miscellaneous products such as power poles, piling, chemical wood, cooperage, handle stock, and other products.

In addition to lumber, pulp, veneer, and miscellaneous forest products, the forest lands within the region provide valuable wildlife habitat and outdoor recreation.



Logs on their way to become lumber and other forest products in Louisiana

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 40,126,000 acres; 2000, 42,640,000 acres; and 2020, 46,003,000 acres. Program B, for the year 1980, 42,927,000 acres; 2000, 47,365,000 acres; and 2020, 51,434,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 1.

#### Other Lands

The "other lands" category includes farmsteads, farm roads, feed lots, ditch banks, fence and hedge rows, rural non-farm residences, investment tracts, coastal dunes, marshes not used for grazing, and miscellaneous federal lands. At the present time (1970) there are 3,506,000 acres classed as "other lands" in the Lower Mississippi study area.

The projected needs for "other land" use is the same for both Programs A and B in all time frames of the study. The projected needs show a gradual decline in acreage devoted to this use. This trend is due to an increased competition for land space by an expanding population. In 1980 the projected needs for "other land" use is 1,863,000 acres. For the year 2000, this need will decrease to 1,666,000 acres, and in 2020 to 1,426,000 acres (table 1).

#### Urban and Built-Up Areas

The Lower Mississippi Region presently contains 2,332,000 acres of urban and built-up land, which is about 3.6 percent of the total acreage in the region. Urban and built-up areas, in general, include land used by man primarily for his shelter, place of work, means of transportation, and other associated purposes. In more specific terms, it includes cities, villages, and associated industrial sites; railroad yards; cemeteries; airports; golf courses; institutional and administrative sites; roads, railroads; shooting ranges; and any populated area of more than 10 acres. As shown in table 2, cities with a population of less than 5,000, other developed areas, and populated areas of more than 10 acres, accounted for roughly 79 percent (or 1,845,100 acres) of total urban and built-up land in the region in 1970, and urban areas with population in excess of 5,000 inhabitants accounted for the remaining 21 percent (or 486,900 acres). The majority of the 1970 population of the region was located in urban and built-up areas, and included 3,188,703 urban residents in cities of 5,000 or more population, 524,304 urban residents in cities of 2,500 to 5,000 population, and most of the remaining population (2,580,226) in small towns and built-up areas of less than 2,500 population.

Table 2 - Population And Associated Urban And Built-Up Lands In  
The Lower Mississippi Region (1970-2020)

<u>Population</u>	<u>Item</u>	<u>1970</u> <u>Number</u>	<u>1980</u> <u>Number</u>	<u>2000</u> <u>Number</u>	<u>2020</u> <u>Number</u>
<u>Total LMR</u>					
	Program A	6,293,233	6,741,000	8,156,000	10,196,000
	Program B	6,293,233	7,285,000	9,188,000	11,655,000
<u>Urban 1/</u>					
	Program A	3,713,007	4,314,240	5,709,200	7,748,960
	Program B	3,713,007	4,662,400	6,431,600	8,857,800
<u>Cities with 5,000 or more population 2/</u>					
	Program A	3,188,703	3,574,541	4,259,471	4,957,944
	Program B	3,188,703	3,935,489	5,027,964	6,317,900
<u>Cities 2,500 to 5,000</u>					
	Program A	524,304	739,699	1,449,729	2,791,016
	Program B	524,304	726,911	1,403,636	2,539,900
<u>Places</u>					
<u>Less than 2,500 and Other Rural 3/</u>					
	Program A	2,580,226	2,426,760	2,446,800	2,447,040
	Program B	2,580,226	2,622,600	2,756,400	2,797,200
<u>Land Use</u>		<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
<u>Total Urban &amp; Built-Up</u>					
	Program A	2,332,000	2,481,000	2,898,000	3,553,000
	Program B	2,332,000	2,649,000	3,277,000	4,089,000
<u>Urban of 5,000 or more population 2/</u>					
	Program A	486,900	548,200	661,900	780,800
	Program B	486,900	602,300	775,300	993,600
<u>Built-Up 4/</u>					
	Program A	1,845,100	1,932,800	2,236,100	2,772,200
	Program B	1,845,100	2,046,700	2,501,700	3,095,400

1/ U. S. Census Bureau definition as contained in Appendix B - Persons residing in areas of 2,500 or more inhabitants.

2/ HUD definition of Urban (Cities having 5,000 or more population).

3/ Total LMR minus Urban equals U. S. Census Bureau "Rural."

4/ HUD definition of Built-Up (Cities less than 5,000 population and built-up areas).



Some land in the region is used for urban and built-up areas

Population projections under Program A and Program B differ both in number and in the distribution of population. Under Program A, regional population is projected to increase from 6,293,233 in 1970 to 10,196,000 by 2020. This represents a 62 percent increase over the 50-year period. The greater part of the increased population is expected to occur in areas with populations less than 5,000 residents. Under Program A, 4,957,944 persons are expected to reside in urban centers with 5,000 or more inhabitants in 2020, while 5,238,056 persons are expected to reside in all other areas.

Program B population projections are higher than those under Program A, and they project a greater concentration of population in areas of 5,000 or more inhabitants than in other areas. <sup>2/</sup> Under Program B, the 1970 population of 6,293,233 is expected to increase to 11,655,000 by 2020, which is an 85 percent increase or 1,459,000 more than the 2020 population projected under Program A. Furthermore, urban areas

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<sup>2/</sup> A large number of cities less than 5,000 population under Program A become greater than 5,000 under Program B.

over 5,000 inhabitants in size under Program B are expected to increase faster than other areas. Program B projections are that by 2020, urban areas 5,000 inhabitants and over in population will account for 6,317,900 persons and all other population will be 5,337,100.

Urban and built-up area land use needs for the Lower Mississippi Region are projected under Program A to be 3,553,000 acres by 2020, an increase of 1,221,000 acres from the 1970 figure of 2,332,000.

Total urban and built-up area land use needs for the Lower Mississippi Region are expected under Program B to be 4,089,000 acres by 2020, an increase of 1,757,000 acres over the 1970 figure of 2,332,000. Distribution of this increased acreage is relatively the same for Program B as for Program A.

Under Program B, needs for urban centers of 5,000 and more inhabitants for the Lower Mississippi Region are expected to increase from 486,900 acres in 1970 to 993,600 acres by 2020, an increase of 104 percent. The distribution of urban needs under Program B follow relatively the same pattern as that under Program A. Urban area needs are projected to be greatest in WRPA's 10 and 3, which contain the New Orleans and Memphis SMSA's, respectively, and therefore require the greatest amount of urban acreage. The smallest increase in urban needs for population centers 5,000 and up is projected to be in WRPA 6, where need in 2020 is expected to total only 12,700 acres.

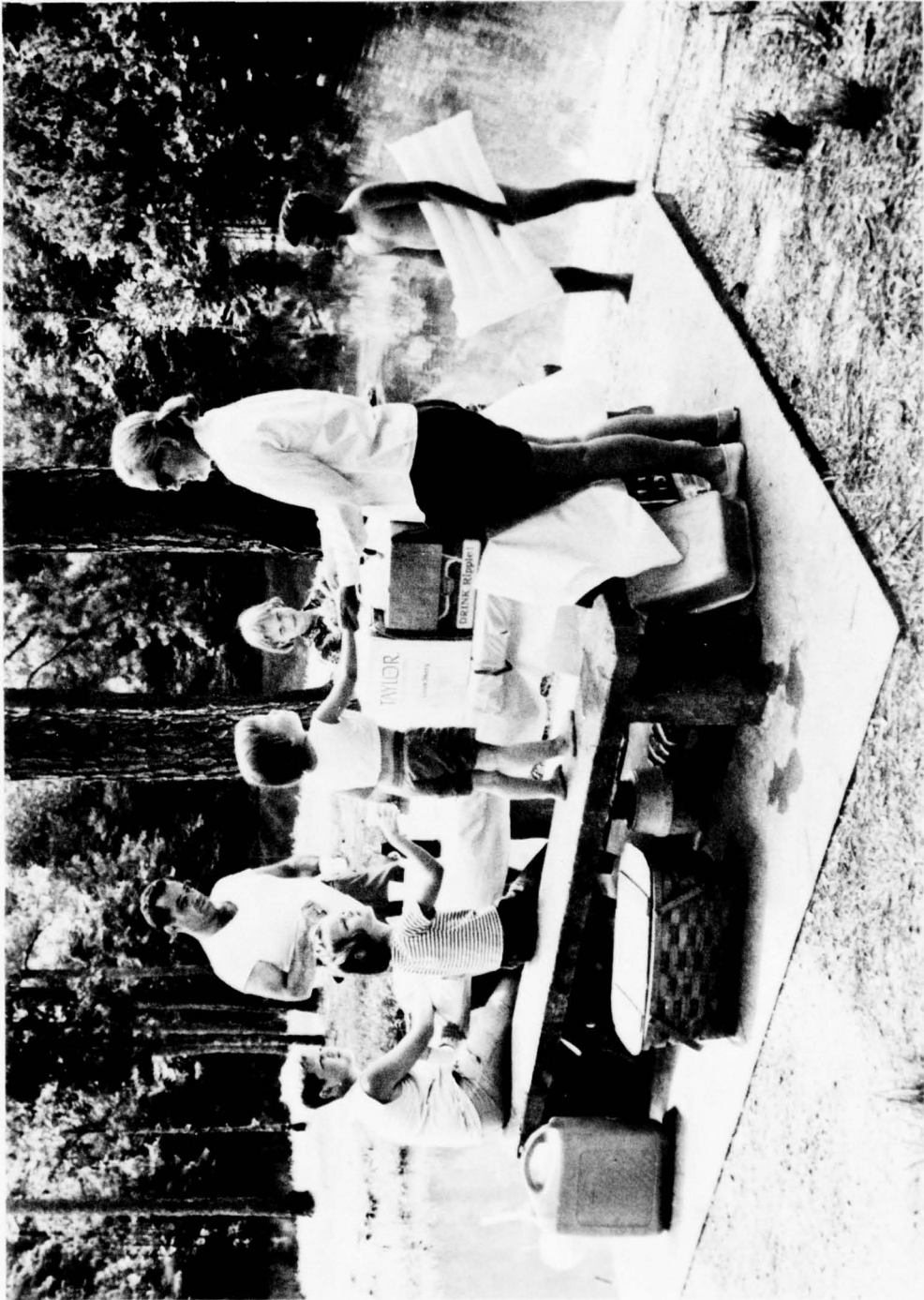
#### Federal Lands

At the present time, the Lower Mississippi Region contains 2,219,000 acres of Federally-owned land. National Forest ownership covers 1,318,000 acres of the study area. The remaining 901,000 acres of total Federal land is made up of National Parks, National Wildlife Refuges, Corps of Engineers reservoir buffer zones, military bases, and administrative sites. Federal land acreages are included in forest and "Other Land" categories in table 1.

#### Recreation

Recreation is a land use which is, for the most part, dependent upon and compatible with other land uses. The major recreation activities considered in this study are camping, picnicking, hiking, swimming, boating, and playing outdoor games and sports.

Camping, picnicking, and hiking are compatible uses of land, whereas outdoor games and sports are usually not compatible with other land uses on the same site. Such games as golf, baseball, softball, soccer, tennis, volleyball, and track require a prepared court, field, or course which is devoted to one game or a combination of games. Swimming and boating are dependent upon large and small water areas.



A family outing in the Lower Mississippi Region

At the present time, recreation activities use 188,300 acres of land in the Lower Mississippi Region. Of this total only a very small part is exclusive-use recreation land.

The projected needs for recreation for Program A are: year 1980, 225,700 acres; year 2000, 326,200 acres; and year 2020, 496,900 acres.

For Program B, the projected needs are: year 1980, 240,100 acres; for year 2000, 373,500 acres; and for 2020, 581,200 acres (table 1). The projections for future recreation acreage needs are greater for Program B due to a difference in population for the two programs.

### Fish and Wildlife

Land use for fish and wildlife is usually dependent upon and multi-use with other land uses. These uses are cropland, pasture, forests, water areas, and other lands such as fence rows, hedge rows, and marshes not used for grazing. The amount and type of wildlife available is directly dependent upon the amount, type, and arrangement of habitat for the particular species of wildlife involved. Cropland may provide food for many types of wildlife, providing a suitable habitat is nearby. Pasture may provide both food and habitat for many types of small animals. The same is true for fence rows and hedge rows. Forests are the natural habitat for most wildlife species other than waterfowl and, in some cases, hardwood forests even provide food for certain species of waterfowl. Marshes provide habitat for many birds and small animals. Fish are directly dependent upon large and small water areas.

Except for commercial fishing and the taking of fur-bearing animals, land uses for fish and wildlife are also recreational uses. The same type of land base can serve for recreation and fish and wildlife uses.

At the present time, 12,874,000 acres of land in the Lower Mississippi Region are needed to support fish and wildlife activities.

Based on the present trend in use of lands for fish and wildlife, projections have been made for future needs. Under Program A, these needs are: 1980, 39,729,000 acres; 2000, 48,704,000 acres; and 2020, 61,701,000 acres. Under Program B, the projected needs are: 1980, 42,942,000 acres; 2000, 54,823,000 acres; and 2020, 70,369,000 acres (table 1).



Quail hunting is a popular sport in the Lower Mississippi Region

#### Minerals

The Lower Mississippi Region is rich in minerals, presently supplying about 18 percent of the nation's mineral output. The region supplies 34 percent of the nation's natural gas, 25 percent of the petroleum, 20 percent of the lead, 20 percent of bromine, 34 percent of the salt, and 67 percent of the nation's sulfur.

Generally, the minerals produced in the region are three types: fuels, metallic minerals, and non-metallic minerals. Fuels produced in the region are natural gas, natural gas liquids, and petroleum. The mining of fuels is a non-destructive process which requires a small land base and is compatible with many other land uses. Metallic minerals produced in the Lower Mississippi Region include copper, iron, lead, silver, vanadium, and zinc. Non-metallic minerals include abrasives, barite, bromine, cement clay, gemstones, gypsum, lime, salt, sand, gravel, stone, and sulfur. Mining of metallic and non-metallic minerals is a practice which is not compatible with other land uses on the same site; however, the land can often be restored to other land uses after the mining process is completed.



Drilling for oil in the Lower Mississippi Region

At the present time, 66,700 acres of the land base is devoted to mineral production in the region. Of this, fuel production requires 20,600 acres; metallic minerals require 22,600 acres; and non-metallic minerals are produced on 23,500 acres.

For Program A, the projected needs are: 1980, 86,900 acres; 2000, 127,200 acres; and 2020, 182,000 acres.

For Program B, the projected needs are: 1980, 100,500 acres; 2000, 166,700 acres; and for 2020, 253,300 acres (table 1). Since the demand for minerals is directly related to the population, the future needs will be greater for Program B.

#### Environmental

Man's environment is a complex system in which every living thing is dependent upon the land resources in some manner. The full interrelation of all the elements in this complex system is not yet fully understood, but man is showing increasing concern about the environmental impact of his use of land resources. Attempts are being made to

learn more about what happens to the natural environment when these resources are manipulated.

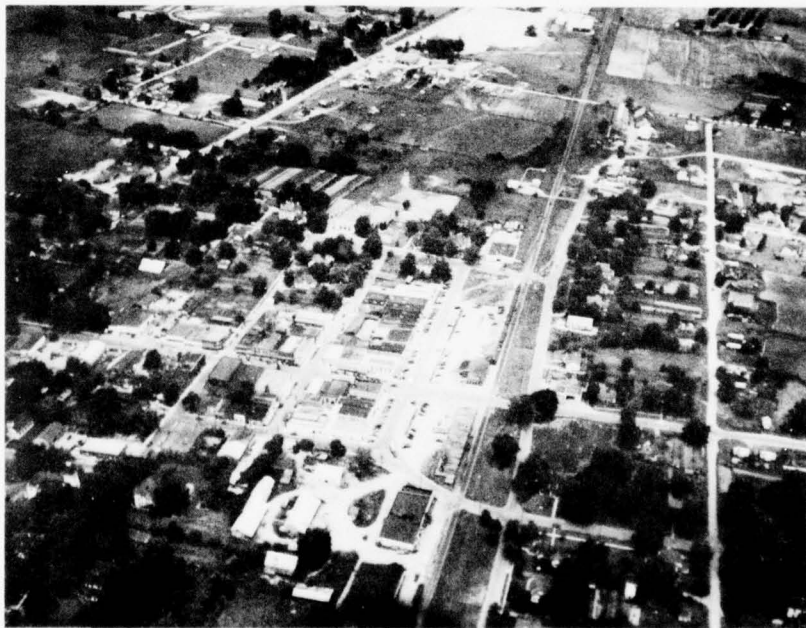
When land is cleared to grow cultivated crops, the existing environment is altered or destroyed while new environment is created. The clearing of land for pasture displaces some wildlife, but supports more domesticated animals for human food. When forest products are harvested, wildlife is displaced, but new physical environment is created from the forest products, either directly in the form of manufactured goods or indirectly through wages.

Other uses of land affect the environment in numerous ways. Roads and ditches alter habitat and often produce sediment which enters stream systems. On the other side of the ledger, roads provide transportation of goods to market. Feed lots produce pollutants from animal waste and residents occupy space and alter the land, but each serves a definite purpose in the revised system. All of these uses are a part of man's existence in our present society.

Urban and built-up areas displace all other land uses and produce many of the wastes of man's culture. Man's pursuit of recreation alters the environment by the construction of recreation facilities and production of waste from use of the site. The production of minerals may have a drastic impact on the natural environment, but minerals, in turn, provide needed inputs to the revised system.

All uses of the region's land resources are part of the existence of man. As population increases, pressures on land resources will become greater, as will the impact of man upon his natural environment.

The land requirements for the natural environment are the acreages occupied by specific natural environmental quality components, such as unique botanical systems, unique geological systems, lands surrounding lakes and streams of outstanding natural beauty. These acreages are environmental areas that constitute a limited resource. The needs, summarized in table 1, are more specifically defined and identified in Appendix U. The land needs, 12,888,000 acres, are the same for all time periods since the components are a nonrenewable resource. The environmental needs for water surface may be found in Appendix U. The Environment, and in Appendix T, Plan Formulation.



Man's environment in the Lower Mississippi Region ranges from natural forests and water areas (above) to highly developed cities and urban areas (below)

## LAND RESOURCES

### Land Resource Regions

The United States is delineated into 20 land resource regions. <sup>3/</sup> These areas are delineated on the basis of similarities in relationships to farming and other land uses. The Lower Mississippi Region is made up of parts of five of the land resource regions. They are the Atlantic and Gulf Coast Lowlands, Forest and Truck Crop Region; South Atlantic and Gulf Slope Cash Crop, Forest and Livestock Region; Mississippi Delta Cotton and Feed Grains Region; East and Central General Farming and Forest Region; and Central Feed Grains and Livestock Region.

### Land Resource Areas

The 20 land resource regions are divided into 156 major land resource areas (LRA's). These areas are delineated with emphasis on combinations of intensities of problems in soil and water conservation. They are characterized by particular patterns or combinations of soils (including slope and erosion), climate, water resources, land use, and types of farming.

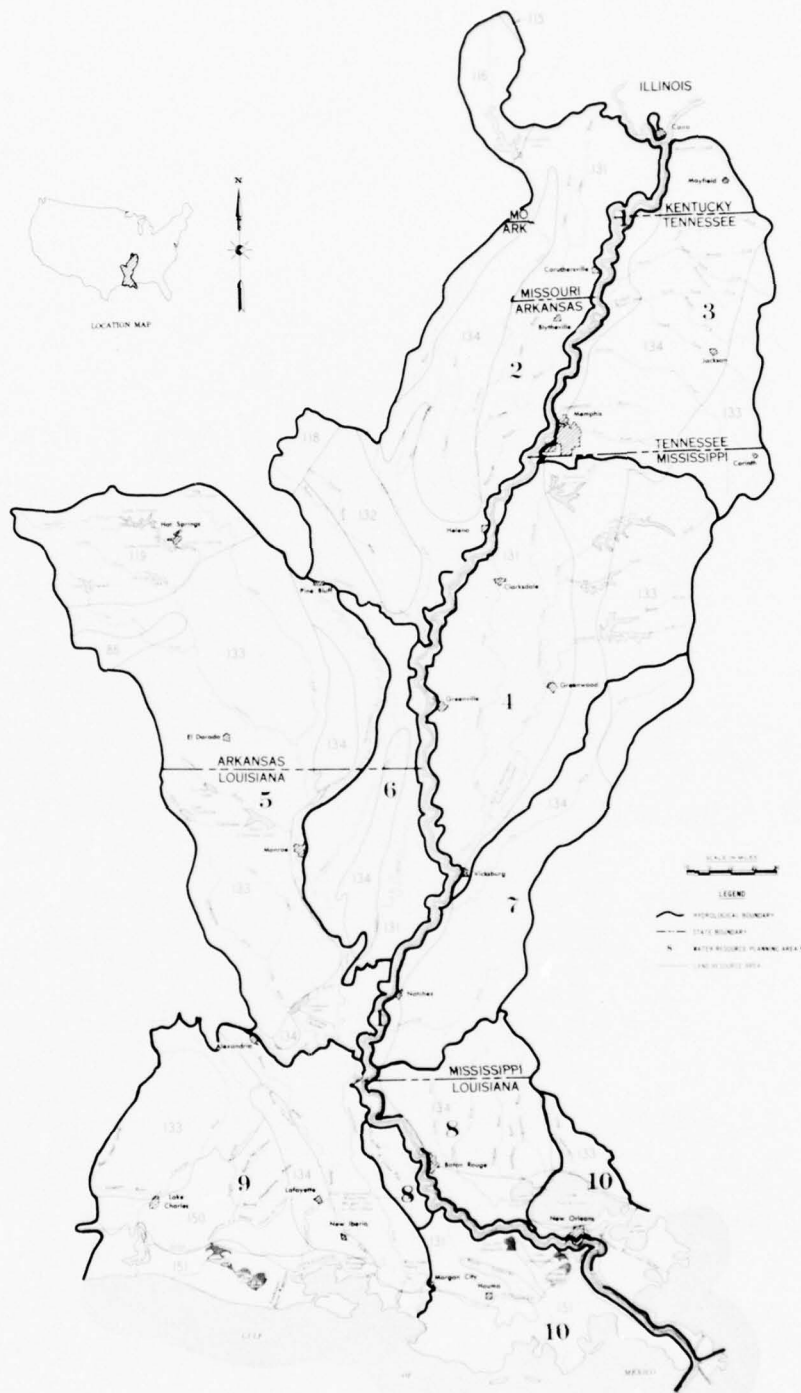
Eleven land resource areas found entirely or partially in the Lower Mississippi Region are listed in table 3. The general geographic location of each is shown in figure 6. General characteristics of each land resource area are listed in table 4.

Table 3 - Land Resource Areas of the Lower Mississippi Region

LRA	Definition	Location
86	Texas Blackland Prairie	Arkansas
115	Central Miss. Valley Wooded Slopes	Missouri
116	Ozark Highlands	Arkansas, Missouri
118	Arkansas Valley and Ridges	Arkansas
119	Ouachita Mountains	Arkansas
131	Southern Miss. Valley Alluvium	All States
132	Eastern Arkansas Prairie	Arkansas
133	Southern Coastal Plain	Miss., Tenn., La., Ark.
134	Southern Miss. Valley Silty Uplands	All States
150	Gulf Coast Prairie	Louisiana
151	Gulf Coast Marsh	Louisiana

There are 57,920,000 acres of the region's 65,538,000 acres classified as agricultural land as defined by the Conservation Needs Inventory

<sup>3/</sup> Atlas of River Basins of the United States, Soil Conservation Service, United States Department of Agriculture, June 1963.



LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND RESOURCE AREAS  
 WITH REGIONAL AND  
 HYDROLOGICAL BOUNDARIES**

FIGURE 6

Table 4 - General Characteristics of Land Resource Areas in Lower Mississippi Region

Land Resource Area	Elevation and Topography	Soils	Water	Land Use and Major Crops
86 Texas Blackland Prairie	300 to 800 feet, increasing gradually from south to north and from east to west. On these undulating to gently rolling dissected plains, gentle upland slopes merge into narrow valleys with more steeply dissected slopes. The major rivers cross the area have broad but shallow valleys. The only significant tracts of hilly land are along the western margin in Texas. Relief is mainly in a few feet to a few tens of feet.	Demopolis (Orthents), Oktibbeha (Ultisols), and Sarter (Ochrepts) are upland soils. Demopolis and Sarter are calcareous soils over chalk. Oktibbeha has an acid, clayey subsoil. Sarter (Ultisols) are clayey and loamy (Aquerts) are clayey soils on flood plains and colluvial slopes.	The moderate rainfall is adequate for crops and pastures in many years, but summer droughts that reduce crop yields are fairly common. The built-up many reservoirs and built-up control floods, furnish municipal water supplies, and provide recreational facilities. Small farm ponds on individual farms are an important source of water for livestock. Ground water is scarce throughout the area, but a little water is obtained from wells in a few places.	Nearly all this area is in farms. In Texas, two-thirds of the area is cropland, the remainder is in abandoned fields or narrow strips of woodland along streams. The small outlier in Arkansas, three-fifths pasture, and the remainder woodland. Cotton is the major cash crop, but small grains, grain sorghum, corn, and Johnson grass and other hay occupy a larger total acreage in cropland and an increase in pasture cropland and an increase in pasture on the more sloping and eroded soils.
115 Central Mississippi Valley Wooded Slopes	400 feet on the main valley floors to 1,000 feet on the ridgetops. This dissected glacial-till plain has rolling narrow ridgetops and hilly to steep ridge slopes and valley sides. The small streams have narrow valleys and steep valley floors. The major rivers have wide valley floors are one to several hundred feet below the adjoining hilltops.	Agnes (Ultisols) and Gepp (Ultisols) have clayey subsoils. Clarksville and Nixa (Ultisols) are loamy, skeletal, and, in addition, Nixa (Ultisols) have loamy skeletal (Ultisols) subsoils. (Ultisols) are clayey-skeletal soils and Gasconade is underlain by rock at depths of less than 20 inches. Razorrt soils (Ultisols) have loamy subsoils.	Rainfall is adequate in most years for the crops commonly grown but yields are reduced by drought in some years. Ground water furnishes domestic and livestock water for the Ohio River and is used for recreation.	Nearly all the area is in farms and about two-fifths is cropland. The grains and hay for livestock are the orchards are important on some of the more sloping parts. About one-third of the area is in forest, mainly in small farm woodlots but partly in large tracts that include some national forest. Most of the remainder of the land in farms is in pasture of tame and native grasses.
116 Ozark Highlands	500 to 1,500 feet. These sharply dissected limestone plateaus have narrow rolling ridgetops that break sharply to steep side slopes. Valleys are narrow and have steep gradients, especially in the upper reaches. There are some gently sloping plateau remnants in the west. Local relief is in several tens of feet to a few hundred feet.	Clarksville and Nixa soils (Ultisols) are loamy-skeletal. Nixa soils also have a fragipan. Capitina (Ultisols) and Lebanon (Ultisols) have fragipans. Demphan (Ultisols) have clayey subsoils.	(Crops and pasture depend upon the moderate rainfall. Shallow wells or springs supply domestic needs and water for livestock on most farms, but deep wells are required to obtain large supplies. Water from deep wells is of good quality but hard. Small ponds on many individual farms and a few large reservoirs are used for flood control and recreation.	About three-fifths of the area is in forest or woodland, most of it in farm woodlots but some in large holdings. About one-fifth of the area is cropland. Corn, feed grains and hay or dairy cattle feed crops are the principal crops and orchards, vineyards, and truck crops are important on some of the more friable deep soils. Pastures, mainly of tame grasses and legumes, occupy most of the remaining one-fifth of the area.

Table 4 - General Characteristics of Land Resource Areas in Lower Mississippi Region (Con.)

Land Resource Area	Elevation and Topography	Soils	Water	Land Use and Major Crops
118 Arkansas Valley and Ridges	300 feet on the lowest valley floors to 2,800 feet on some mountain tops. These ridges and valleys are underlain by slightly folded to level beds of sandstones and shales. Ridge slopes are steep; most crests are narrow and rolling but some are broad and flat. The intervening valleys are broad and smooth. Local relief is in several tens of feet in valleys and on the flat plateaus. The plateaus and mountain rise sharply hundreds of feet above adjacent valleys.	Enders, Linker, and Waintainburg (Dulits) are in the uplands. Enders and Linker are underlain by rock at depths below 20 inches and Waintainburg soils are loamy-skeletal underlain by rock at depths of less than 20 inches. Allen and Spadra (Dulits) are loamy soils on stream terraces and are underlain by sandstone and limestone. Dulits and Hart (Dulits) are silty, loamy, and heavy-textured soils. Dulits (Dulits) are well drained, silty soils.	The moderate rainfall is generally adequate for crops and pasture. In the uplands, water for domestic use is obtained mainly from shallow wells and water for livestock from small ponds on individual farms. In the valleys, springs, shallow wells, small ponds, and perennial streams are the main sources of water. Wells yield large amounts of hard water except in areas of shale bedrock where ground water is scarce.	About one-half of the area is in forest; about one-third of the wooded area is Federally owned and most of the remainder is in farm woodlots. The other half of the area is one-third cropland and two-thirds pasture. Most of the cropland is in the valleys but some is on flat mountain tops. Corn, cotton, soybeans, other feed grains, and hay are the major crops. Fruits and vegetables are important locally on the deeper soils throughout the area. Pastures are on the bottom land of small streams and throughout cleared parts of the uplands. They consist of mixtures of tame and native grasses and legumes.
119 Ouachita Mountains	300 feet on the lowest valley floors to 2,700 feet on the highest mountain peaks. These mountains are underlain by folded and faulted shales, slates, quartzites, sandstones, and novaculite. Most of the stream valleys are narrow and have steep gradients, but wide terraces and flood plains border the Ouachita River in western Arkansas. Local relief is a few hundred feet to more than 1,000 feet.	Mountainburg, Pinnac, and Sherwood (Dulits) and Pickens (Xchrepts) are upland soils. Mountainburg and Pickens are loamy-skeletal soils underlain by rock at depths of less than 20 inches. Pinnac and Sherwood are loamy soils underlain by rock at depths of more than 20 inches. Carnasaw soils (Dulits) have clayey subsoils.	The high rainfall and many perennial streams provide abundant water. Several large reservoirs for water storage and flood control are used also for recreation. In the valleys spring and shallow wells are the main sources of water for domestic use and for livestock.	Slightly more than four-fifths of the area is forested. Of this about one-fourth, mainly in Arkansas, is Federally owned. Some of the remainder is in large holdings, but much of it is in farm woodlots. Lumbering, wood-using industries, and recreational uses are important throughout the area. Crops are for pasture; the pasture acreage is a little larger than cropland acreage. Corn, oats, other feed grains, and hay for livestock feed are the main crops. Pastures are largely mixtures of tame grasses and legumes except on some small prairie outliers in the west where pastures are in native grasses.
131 Southern Mississippi Valley Alluvium (Delta)	Sea level in the south, increasing gradually to about 500 feet in the north. The area consists of nearly level to gently sloping broad flood plains and terraces. Most of the terrain is flat. The only noticeable slopes are sharp terrace scarps and natural levees that rise sharply a few feet to several tens of feet above adjacent bottom lands or stream channels.	Alligator, Berry, Tunica, and Sharkey (Xchrepts) are poorly drained, clayey soils on flood plains. Commerce, Convent, and Macon (Aquents) and Bruin, and Morganfield, and Robinsonville (Fluvents) are silty and loamy soils on flood plains. Kosket, Dabbs, and Tutwiler (Dulits) are well drained, higher lying terrace soils. Awagons, Barbee, Barbe, Forestdale, Heipert, and Lumberton (Aquents) are poorer drained, low lying terrace soils. Earle, Forestdale, and Texas have clayey subsoils and the remaining soils are silty.	Rainfall, streamflow, and ground water supply an abundant water. Surplus water is serious problem on many of the soils, and artificial drainage is required before they can be used successfully for crops. The Mississippi River crosses the area from north to south and many of its tributaries also cross the area. Ox-bow lakes and bayous are extensive throughout.	Nearly all the area is in farms. For the area as a whole, about 10 percent is in woodland and the remainder is evenly divided between cropland and pasture. But the proportion of cropland is nearly three-fourths in the north and less than one-fourth in the south. The amount of land in forest varies inversely with that in cropland, being higher in the north and little higher in the south. This is an important cash-crop area. Cotton, corn, and soybeans grown by highly mechanized methods are major crops throughout the area. Rice is an important crop in Arkansas and Louisiana and sugarcane in southern Louisiana.

(Continued)

(2 of 4 sheets)

Table 4 - General Characteristics of Land Resource Areas in Lower Mississippi Region

Land Resource Area	Elevation and Topography	Soils	Water	Land Use and Major Crops
133 Eastern Arkansas Prairies	150 to 300 feet. Nearly level broad terraces are crossed by meandering streams having shallow valleys. The terraces terminate in short steep escarpments, and natural levees one to several tens of feet high border the stream channels. Elsewhere local relief is in only a few feet.	The Crowley series (Aquifers) is poorly drained, and has a clayey subsoil. Calloway, Grenada, and Stuttgart series (Aquifers) are browner and better drained. Calloway and Grenada have fragipans. Stuttgart soils have clayey subsoils that are high in sodium.	Rainfall, ground water, and streams provide an abundance of water. Water is stored in the soil. In many artificial ponds and voirs, and water from wells is also used for this purpose. Except for rice, artificial drainage is required for the successful production of most crops. The many lakes and ponds, both natural and artificial, provide excellent hunting and fishing.	Most of the area is in farms, but about 10 percent is urban or in other uses. About one-half is cropland and the other half is in pasture. Rice is the major crop in this cash-crop area. Cotton, corn, and soybeans are other important crops. About one-third of the area is in forest.
133 Southern Coastal Plain	100 to 600 feet, increasing gradually from the lower Coastal Plain to the Piedmont. The gently to strongly sloping dissected coastal plain is underlain by unconsolidated sands, silts, and clays. In their upper reaches stream valleys are narrow but they broaden and become meandering stream channels. Local relief is mainly in a few tens of feet, but some of the more deeply dissected parts have relief of 100 to 200 feet.	Bowie, Wierick, Ruston, Saffell, and Smithdale (Aquifers) are well drained, loamy upland soils. Ruston soils (Aquifers) are sandy. Kirwin, Sacu, Shubuta, and Sweetman soils (Aquifers) have clayey subsoils. Ora and Snyman (Aquifers) have fragipans. Bossell (Aquifer) in Louisiana (Aquifer) have thick clayey subsoils. Amv and Matt (Aquifers) are poorly drained, loamy soils. Bibb and Maitachie soils (Aquifers) are poorly and somewhat poorly drained soils on flood plains. Luka, Jena, Ochlocknee (Fluvents), and Escalier (Cortegres) are loamy soils on flood plains. Wreland (Udolls) and Severn (Fluvents) are redder soils in the flood plains of Louisiana.	Rainfall, many perennial streams, and ground water provide an abundance of water. Even though summer rainfall is fairly high, droughts are common and then good returns are obtained from irrigation on all but the wettest soils. Drainage is necessary before the wet lowlands can be used for crops. Domestic water supplies are obtained mainly from shallow wells and water for livestock and small farm ponds. The perennial streams are potential water sources that have been little used in most of the area.	Nearly all the area is in farms. A small acreage is owned by the Federal Government and used for other purposes. Small areas are urban or in other uses. Between one-half and three-fourths is woodland, nearly all in small holdings but some in large tracts. The proportion of woodland is greatest in the west. Lumber, pulpwood, and naval stores are the major forest products. Between the tenth and one-third is cropland, the largest acreage is in the east. This is a cash-crop area, and cotton is a major crop. Peanuts, tobacco, melons, various vegetable crops, and corn are important also. The trend recently is to more pasture and woodland and less cropland.
134 Southern Mississippi Valley Silty Uplands	100 to 600 feet. The sharply dissected plains have a thick loess mantle, which is underlain by unconsolidated sands, silts, and clays, mainly of marine origin. Valley sides are hilly to steep, especially in the west. The intervening ridges are mostly narrow and rolling, but upper reaches of the ridges are broad and flat. Stream valleys are narrow in their upper reaches but broaden rapidly downstream and have wide flat flood plains and meandering stream channels. Local relief is mainly in several tens of feet to 100 or 200 feet.	Bude, Calloway, Grenada, Lexington, Loring, Memphis, and Providence (Aquifers) are upland soils formed in silty materials. All of these, except Lexington and Memphis, have fragipans. Bonn, Eyer, and Verdun (Aquifers) have silty subsoils that are high in sodium. Wrenfield and Blackburg (Fluvents) are silty soils on flood plains. Faldway, Gillsburg, and Moverly (Aquifers) are poorer drained, silty soils on flood plains.	Rainfall and ground water are abundant. In the uplands shallow wells, ponds, and streams are the main water sources for livestock. Shallow wells provide only small amounts of water but deep wells in the underlying sands and gravels yield large amounts. Most streams in the area are small and flow intermittently. They flow most of the time in winter and spring but only during and immediately after storms in summer and autumn.	Most of the land is in farms, a small amount is federally owned, and other small areas are urban or in other uses. About one-third of the whole area is woodland and the remaining cropland varies greatly from county to county, depending on soils and topography. This is largely a cash-crop area. Cotton, corn, and soybeans are major crops, but rice is important locally in Arkansas and strawberries in Louisiana. Feed grains and forage are grown on dairy farms, mainly near the larger towns and in the uplands. About one-fifth of the area is in pasture, but the present trend is to a moderate increase in land in pasture. About one-fourth is in forest. Lumber is the major forest product and some pulpwood is harvested.

(Continued)

(3 of 4 sheets)

Table 4 - General Characteristics of Land Resource Areas in Lower Mississippi Region (Con.)

Land Resource Area	Elevation and Topography	Soils	Water	Land Use and Major Crops
150 Gulf Coast Prairies	Sea level to about 200 feet along the interior margin. The level low country plain has local relief of only a few feet.	Crowley, Midland, and Mwata (Aqualis) and Mirey (Aqualis) are poorly drained soils. Crowley and Midland are clayey subsiltic and Midland and Mirey have silty subsoils.	The moderate to high rainfall and many perennial streams providing abundant water make the growing of rice is obtained from streams. Ground water is abundant. Much of the land must be drained before it can be successfully used for the general farm crops.	Nearly all the area is in farms. Rice, cotton, corn, grain sorghum, and cotton are the major crops. A large acreage is in pasture or range of native grasses, tame grasses, and legumes. Bottom-land hardwood forests border several streams that cross the area.
151 Gulf Coast Marsh	Sea level to less than 5 feet above sea level. Marshes and swamps are broken by shallow lakes and bayous and are crossed by many streams and channels. Except for narrow bands of gentle slopes on natural levees, the area is flat.	Barbary and Scatlake (Aquents) and Harris (Aqualis) are clayey soils that are wet for long periods. Kemmer and Lafitte (Saprists) formed in organic soil materials.	Much of the area is periodically covered either by tide flow or by stream overflow. Flooding and salinity preclude use of most of the area for agriculture.	Only a small part of the area is in farms and little or none is cropped. The drier parts are grazed seasonally, but hunting, fishing, and trapping are the principal uses. Oil wells and sulfur wells are abundant. The principal crops are cottons, bollworm, freshwater marsh grasses, and salt grasses occupy most of the area. Mangrove is prominent in places near the coast, and forests of cypress, tupelo gum, and other wetland hardwoods border the area on the landward side.

and included in the region's 11 LRA's. The inventory acreage excludes 2,219,000 acres of Federal land, 2,332,000 acres in urban and built-up areas, and 3,067,000 acres of water from the total area.

The distribution of the region's inventory acreage by land resource areas is shown in table 5. Approximately 34 percent of the total acreage is found in LRA 131, 28 percent in LRA 134, 24 percent in LRA 133, and the remaining 14 percent is made up of acreage in the other eight land resource areas.

Soybeans, cotton, rice, hay, corn, wheat, and sugarcane accounted for 98 percent of the cropland harvested in the region in 1970. A large percentage of the total production of these crops accrued from soils of the Southern Mississippi Valley Alluvium (LRA 131). Regional crop production from these soils were as follows: soybeans, 66 percent; cotton, 61 percent; rice, 28 percent; hay, 33 percent; corn, 41 percent; wheat, 77 percent; and sugarcane, 63 percent.

Table 5 - Distribution of Land by Land Resource Areas, 1970

Land Resource Area	Total Inventory Land Acres	Distribution Percent
86	115,773	.20
115	50,792	.09
116	828,128	1.43
118	392,607	.68
119	1,459,769	2.52
131	19,644,311	33.91
132	865,953	1.49
133	13,932,664	24.06
134	16,226,555	28.01
150	1,700,189	2.94
151	2,703,259	4.67
Totals	57,920,000	100.00

#### Land Capability Classification

The suitability of soils for crops, pasture, forest products, and other vegetation varies throughout the region. To help define the natural variation of soils, the USDA has grouped all soils available for agricultural uses into land capability classes. This practical grouping is based on limitations of the soils, the risk of damage in use (referred to as a hazard), and their response to use. The grouping does not reflect the productivity of any soil or determine suitability for specific kinds of crops.

The land capability system presented herein classifies all soils in eight classes (Classes I, II, III, IV, V, VI, VII, and VIII). Generally, the suitability of the soil for agricultural uses decreases from Class I to Class VIII. Soils in the first four classes under good management are generally defined as land suited to cultivation. Classes I to III, with use of proper conservation measures, are recommended for continuous cultivation, and Class IV is recommended for limited cultivation. Soils in Classes V through VIII are generally defined as land limited in use--not generally suited to cultivation, but are best used for pasture, forest, wildlife habitat, recreation, water supply, and aesthetic purposes.

A general description of each class follows:

#### Class I

Soils in Class I have few limitations that restrict their use. They are suited to a wide range of plants and may be used safely for cultivated crops, pasture, range, forest, and wildlife. These soils are nearly level, and erosion hazard is low. They are deep, generally well drained, and easily worked. They hold water well, and are either fairly well supplied with plant nutrients, or are highly responsive to inputs of fertilizer. They are not subject to damaging overflow and will maintain productivity with ordinary management practices.

#### Class II

Soils in Class II have some limitations that reduce the choice of plants and/or require moderate conservation practices.

Soils in this class require management to prevent soil loss or to improve air and water relations under cultivation. The limitations are few and the practices are easy to apply. The soils are best suited to use for cultivated crops, pasture, range, forest, and wildlife food and cover.

#### Class III

Soils in Class III have severe limitations that reduce the choice of plants and/or require special conservation practices. These soils are best suited to use for cultivated crops, pasture, forest, range, and wildlife food and cover. Their limitations restrict the amount of clean cultivation, timing of planting, tillage, and harvesting; choice of crops; or a combination of these.

When cultivated, many of these wet, slowly permeable, nearly level soils require a drainage system and a cropping system that maintain or improve the structure and tilth of the soil. Each distinctive kind of soil in Class III has one or more alternative combinations of use and practices required for safe use, but the number of practical alternatives for average farmers is less than for soils in Class II.

#### Class IV

Soils in Class IV have very severe limitations that restrict the choice of plants and/or require very careful management. These soils are best suited to use for crops, pasture, forest, range, and wildlife food and cover. They may be well suited to only two or three of the common crops, or the production may be low in relation to inputs over a long period.

Many sloping soils are suited for occasional, but not regular, cultivation. Some of the poorly drained, nearly level soils are not subject to erosion, but are not well suited to crops because of the time required for the soil to dry out in the spring.

#### Class V

Soils in Class V have little or no erosion hazard, but have other limitations, impractical to remove, that limit their best use largely to pasture, range, forest, and wildlife food and cover.

Limitations restrict the kinds of plants that can be grown and prevent normal tillage of cultivated crops. These soils are nearly level, wet, or frequently overflowed by streams.

#### Class VI

Soils in Class VI have severe and continuing limitations that cannot be corrected, and that make them generally unsuited for cultivation and limit their best use largely to pasture or range, forest, and wildlife food and cover. It is, however, practical to apply range or pasture improvement measures.

#### Class VII

Soils in Class VII have very severe limitations that make them unsuited for cultivation, and that restrict their best use largely to grazing, forest, or wildlife forage and cover. The physical condition of these soils make it generally impractical to develop improved pasture.

#### Class VIII

Soils and landforms in Class VIII have limitations that preclude their use for commercial plant production, and restrict their best use to recreation, wildlife, water supply, or aesthetic purposes.

Over 62 percent of the 57.9 million acres of agricultural land in the region is capable of continuous cultivation (Classes I-III). Class I soil accounts for 5.4 percent of the agricultural acreage. The largest capability category in acreage is Class III with 20.8 million acres, or about 36 percent of the agricultural acreage. About 81 percent of the 20.2 million acres of cropland is currently being harvested. This is only 45 percent of the agricultural acreage capable of continuous cultivation (table 6).

Table 6 - Land Use by Land Capability Class, 1970

Capability Class	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	Total Acres
I	2,307,529	363,166	342,461	99,155	3,112,311
II	5,956,213	1,929,672	4,015,362	312,382	12,213,629
III	10,040,499	2,223,220	8,173,809	361,764	20,799,292
Total (I-III)	18,304,241	4,516,058	12,531,632	773,301	36,125,232
IV	1,390,885	836,478	3,221,907	97,560	5,546,830
Total (I-IV)	19,695,126	5,352,536	15,753,539	870,861	41,672,062
V	104,580	148,993	3,600,998	34,473	3,889,044
VI	239,154	463,557	3,175,869	48,379	3,926,959
VII	175,140	815,829	5,000,411	813,478	6,804,858
VIII	0	1,085	9,183	1,616,809	1,627,077
Total (V-VIII)	518,874	1,429,464	11,786,461	2,513,139	16,247,938
Totals	20,214,000 <sup>1/</sup>	6,782,000 <sup>2/</sup>	27,540,000 <sup>3/</sup>	3,384,000	57,920,000

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forests. Includes pastured forest land.

Forest land represents nearly 48 percent of the total agricultural inventory acreage; of this 35 percent of the Classes I-III land group which can be cultivated regularly. An estimated two-thirds of the permanent pasture land has Classes I-III soils. Almost 10 percent of the agricultural land is in Class IV, which can be cultivated occasionally with proper treatment. Practically all of the Class VIII land, which includes sandy beaches, river wash, marshes, and barren land, is grouped in the other land-use category.

The geographical distribution of agricultural land by capability classes shows that WRPA 2, which is the leading agricultural subregion, has the best balance of capability classification in its land resource. This large northeastern Arkansas and southeastern Missouri area contains 23 percent of the region's Classes I-III land. WRPA 10 on the gulf coast has the poorest land in terms of capability or potential for development.

WRPA's 2 through 5 in the central and northern portion of the region contain 68 percent of the region's Class I land, 65 percent of the Class II acreage, and 62 percent of all Class III land. The largest subregion, WRPA 5, has the highest proportion of the marginally cultivatable Class IV land. It also contains one-third of the Class V land, and nearly one-half of all Class VI land, which is not recommended for crops. About 62 percent of the Class VIII land, mainly marshes and coastal dunes, is located in southeastern Louisiana in WRPA 10 (table 7).

Table 7 - Land Use Distribution by Land Capability Class, 1970

Capability Class	Total Distribution Percent	Cropland Percent	Pasture Percent	Forest Percent	Other Percent	Total Percent
I	5.4	74.1	11.7	11.0	3.2	100.0
II	21.1	48.8	15.7	32.9	2.6	100.0
III	35.9	48.3	10.7	39.3	1.7	100.0
Total (I-III)	62.4	50.7	12.5	34.7	2.1	100.0
IV	9.6	25.1	15.0	58.1	1.8	100.0
Total (I-IV)	72.0	47.3	12.8	37.8	2.1	100.0
V	6.7	2.7	3.9	72.5	0.9	100.0
VI	6.8	6.1	11.8	80.9	1.2	100.0
VII	11.7	2.6	12.1	73.4	11.9	100.0
VIII	2.8	0	0	0.6	99.4	100.0
Total (V-VIII)	28.0	3.2	8.9	72.5	15.4	100.0
Totals	100.0	XXX	XXX	XXX	XXX	XXX

#### Land Capability Subclasses

The soils capability subclass provides information as to the kind of conservation problem or limitations involved. Soils are usually divided into three subclasses to indicate erosion hazards, wetness, or root-zone limitations. The subclasses are:

Subclass (e) - Erosion

This includes soils where susceptibility to erosion is the dominant problem or hazard to their use. Erosion susceptibility and past erosion damage are the major soil factors for placing soils in this subclass.

Erosion is a serious problem in the Lower Mississippi Region. However, it is less intense now than in the past due to the implementation of erosion-control measures. These measures include, but are not limited to, conservation cropping systems, terracing, critical area planting, tree planting, grassing of waterways, and contour farming.

There are 19.0 million acres of inventory land that have an erosion problem or are susceptible to erosion as shown in table 8. About one-third of the land in the region is subject to moderate or severe erosion and is contributing significantly to sediment problems. Forty-six percent of the erosion in the region is on Land Resource Area 134, and 40 percent is on Land Resource Area 133. Sixty-eight percent of all erosion in the region is from sheet erosion, 18 percent is from gully erosion, 11 percent is from streambank erosion, and 3 percent is from roads.

Table 8 - Inventory Land With an Erosion Hazard, 1970 <sup>1/</sup>

WRPA	Total				
	Agricultural "E" Land Acres	Cropland Acres	Pasture Acres	Forest Land Acres	Other Acres
1	28,611	8,950	1,462	17,550	649
2	1,759,973	718,346	446,388	549,760	45,479
3	3,572,384	1,449,652	689,409	1,307,649	125,674
4	2,868,441	464,494	564,776	1,784,792	54,379
5	5,552,240	247,910	593,122	4,637,403	73,805
6	247,356	156,520	57,742	29,143	3,951
7	2,500,048	225,618	612,803	1,643,500	18,127
8	1,213,559	154,472	302,435	743,144	13,508
9	1,143,706	127,930	90,855	908,783	16,138
10	132,529	34,171	23,760	72,666	1,932
Total	19,018,847	3,588,063	3,382,752	11,694,390	353,642

<sup>1/</sup> Erosion hazard is indicated in SCS land capability subclass "e"-- soils subject to erosion by wind or water.

Some scour damage occurs on the flood plains. Damage is limited in scope and does not seem to appreciably affect the use or productivity of the land.

Activities other than agriculture contribute to the erosion and sediment problem. These activities include dredging of navigation and drainage channels, road and highway construction, urban developments, excessively heavy recreation use, and fires that destroy the vegetative cover.

A more detailed discussion of the region's sediment and erosion problems is contained in Appendix S.

Subclass (w) - Excess Water

This includes soils where excess water is the dominant hazard or limitation in their use. Poor soil drainage, wetness, high water table, and overflow are the criteria for determining which soils belong in this subclass.

There are approximately 33.8 million acres of inventory land with a wetness hazard as shown in table 9. However, only about 26 percent of this needs drainage. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmers' groups, and individual owners and operators.

Table 9 - Inventory Land With a Wetness Hazard, 1970 <sup>1/</sup>

WRPA	Total				
	Agricultural "W" Land Acres	Cropland Acres	Pasture Acres	Forest Land Acres	Other Acres
1	955,193	133,106	20,371	750,390	51,326
2	6,662,042	5,112,640	169,651	1,204,504	175,247
3	2,076,020	1,083,824	177,064	768,972	46,160
4	4,146,458	2,650,921	338,903	1,033,385	123,249
5	4,827,169	452,844	274,662	4,073,614	26,049
6	2,841,802	1,625,266	397,094	794,966	24,476
7	1,262,526	276,335	317,400	657,850	10,941
8	2,000,286	153,876	305,613	1,510,788	30,009
9	5,851,306	2,231,489	717,505	2,131,267	771,045
10	3,218,669	226,751	147,203	1,211,355	1,633,360
Total	33,841,471	13,947,052	2,865,466	14,137,091	2,891,862

<sup>1/</sup> Wetness hazard is indicated in SCS land capability subclass "w" -- excess water in or on the surface.

In recent years federally assisted projects by the Corps of Engineers have resulted in establishment of some major drainage outlets. The Soil Conservation Service, under Public Law 566, the Watershed Protection and Flood Prevention Act, and by technical assistance through local conservation districts, have assisted with installation of drainage works. About 84 PL-566 work plans and five Resource Conservation and Development Projects, many of which contain drainage assistance elements, have been approved for operations in the region.

A more detailed discussion of the region's drainage problems is contained in Appendix I.

Subclass (s) - Soil Limitations Within the Rooting Zone

This includes soils that have limitations such as shallowness of rooting zones, stones, low moisture-holding capacity, low fertility which is difficult to correct, and salinity or sodium.

There are approximately 1.9 million acres of inventory land that have an unfavorable soil condition as shown in table 10. The problems of these soils are such that it is not within the realm of economic possibility to remove the limitations.

Table 10 - Inventory Land With an Unfavorable Soil Condition, 1970 <sup>1/</sup>

WRPA	Total Agricultural "S" Land	Cropland	Pasture	Forest Land	Other
1	93,365	7,325	3,876	75,536	6,628
2	841,315	271,295	40,710	518,424	10,886
3	53,745	9,352	2,985	37,523	3,885
4	30,133	7,974	5,464	14,943	1,752
5	822,147	53,342	76,384	686,495	5,926
6	12,314	7,388	-	4,139	787
7	10,994	266	1,128	9,168	452
8	3,324	-	1,921	1,141	262
9	72,603	14,414	31,569	18,264	8,356
10	7,431	-	6,579	425	427
Total	1,947,371	371,356	170,616	1,366,058	39,341

<sup>1/</sup> Unfavorable soil conditions are indicated in land capability subclass "s" -- soils that limit root development or have low moisture-holding capacity.

## Land Resource Development Potential

Since inventory land is that which is considered potentially available for agricultural use, this section is concerned only with the inventory portion of the land (57,920,000 acres).

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 6. Conservation needs estimates indicate that 19,695,126 acres are in Classes I through IV which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 2,307,529 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 5,956,213 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 10,040,499 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; and 1,390,885 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 518,874 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 20,214,000 acres of cropland, 11 percent is adapted to very intensive cultivation, 29 percent to intensive, 50 percent to moderate, 7 percent to limited, and 3 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 4,516,058 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and in some instances clearing of scrub timber and brush. Of the 4,516,058 acres suitable for cultivation, 363,166 acres are Class I, 1,929,672 acres are Class II, and 2,223,220 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 342,461 acres now in generally level and fertile forest would make Class I cropland. Another 4,015,362 acres are suitable for regular cultivation as Class II crop-

land, if simple erosion control practices are followed, and if the fertility is improved by adding fertilizers or other soil amendments. An additional 8,173,809 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 12,531,632 acres of forest that could be converted to cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

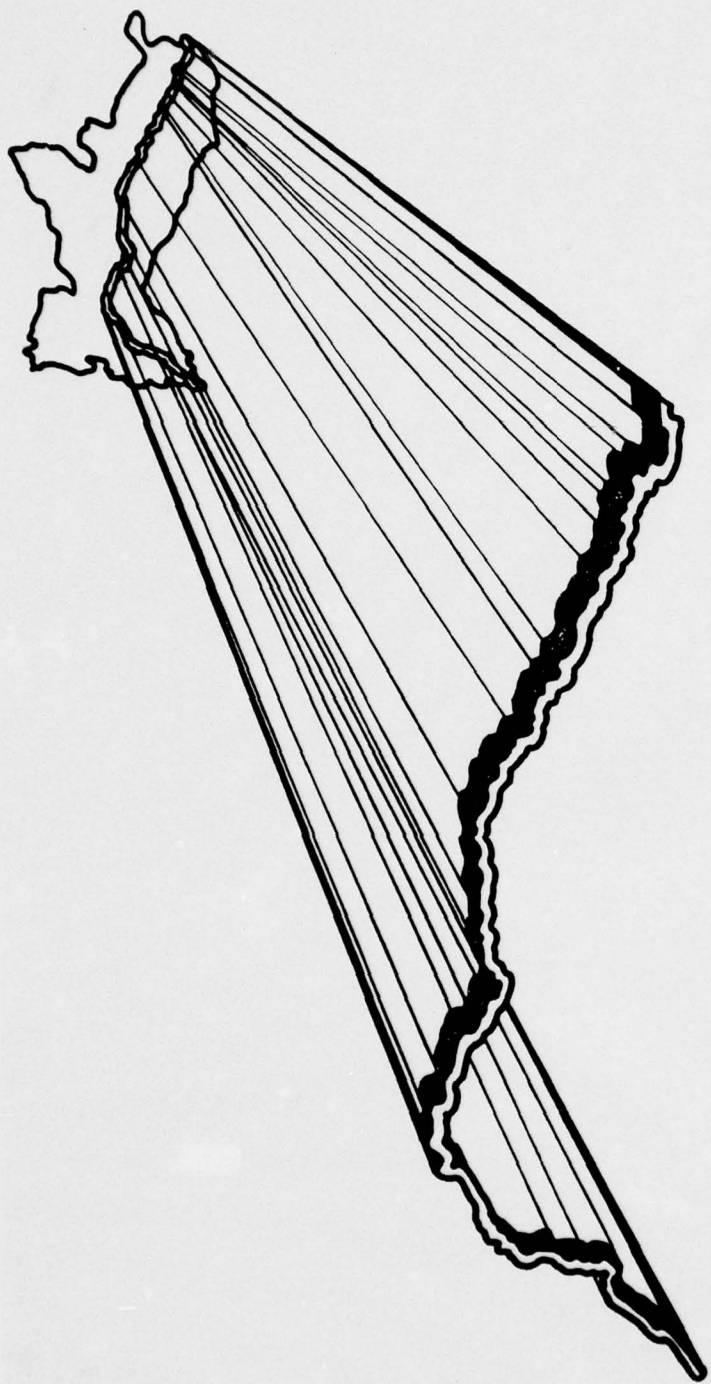
The region with its acreage of suitable land is well adapted for production of food and feed crops. Alternative costs and returns of placing this land in cultivated crops and improved pasture over returns from production of timber products and grazing should be studied in detail before clearing operations are undertaken. Desirable commercial forest species already on the forest land, in the long run, may give better returns than would clearing and converting to some other use.

#### Potential for Shift of Cropland to Grassland and Forest

Partly offsetting the potential for shift of grassland and forests to cropland are 518,874 acres of cropland that are best suited to grassland and forests.

#### Other Land

Other land comprises 3,384,000 acres in the region. Other land is defined as all agricultural land not classified as cropland, pasture and range, or forest and woodland. This land use includes acreages devoted to farmsteads, farm roads, ditch banks, feed lots, fence and hedge rows, nonfarm residences, investment tracts, coastal dunes, marshes not used for grazing, strip mines, and borrow and gravel pits. No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of this land.



**W  
R  
P  
A  
1**

## WRPA 1

### DESCRIPTION

WRPA 1 encompasses the land and water within the main stem of the lower Mississippi River below the mouth of the Ohio River and extending to and including the levees, or to the top bank where levees do not exist. It contains approximately 1,559,000 acres or 2,436 square miles of land and water area. The present length of the lower Mississippi River is 954 miles, and the average width is 0.9 of a mile.

The WRPA has a very level terrain that has numerous natural and man-made small and large water areas. Oxbow lakes and bayous continually break the continuity of the land surface. All of the area drains directly into the Mississippi River.

The normal annual precipitation varies from 44 inches in the north to 64 inches on the Gulf Coast. The average annual temperature decreases from 70 degrees on the coast to 58 degrees in Illinois. The average annual growing season varies from 277 days at Cairo, Ill., to 300 days in the coastal area.

### LAND USE

#### Cropland

Since WRPA 1 is subject to flooding throughout the annual growing season, row cropping is an insignificant land use in the area. There are presently 188,000 acres of cropland within the WRPA. This acreage is projected to remain the same throughout the time frames of the study (table 11).

#### Pasture

WRPA 1 is more adaptable to pasture production than crop production, especially along the levees that contain the Mississippi River. The levees themselves are kept free of woody vegetation but support native grasses. In 1970, approximately 197,000 acres of land were utilized for the grazing of livestock in the area. Of this, 32,000 acres are permanent pasture. The remaining acreage is made up of 30,000 acres of pastured cropland and 135,000 acres of pastured forest land. Much of this land is utilized by farmers in adjacent WRPA's for grazing. The present acreage is projected to remain constant throughout the 50-year projection period for both Programs A and B (table 11).

Table 11 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 1

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	188,000	188,000	188,000	188,000
	B	188,000	188,000	188,000	188,000
Pasture	A	32,000 <sup>1/</sup>	32,000	32,000	32,000
	B	32,000	32,000	32,000	32,000
Pastured Cropland	A	30,000	30,000	30,000	30,000
	B	30,000	30,000	30,000	30,000
Pastured Forest	A	135,000	135,000	135,000	135,000
	B	135,000	135,000	135,000	135,000
Total Pasture	A	197,000	197,000	197,000	197,000
	B	197,000	197,000	197,000	197,000
Forest	A	879,000 <sup>2/</sup>	879,000	879,000	879,000
	B	879,000	879,000	879,000	879,000
Other	A	62,000 <sup>3/</sup>	62,000	62,000	62,000
	B	62,000	62,000	62,000	62,000
Urban	A	-	-	-	-
	B	-	-	-	-
Small Water <sup>4/</sup>	A	-	-	-	-
	B	-	-	-	-
Large Water <sup>4/</sup>	A	368,000	-	-	-
	B	368,000	-	-	-
Total	A	1,559,000	-	-	-
	B	1,559,000	-	-	-
Recreation <sup>5/</sup>	A	6/			
	B		(Future needs for recreation and fish and wildlife areas are included in adjacent WRPA summaries.)		
Fish & Wildlife <sup>5/</sup>	A	131,000			
	B	131,000			
Minerals <sup>5/</sup>	A	(Existing mineral production and future needs for mineral areas are included in adjacent WRPA summaries.)			
	B				
Environmental <sup>5/</sup>	A	879,000	879,000	879,000	879,000
	B	879,000	879,000	879,000	879,000

<sup>1/</sup> Pasture and range land.

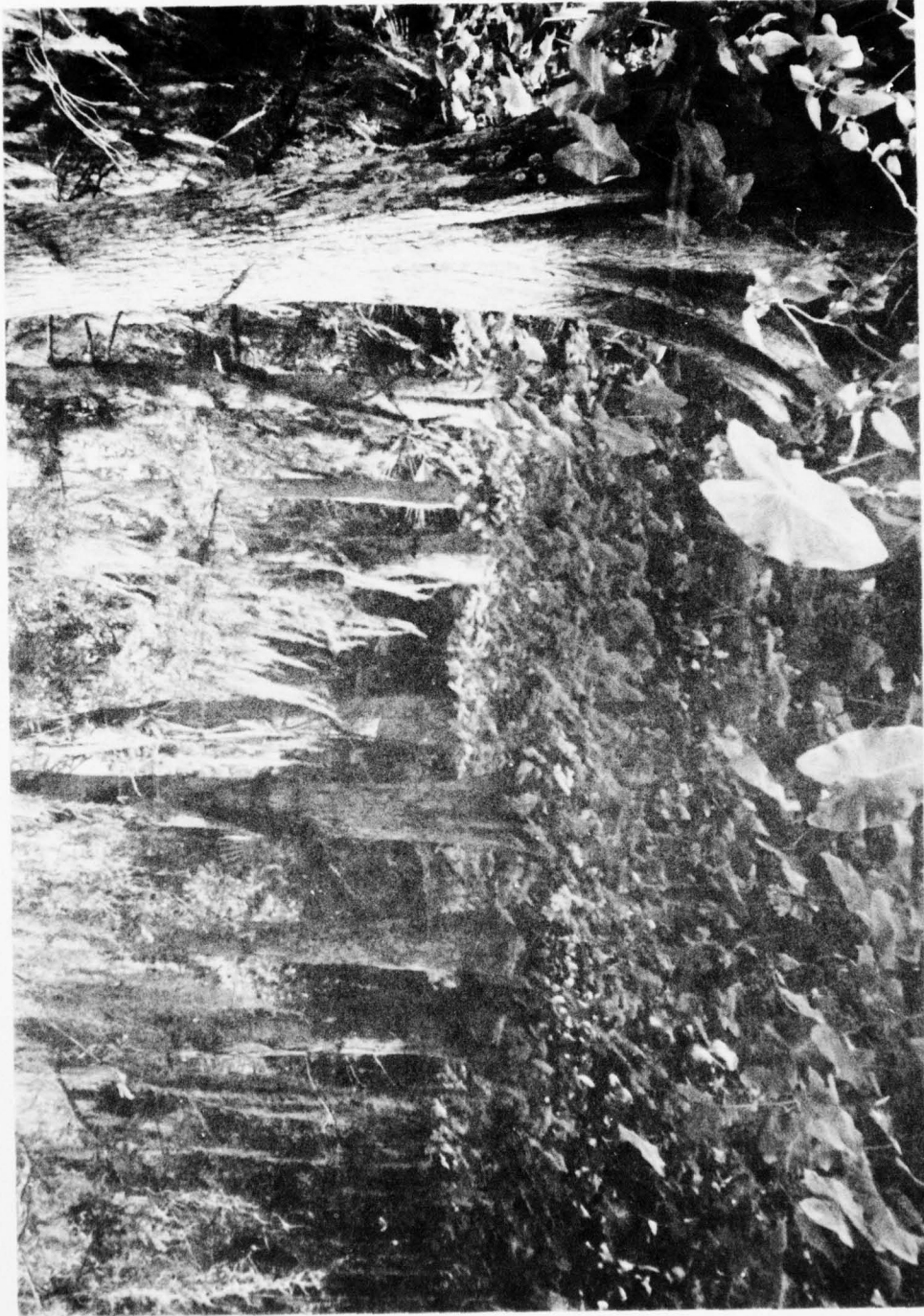
<sup>2/</sup> Includes pastured forest land and forested wetlands.

<sup>3/</sup> Includes lands not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

<sup>6/</sup> In 1970 WRPA 1 was used for many passive recreation activities such as hiking, sightseeing, and bird watching but since there was no organized development for the key recreation activities, no acreage is recognized.



Oak-Gum-Cypress Forest in WRPA 1

## Forest

Commercial forest land within WRPA 1 presently amounts to 879,000 acres, almost 56 percent of the total land use. The larger portion of the land is owned by forest industries and the remainder is individually owned.

The two forest types in the WRPA are oak-gum-cypress and elm-ash-cottonwood. This land is capable of producing a high quality hardwood forest at a very rapid growth rate. As a whole the forest receives intensive management and is in relatively good condition. There are no forest industries within the WRPA.

These forests provide valuable benefits to the region in the form of wildlife habitat, recreation, and as a filtering strip for sediment laden flood waters of the Mississippi River.

Due to the frequency of flooding, WRPA 1 is thinly populated and is expected to remain at the present level of development throughout all time frames of the study.

## Other Land

This category of land includes farmsteads, farm roads, feed lots, ditch banks, fence and hedge rows, rural nonfarm residences, investment tracts, coastal dunes, marshes not used for grazing, strip mines, borrow and gravel pits, and the like. In 1970, 62,000 acres were classed as other land. Projected needs for other land in WRPA 1 are 62,000 acres for the years 1980, 2000, and 2020 for both Programs A and B.

## Federal Lands

At the present time, WRPA 1 contains no federally owned land.

## Recreation, Fish and Wildlife, and Minerals

Needs per se for the land use categories of recreation, fish and wildlife, and minerals were not quantified for WRPA 1 since the WRPA has no population. The WRPA's potential for satisfaction of adjacent needs was considered in the formulation, however. A brief summary of existing use in these land-use categories is included herein. More detail can be found in the respective appendixes and in Appendix T, Plan Formulation.

Outside of a few boat ramps, there are virtually no recreation facilities and very little public land in WRPA 1. However, there is a substantial amount of recreation use in the WRPA. The batture lands and oxbow lakes receive much of the use. Much of the main stem of the

Mississippi River is considered too dangerous for water sports, but there are certain areas where it receives extensive use.

Fish and wildlife found in WRPA 1 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 879,000 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat. Common big game animals are white tail deer and turkey.

Since all of WRPA 1 falls in the Mississippi Flyway, it plays an important role to both migrating and wintering waterfowl. The river, oxbow lakes, and surrounding wetlands constitute important waterfowl habitat.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat. The decline in market price for pelts over the past 10 years has reduced commercial utilization of the fur-bearing resource.

Sixteen major oxbow lakes located within the WRPA provide 25,000 acres of fishery habitat. In addition, there are numerous other small lakes scattered within WRPA 1. The Mississippi River supplies 954 miles of stream in the area.

Lease of hunting and fishing rights to individuals and club units is progressing into an enveloping condition in WRPA 1. Therefore, there is a conversion to restrictive and, in some instances, managed types of hunting and fishing areas. Some of the best deer, turkey, squirrel, and waterfowl hunting within each state bordering the main channel is found in this habitat remnant.

In addition to hunting, good fishing is provided within the channel overflow area. Important permanent-water sport fishing areas include the cutoff and meander lakes and the borrow pits along the levees. Commercial fish catches of local economic importance are taken from the river, lakes, and especially from the floodplain when the river exceeds bankfull stage.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Most of the animals, especially birds, are important in satisfying nonconsumptive wildlife uses. Many species of non-game wildlife occur in WRPA 1, utilizing a broad range of habitat.

Minerals produced in WRPA 1 include sand, gravel, and clay, as well as subsurface oil and gas.

## Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 879,000 acres. Composition of the acreage may be found in Appendix U, The Environment.

## Soils

WRPA 1 originates at Cairo, Ill., crosses the portions of Missouri and Kentucky south of Cairo, and traverses the States of Tennessee, Arkansas, Mississippi, and Louisiana. Land Resource Area 131 covers all of the inventory acreage within the area.

The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 12 and figure 7.

The production requirements or needs for agricultural commodities for Programs A and B for 1970 and for future time frames 1980, 2000, and 2020 are contained in tables for adjacent WRPA's found in Appendix B, Economics.

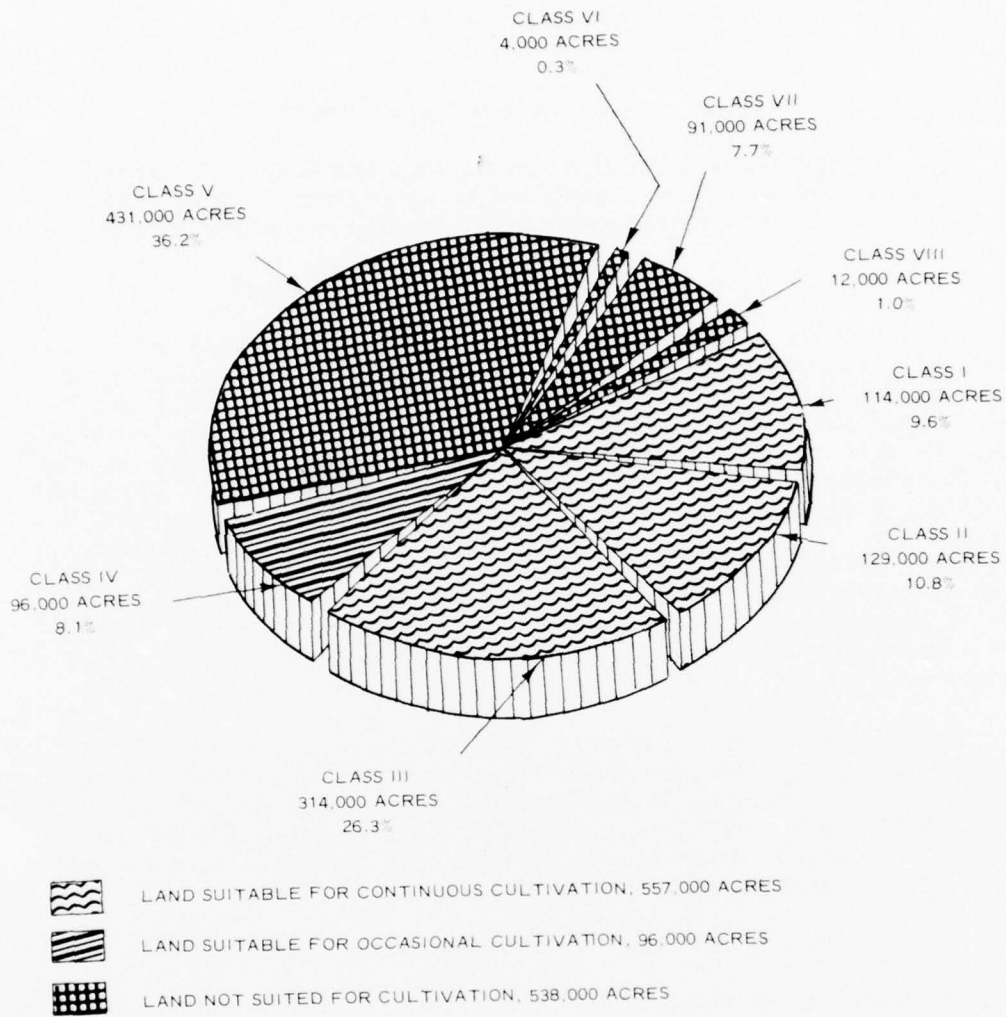
Table 12 - Land Use by Land Capability Class, 1970, WRPA 1

Land Capability Class	Total Agricultural Land					Distribution Percent
	Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	
I	113,831	68,619	6,291	35,524	3,397	9.6
II	129,042	60,025	3,521	57,707	7,789	10.8
III	313,581	75,589	13,809	217,877	6,306	26.3
IV	95,899	6,987	3,311	81,182	4,419	8.1
Total I-IV	652,353	211,220	26,932	392,290	21,911	54.8
V	431,318	6,081	753	414,280	10,204	36.2
VI	3,683	482	461	2,740	0	0.3
VII	91,166	217	3,744	69,529	17,676	7.7
VIII	12,480	0	110	161	12,209	1.0
Total V-VIII	538,647	6,780	5,068	486,710	40,089	45.2
Totals	1,191,000	218,000 <sup>1/</sup>	32,000 <sup>2/</sup>	879,000 <sup>3/</sup>	62,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Includes pastured forest land.



LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA I**

FIGURE 7

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 1 comprises 1,559,000 acres of land and water. Of this amount, 1,191,000 acres are classified as agricultural land. Only inventory land is considered potentially available for agricultural use.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 12. Conservation needs estimates indicate that 211,220 acres are in Classes I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 68,619 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 60,025 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 75,589 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; and 6,987 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 6,780 acres are Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 218,000 acres of inventory cropland, 31 percent is adapted to very intensive cultivation, 28 percent to intensive, 35 percent to moderate, 3 percent to limited, and 3 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible for development as cropland consist of 23,621 acres of grassland pasture. Of the 23,621 acres suitable for cultivation, 6,291 acres are Class I, 3,521 acres are Class II, and 13,809 acres are Class III.

### Potential for Shift of Forest to Cropland

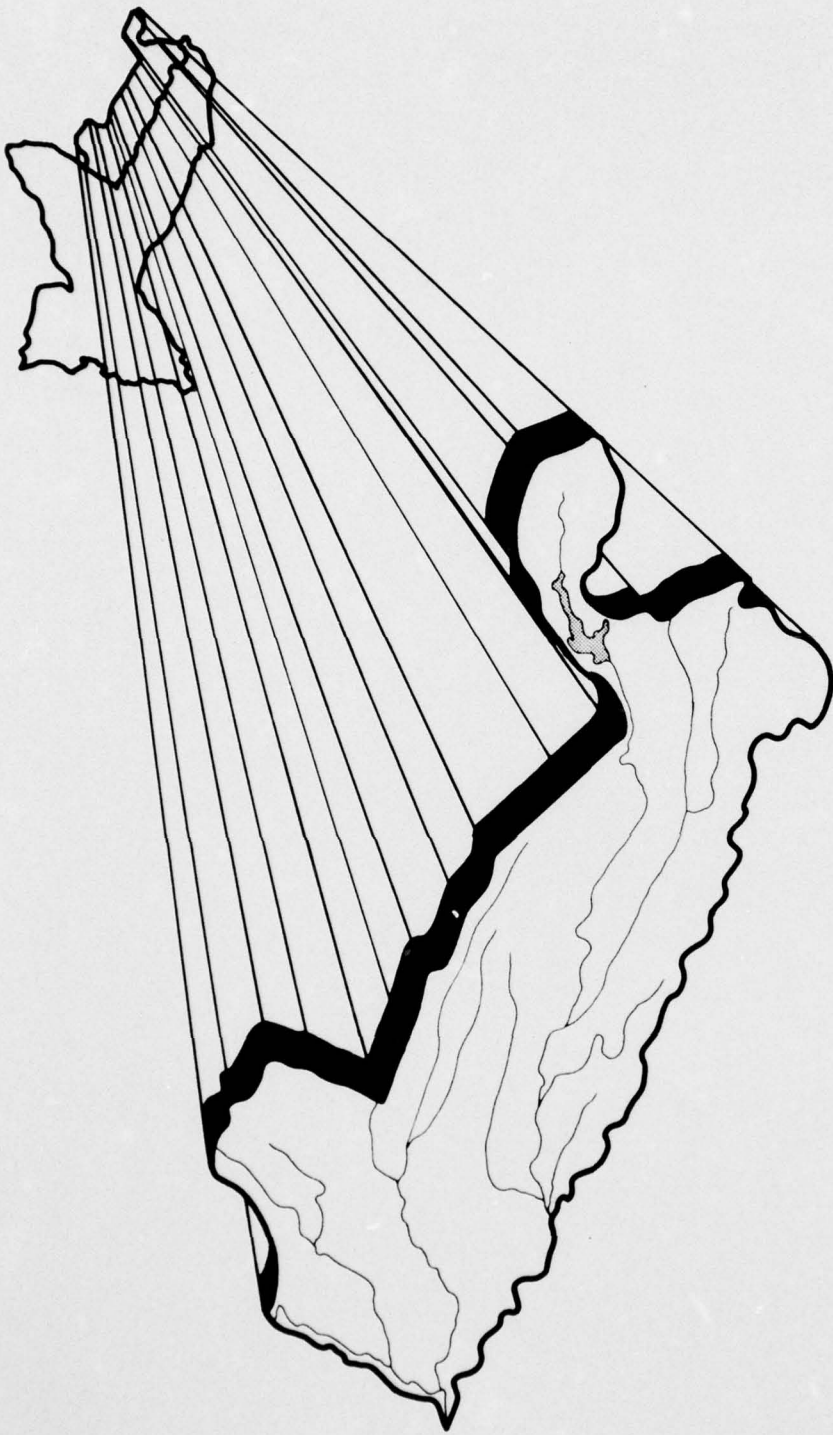
If cleared and properly cultivated, 35,524 acres now in generally level and fertile forest would make Class I cropland. Another 57,707 acres are suitable for regular cultivation as Class II cropland. An additional 217,877 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 311,108 acres of forest that could be converted to cropland.

### Potential for Shift of Cropland to Grassland and Forest

Partly offsetting the potential shift of grassland and forests to cropland are 6,780 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope that it should be kept in continuous sod or forest cover.

### Other Land

Other land comprises 62,000 acres in WRPA 1. Other land is defined as all agricultural land not classified as cropland, pasture and range, or forest. This land use includes acreage devoted to farmsteads, farm roads, ditch banks, feed lots, fence and hedge rows, nonfarm residences, investment tracts, coastal dunes, marshes not used for grazing, strip mines, and borrow and gravel pits. No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of this land.



**W  
R  
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2**

## W R P A 2

### DESCRIPTION

WRPA 2 is located in the northwest corner of the Lower Mississippi Region. It lies in parts of two states - southeast Missouri and northeast Arkansas. This WRPA contains about 10,702,000 acres of land and water area. It contains all or parts of 24 counties in Arkansas and 14 counties in Missouri. It is bounded by the Mississippi River on the east, by the limits of the lower valley on the north and west, and by the Arkansas River on the south.

There are three major drainage systems within this area - the White, Arkansas, and St. Francis Rivers. The White and Arkansas Rivers drain areas from outside the WRPA and from outside the region.

The topography of the area is varied, ranging from flat Southern Mississippi Valley Alluvium to the very rolling Ozark Highlands. The majority of the land is flat to slightly rolling.

The climate is mild, with an average annual temperature of around 60° F. The average length of growing season is about 210 days, ranging from less than 180 to 225 from north to south. The normal annual precipitation is about 48 inches, ranging from about 44 inches to about 52 inches from north to south.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 2 is estimated at 6,192,000 acres (table 13). However, slightly less than 6,000,000 acres were harvested in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 14. The description of the SPG's is presented in the regional summary. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

Projected cropland needs are presented in table 13. Program A needs are 6,673,000 acres in 1980; 6,854,000 acres in 2000; and 6,760,000 acres in 2020.

Program B needs are 6,673,000 acres in 1980; 7,378,000 acres in 2000; and 7,215,000 acres in 2020.

Table 13 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 2

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	6,192,000	6,673,000	6,854,000	6,760,000
	B	6,192,000	6,673,000	7,378,000	7,215,000
Pasture	A	693,000 <sup>1/</sup>	344,000	463,000	620,000
	B	693,000	344,000	491,000	666,000
Pastured Cropland	A	380,000	545,000	732,000	981,000
	B	380,000	545,000	777,000	1,053,000
Pastured Forest	A	365,000	491,000	659,000	883,000
	B	365,000	491,000	699,000	949,000
Total Pasture	A	1,438,000	1,380,000	1,854,000	2,484,000
	B	1,438,000	1,380,000	1,967,000	2,668,000
Forest	A	2,634,000 <sup>2/</sup>	2,989,000	2,609,000	2,731,000
	B	2,634,000	3,153,000	2,896,000	3,086,000
Other	A	247,000 <sup>3/</sup>	379,000	253,000	174,000
	B	247,000	379,000	253,000	174,000
Urban	A	367,000	378,000	396,000	459,000
	B	367,000	392,000	448,000	541,000
Small Water <sup>4/</sup>	A	98,000	-	-	-
	B	98,000	-	-	-
Large Water <sup>4/</sup>	A	91,000	-	-	-
	B	91,000	-	-	-
Total	A	10,702,000	-	-	-
	B	10,702,000	-	-	-
Recreation <sup>5/</sup>	A	21,000	23,000	24,000	34,000
	B	21,000	23,000	27,000	40,000
Fish & Wildlife <sup>5/</sup>	A	1,255,000	3,698,000	4,103,000	4,852,000
	B	1,255,000	3,973,000	4,591,000	5,538,000
Minerals <sup>5/</sup>	A	26,000	35,000	56,000	87,000
	B	26,000	40,000	71,000	118,000
Environmental <sup>5/</sup>	A	1,644,000	1,644,000	1,644,000	1,644,000
	B	1,644,000	1,644,000	1,644,000	1,644,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest lands, forested wetlands, and 319,000 acres of Federal forest lands.

<sup>3/</sup> Includes lands not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 14 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 2

State And Soil Productivity Group	Total Agricultural Land	Cropland	Pasture	Forest	Other
	Acres	Acres	Acres	Acres	Acres
<u>Arkansas</u>					
1	165,863	73,808	61,843	28,476	1,736
2	22,163	4,286	3,908	13,064	905
3	47,194	7,576	24,952	14,666	0
4	49,729	13,632	23,468	12,629	0
5	31,279	10,118	10,179	10,152	830
6	11,011	0	765	10,246	0
8	103,300	1,678	2,324	98,392	906
9	433	0	86	347	0
10	61,566	46,496	2,686	7,597	4,787
11	864,995	625,049	88,988	117,239	33,719
12	167,951	26,459	43,376	94,667	3,449
13	110,474	78,882	8,925	20,703	1,964
14	1,167,882	922,242	37,876	185,743	22,021
15	520,617	304,208	16,665	187,785	11,959
16	417,909	367,774	14,752	21,738	13,645
17	1,531,900	1,160,758	9,911	325,285	35,946
18	1,173,266	978,196	25,765	146,588	22,717
19	46,016	41,403	1,793	983	1,837
20	43,613	26,260	12,054	2,340	2,959
21	150,780	119,350	6,187	21,685	3,558
Sub-Total	6,687,941	4,808,175	396,503	1,320,325	162,938
<u>Missouri</u>					
B2	364,691	233,373	81,162	39,578	10,578
B3	451,719	369,784	16,473	50,687	14,775
B4	277,307	56,082	89,253	125,372	6,600
B5	58,326	23,166	24,697	7,980	2,483
B6	449,292	387,286	26,104	19,338	16,564
B7	578,537	529,538	9,764	20,225	19,010
B8	163,910	149,612	2,527	3,587	8,184
B9	5,797	5,567	0	0	230
C0	789,480	9,417	46,517	727,908	5,638
Sub-Total	3,139,059	1,763,825	296,497	994,675	84,062
TOTAL	9,827,000	6,572,000 <sup>1/</sup>	693,000 <sup>2/</sup>	2,315,000 <sup>3/</sup>	247,000

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.



Cotton grown in WRPA 2

#### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 2.

At the present time (1970), there are 1,438,000 acres of land utilized for the grazing of livestock within the area. Of this, 695,000 acres is permanent pasture. The remaining acreage is made up of 380,000 acres of pastured cropland and 365,000 acres of pastured forest land (table 13).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.

Primarily, there are two types of land used for pasture--summer and winter pastures and rangeland. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue or orchardgrass. Rangeland is managed for the adapted native grasses.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 1,336,000 acres; year 2000, 1,801,000 acres; and year 2020, 2,421,000 acres.

For Program B, the projected needs are: year 1980, 1,336,000 acres; year 2000, 1,913,000 acres; and for 2020, 2,595,000 acres (table 13).

### Forest

In 1970 commercial forest occupied 2,634,000 acres, or 25 percent, of the total land area. Commercial forest includes an aggregate of 2,184,000 acres of privately owned and 450,000 acres of publicly owned forests. Clark, Ozark, and St. Francis National Forests comprise 54 percent of all the public commercial forest land.

The five major forest resource types represent a broad spectrum of softwoods and hardwoods. The most common types are oak-hickory and oak-gum-cypress. The oak-hickory forests are located primarily in the north-central portion of the WRPA; oak-gum-cypress occurs on the moisture-rich soils of floodplains of major streams. Elm-ash-cottonwood type occurs in the same general region on the better-drained terraces of the floodplains and oak-pine and loblolly-shortleaf pine types occur in the northwestern portion of the WRPA.

The forests produce a variety of forest products with lumber and woodpulp being the most important. There are presently 136 sawmills, 1 wood-preserving plant, 5 veneer plants, and 40 miscellaneous wood-using plants within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 2,989,000 acres; 2000, 2,609,000 acres; and 2020, 2,731,000 acres. Program B, for the year 1980, 3,153,000 acres; 2000, 2,896,000 acres; and 2020, 3,086,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 13.

### Other Land

In 1970, 247,000 acres in the Lower Mississippi Region were classed as other land. Existing use as well as projected needs are presented in table 13 and are 379,000 acres in 1980, 253,000 acres in 2000, and 174,000 acres in 2020.

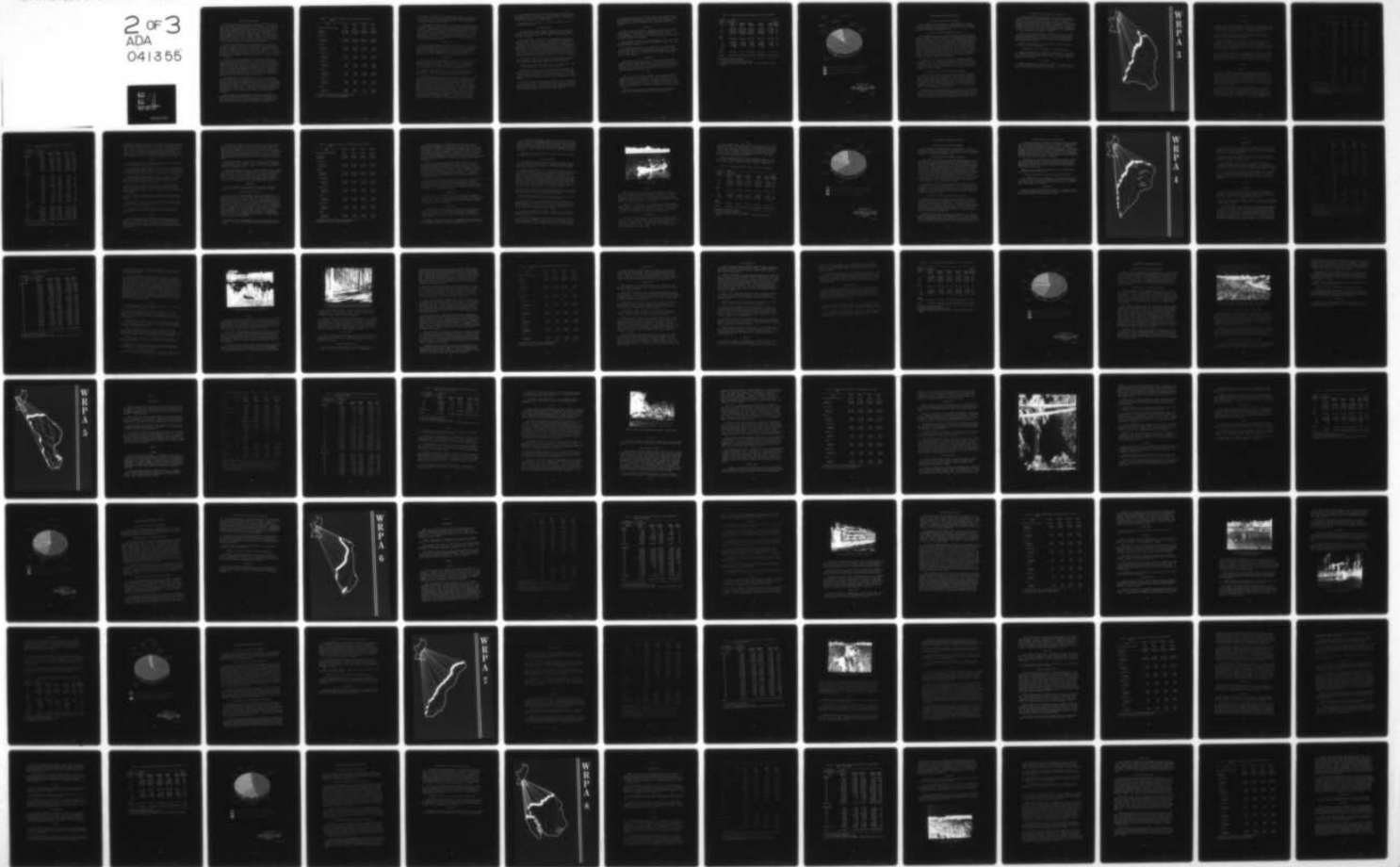
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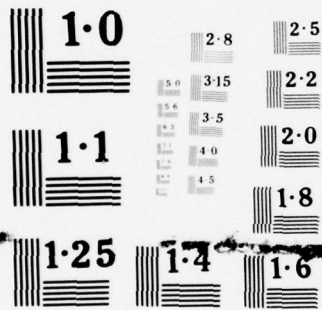
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## Urban and Built-Up Areas

Urban and built-up areas in WRPA 2 account for 367,000 acres, or about 3.4 percent of total land in the WRPA (table 13). This percentage is lower than the regional average. Urban land used by cities of 5,000 or more inhabitants comprises 27,400 acres, and cities of less than 5,000 and built-up areas account for the remaining 339,600 acres. The predominance of the latter is due primarily to the absence of several large population centers within the WRPA. With the exception of West Memphis, Ark., which is included in WRPA 3 as a part of the Memphis SMSA, Jonesboro, Ark., is the only urban center with a population greater than 25,000. Cities with populations greater than 5,000 and less than 15,000 are the dominant form of urban area.

As indicated in table 15, land use requirements for cities of 5,000 and up in WRPA 2 have been subdivided into five classifications: residential, commercial, streets (transportation, communication, and utilities), industrial, and public. As might be expected, residential land use was the primary category in 1970, with 12,400 acres, or roughly 45 percent of all land now in urban areas in the WRPA. Streets required the second largest amount of land, at 6,400 acres, or about 23 percent of total land.

Table 15 also contains projected land use needs for urban and built-up areas in WRPA 2 through 2020. As indicated, needs in total urban and built-up areas will increase by 92,000 acres (or 25 percent) between 1970 and 2020 (Program A). During the 50-year period, there will be a slight shift toward a greater proportion of urban land for cities of 5,000 and more inhabitants in WRPA 2, which corresponds with a 50 percent increase in population for the same areas. Total land needs, as projected under Program A for urban areas with population of 5,000 or larger are expected to increase to 31,700 acres by 1980; to 40,900 acres by 2000; and to 47,700 acres by 2020.

The composition of urban land used for cities of 5,000 or more persons is not expected to change drastically over the 50-year period. The only significant change expected is a more than 2.7 times increase in industrial acreage, to a total of 4,900 acres by 2020. Other changes include slight declines in the proportion of residential land needs and land needed for streets, and a slight increase in the proportion of land needed for public purposes. Commercial acreage shows the greatest proportionate decline, dropping from fourth to last among the five categories.

Urban and built-up acreage needs under Program B for WRPA 2 are expected to increase from 367,000 acres in 1970 to 541,000 acres by 2020. Urban land needs for cities with population of 5,000 and larger are projected to increase by 26,300 acres, and all other urban and built-up land needs are projected to increase by 147,700 acres.

Table 15 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 2

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	367,000	378,000	396,000	459,000
Program B	367,000	392,000	448,000	541,000
Built-Up <u>1/</u>				
Program A	339,600	346,300	355,100	411,300
Program B	339,600	359,500	404,800	487,300
Urban <u>2/</u>				
Program A	27,400	31,700	40,900	47,700
Program B	27,400	32,500	43,200	53,700
Residential				
Program A	12,400	14,300	18,100	21,000
Program B	12,400	14,600	19,200	23,700
Commercial				
Program A	2,200	2,500	3,100	3,600
Program B	2,200	2,600	3,300	4,100
Streets				
Program A	6,400	7,100	8,500	9,600
Program B	6,400	7,300	9,000	10,800
Industrial				
Program A	1,800	2,400	3,900	4,900
Program B	1,800	2,500	4,100	5,500
Public				
Program A	4,600	5,400	7,300	8,600
Program B	4,600	5,500	7,600	9,600

1/ Includes cities less than 5,000 population.

2/ Cities 5,000 and above in population.

The increase in population for the WRPA under Program B is estimated to be 1,724,991. Areas with populations less than 5,000 and built-up areas are expected to constitute more than 90 percent of the acreage in urban and built-up areas in 2020.

Land categories within urban areas of 5,000 and larger population will experience, for the most part, the same relative growth rates under Program B as under Program A, with the exception of industrial acreage, which is projected to increase even faster than under Program A. By 2020 industrial land use needs, according to Program B, will be 5,500 acres, which is more than three times present requirements. The significance of this increase is made even more noteworthy by the fact that industrial land needs outside the city limits of these urban areas are not included in this figure.

#### Federal Lands

At the present time, WRPA 2 contains 319,000 acres of federally owned land. National Forest ownership covers 130,000 acres of the area. National Wildlife Refuges make up 141,000 acres of the federal ownership. The remaining 48,000 acres is in Wappelo Lake Buffer Zone, Arkansas Post National Monument, Corning National Fish Hatchery, and administrative sites. These acreages are included in forest.

#### Recreation

WRPA 2, with seven state parks, 189,000 acres of lakes, and 11,042 miles of streams (1,203 miles suitable for high quality recreation experience) supports a variety of recreation uses. In addition, the area's 130,000 acres of National Forests containing four developed recreation areas are available for dispersed recreation use.

Playing outdoor games and sports is a significant recreation activity in WRPA 2. There are 3,576 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

Almost all land and water areas are suitable in character for some form of recreation, depending upon the needs of the person or persons involved. However, the key activities are camping, picnicking, swimming, boating, and playing outdoor games and sports. Water surface area use and needs for these activities may be found in the Recreation Appendix. The 1970 land use for these activities in WRPA 2 was 20,800 acres. Projected needs are presented in table 13. Program A needs are 23,000 acres in 1980, 24,000 acres in 2000, and 34,000 acres in 2020. The fact that the projected need figure in 1980 is less than present use can be misleading unless two points are brought to mind: (1) existing supply has been equated to present (1970) use, and (2) totaling acreage requirements and supply for Class I, II, and III recreation activities give no indication of possible problem areas; i.e., there

may be outstanding need for Classes I and II which is cancelled by an over-supply of Class III lands, or a poor distribution of the available supply which is not reflected in the total supply data. See Appendix N for detailed discussion of recreation needs.

Program B needs are 23,000 acres in 1980, 27,000 acres in 2000, and 40,000 acres in 2020.

#### Fish and Wildlife

Fish and wildlife groups include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are over 1.1 million acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat. There are over 1.0 million acres of upland hardwood forest which are productive big game habitat and second in mast production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 143,000 acres of pine hardwood habitat and in excess of 57,000 acres of pine habitat in the WRPA. The wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

Since most of WRPA 2 falls in the Mississippi Flyway, it is important to waterfowl. There are 101,000 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat.

One major lake located within the WRPA provides 7,000 acres of fishery habitat. In addition, there are 182,000 acres of other lake fishing scattered within the area. There are 1,203 miles of streams in the area which are capable of supporting a fishery resource. Water surface use and needs for habitat may be found in Appendix Q, Fish and Wildlife.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Many such species of non-game wildlife occur here, including such rare or endangered species as the bald eagle, golden eagle, river otter, swamp rabbit, water turkey, short-billed marsh wren, and alligator (recently imported).

The 1970 area utilized for fish and wildlife was 1,255,000 acres and projected needs for Program A are 3,698,000 acres in 1980, 4,103,000 acres in 2000, and 4,832,000 acres in 2020. Program B needs are 3,973,000 acres in 1980, 4,591,000 acres in 2000, and 5,538,000 acres in 2020.

#### Minerals

Mineral production in WRPA 2 is dominated by lead and associated metals such as zinc and copper in southeastern Missouri. Iron ore of current interest is centered in Iron County, Mo. Iron resources in southern Missouri are huge, but most of the resource is not contained within the boundaries of the WRPA.

Sand and gravel deposits exist throughout most of the area. Stone outcrops are found in the western part of the WRPA and clays are fairly common throughout the area.

The present mineral land use of 26,000 acres is small in comparison with other land uses. Projected needs for Program A are 35,000 acres in 1980; 56,000 acres in 2000; and 87,000 acres in 2020. Program B needs are 40,000 acres in 1980; 71,000 acres in 2000; and 118,000 acres in 2020 (table 13).

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 1,644,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

#### Soils

The soil productivity groups in WRPA 2 were developed from seven Land Resource Areas - 115, 116, 118, 119, 131, 132, and 134. The largest acreage of SPG's in Arkansas is made up of SPG's 11, 14, 17, and 18, or 71 percent of the total. The largest acreage of SPG's in Missouri is made up of SPG's B3, B6, B7, and CO, or 72 percent of the total. The distribution by state and soil productivity groups is shown in table 14.

The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 16 and figure 8.

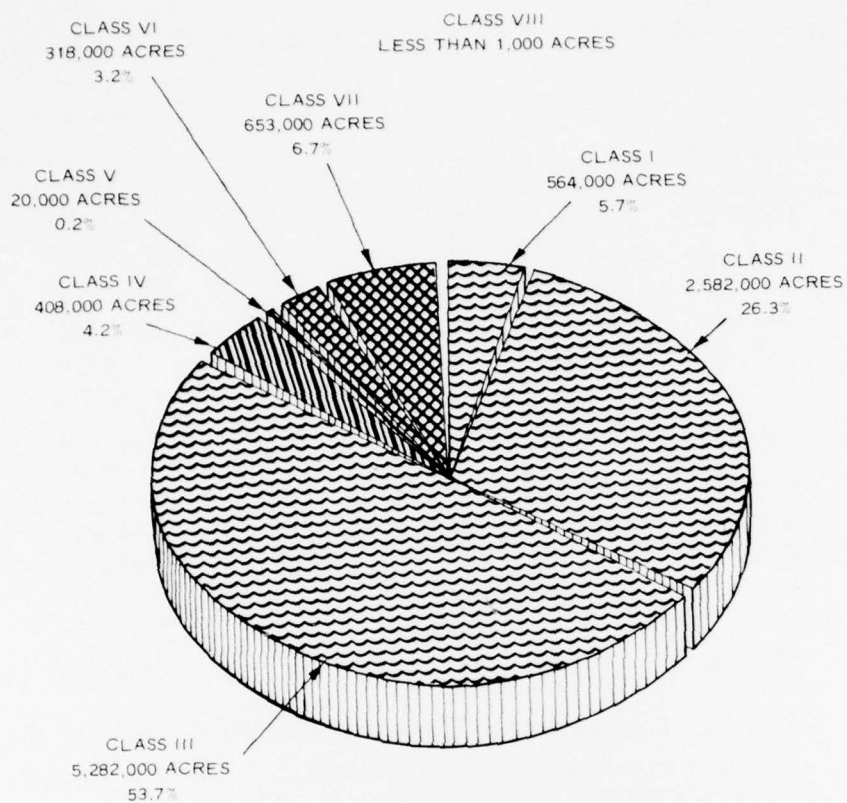
Table 16 - Agricultural Land by Capability Class, 1970, WRPA 2




Land Capability Class	Total Agricultural Land					Distribution	
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	Percent	
I	563,670	469,719	36,251	42,312	15,388	5.7	
II	2,582,237	2,017,394	175,525	317,170	72,148	26.3	
III	5,281,607	3,887,120	270,810	979,883	143,794	53.7	
IV	408,397	142,030	114,865	144,344	7,158	4.2	
Total I-IV	8,835,911	6,516,263	597,451	1,483,709	238,488	89.9	
V	19,880	1,165	2,845	14,626	1,244	0.2	
VI	317,692	40,398	61,816	211,441	4,037	3.2	
VII	653,208	14,174	30,888	604,915	3,231	6.7	
VIII	309	0	0	309	0	-	
Total V-VIII	991,089	55,737	95,549	831,291	8,512	10.1	
Totals	9,827,000	6,572,000	<sup>1/</sup> 693,000	<sup>2/</sup> 2,315,000	<sup>3/</sup> 247,000	100.0	

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.



-  LAND SUITABLE FOR CONTINUOUS CULTIVATION, 8,428,000 ACRES
-  LAND SUITABLE FOR OCCASIONAL CULTIVATION, 408,000 ACRES
-  LAND NOT SUITED FOR CULTIVATION, 991,000 ACRES

LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 2**

FIGURE 8

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 2 comprises 10,702,000 acres of land and water. Of this amount, 9,827,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. Only inventory land is considered potentially available for agricultural use.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 16. Conservation needs estimates indicate that 6,516,263 acres are in Classes I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 469,719 acres are Class I, or land which is suitable for continuous cultivation, requiring only good cultural practices; 2,017,394 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 3,887,120 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; 142,030 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 55,737 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 6,572,000 acres of cropland, 7 percent is adapted to very intensive cultivation, 31 percent to intensive, 59 percent to moderate, 2 percent to limited, and 1 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 482,586 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and in some instances clearing of scrub timber and brush. Of the 482,586 acres suitable for cultivation, 36,251 acres are Class I, 175,525 acres are Class II, and 270,810 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 42,312 acres now in generally level and fertile forest would make Class I cropland. Another 317,170 acres are suitable for regular cultivation as Class II cropland if simple erosion control practices are followed, and if the fertility is restored by adding fertilizers and other soil amendments. An additional 979,883 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 1,339,365 acres of forest that could be converted to cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

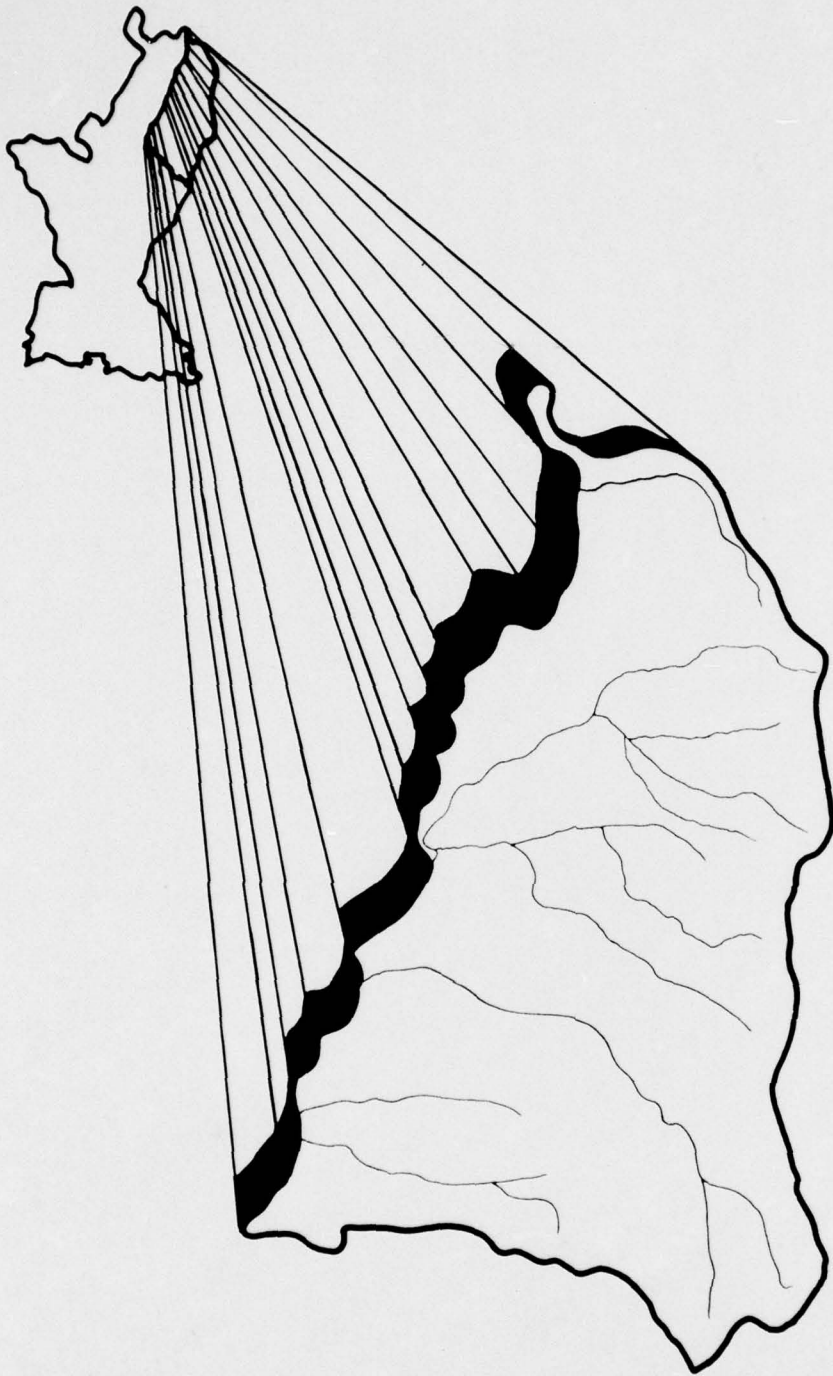
WRPA 2, with its acreage of suitable land, is well adapted for production of food and feed crops.

### Potential for Shift of Cropland to Grassland and Forest

There are 55,371 acres of cropland with a potential for shifting to grassland and forests because they are better suited for these uses. This is mainly land which has so much slope that it should be kept in continuous sod or forests.

### Other Land

Other land comprises 247,000 acres in WRPA 2. No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of this land.



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## WRPA 3

### DESCRIPTION

WRPA 3, the northeast corner of the study area, is located in the southwest corner of Kentucky, the western portion of Tennessee, and the extreme northern end of Mississippi. It contains about 6,818,000 acres or approximately 10,650 square miles of land and water area.

The principal drainage areas from east of the Lower Mississippi River include the Obion, Forked Deer, Hatchie, and Wolf Rivers in Tennessee and Mayfield Creek in Kentucky.

The topography of the area is fairly uniform, ranging from flat along the stream bottoms to rolling hills. Some of the uplands, particularly in that half of the area next to the Mississippi River, are fairly flat and well suited for cultivated crops and pastures. The hills become more rolling as you move from the Mississippi River toward the eastern edge of the area.

The climate is mild with an average annual temperature of around 61° F. The average length of the growing season is about 210 days without much variance from the average throughout the planning area. The normal annual precipitation is about 51 inches, ranging from a low of about 48 inches near the northern end to 52 inches for most of the area.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 3 is estimated at 2,206,000 acres (table 17). However, only about 1,700,000 acres were harvested for the production of crops in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 18. The description of the SPG's is presented in the regional summary. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

Projected cropland needs are presented in table 17. Program A needs are 1,634,000 acres in 1980; 1,583,000 acres in 2000; and 1,571,000 acres in 2020. Program B needs are 1,634,000 acres in 1980; 1,698,000 acres in 2000; and 1,684,000 acres in 2020. Needs in 1980 for both Programs A and B are the same because of the assumption made concerning the derivation of Program B food and fiber requirements.

Table 17 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 3

Item	Program	1970	1980	2000	2020
		Use Acres	Use Acres	Use Acres	Use Acres
Cropland	A	2,206,000	1,634,000	1,583,000	1,571,000
	B	2,206,000	1,634,000	1,698,000	1,684,000
Pasture	A	929,000 <sup>1/</sup>	425,000	569,000	760,000
	B	929,000	425,000	611,000	816,000
Pastured Cropland	A	746,000	952,000	1,275,000	1,703,000
	B	746,000	952,000	1,369,000	1,829,000
Pastured Forest	A	297,000	398,000	533,000	712,000
	B	297,000	398,000	572,000	765,000
Total Pasture	A	1,972,000	1,775,000	2,377,000	3,175,000
	B	1,972,000	1,775,000	2,552,000	3,410,000
Forest	A	2,310,000 <sup>2/</sup>	3,495,000	2,862,000	3,066,000
	B	2,310,000	3,845,000	3,205,000	3,465,000
Other	A	200,000 <sup>3/</sup>	392,000	379,000	354,000
	B	200,000	392,000	379,000	354,000
Urban	A	355,000	401,000	536,000	724,000
	B	355,000	439,000	612,000	843,000
Small Water <sup>4/</sup>	A	32,000	-	-	-
	B	32,000	-	-	-
Large Water <sup>4/</sup>	A	40,000	-	-	-
	B	40,000	-	-	-
Total	A	6,818,000	-	-	-
	B	6,818,000	-	-	-
Recreation <sup>5/</sup>	A	8,000	39,000	66,000	109,000
	B	8,000	45,000	76,000	130,000
Fish & Wildlife <sup>5/</sup>	A	3,168,000	8,380,000	11,416,000	15,609,000
	B	3,168,000	9,198,000	12,987,000	18,109,000
Minerals <sup>5/</sup>	A	2,000	4,000	9,000	14,000
	B	2,000	4,000	9,000	14,000
Environmental <sup>5/</sup>	A	830,000	830,000	830,000	830,000
	B	830,000	830,000	830,000	830,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest land, forested wetlands, and 77,000 acres of Federal forest lands.

<sup>3/</sup> Includes lands not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 18 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 3

State And Soil Productivity Group	Total Agricultural Land				
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
<u>Kentucky</u>					
30	109,058	71,739	10,265	25,389	1,665
31	128,769	78,942	27,187	17,015	5,625
32	92,173	64,681	12,061	13,526	1,905
33	151,287	96,336	29,337	20,767	4,847
34	71,268	40,027	17,471	11,548	2,222
35	55,326	24,631	5,806	24,473	416
36	7,980	4,206	939	2,835	0
37	109,649	19,141	20,027	68,598	1,883
38	12,080	1,568	1,136	8,249	1,127
Sub-Total	737,590	401,271	124,229	192,400	19,690
<u>Mississippi</u>					
62	622	622	0	0	0
63	2,614	1,192	856	566	0
64	70,155	51,106	12,272	6,361	416
67	12,746	8,441	3,531	566	208
69	12,630	8,291	2,318	2,021	0
70	3,194	0	2,056	1,138	0
71	6,308	3,652	1,968	480	208
73	51,799	16,865	11,258	22,217	1,459
74	8,681	1,558	1,469	5,029	625
75	1,362	0	876	486	0
76	14,555	7,204	3,237	4,114	0
77	224	0	224	0	0
79	19,549	4,839	4,154	10,140	416
80	13,171	3,921	5,287	3,963	0
81	172,718	3,713	6,197	162,392	416
82	77,039	4,150	6,486	66,403	0
83	8,995	5,920	2,279	380	416
84	86,856	5,110	9,579	72,167	0
Sub-Total	563,218	126,584	74,047	358,423	4,164
<u>Tennessee</u>					
C1	1,245,361	780,051	237,501	174,847	52,962
C2	575,223	273,168	130,451	151,272	20,332
C3	161,987	130,437	19,331	7,812	4,407
C4	1,061,641	164,627	170,846	684,355	41,813
C5	455,015	300,338	47,997	88,203	18,477
C6	704,412	463,517	69,685	142,603	28,607
C7	809,553	312,007	54,913	433,085	9,548
Sub-Total	5,013,192	2,424,145	730,724	1,682,177	176,146
TOTAL	6,314,000	2,952,000 <sup>1/</sup>	929,000 <sup>2/</sup>	2,233,000 <sup>3/</sup>	200,000

1/ Includes pastured cropland.

2/ Includes permanent pasture and range.

3/ Does not include federal forest lands. Includes pastured forest land.

No changes were made if the region's growth rate in production exceeded the average for the United States. Such was the case between 1970 and 1980; however, between 1980 and 2000, and between 2000 and 2020, the growth rate of the region was below the average of that of the United States. Thus the difference in the growth rate (approximately 7 percent) was used to adjust the food and fiber requirements in the year 2000 and the year 2020. The resulting requirements were then translated into cropland needs and are consequently higher than for Program A.

### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 3.

At present time (1970), there are 1,972,000 acres of land utilized for the grazing of livestock within the area. Of this, 929,000 acres is permanent pasture. The remaining acreage is made up of 746,000 acres of pastured cropland and 297,000 acres of pastured forest land (table 17).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.

Primarily, there are two types of pasture--summer and winter. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue or orchardgrass.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 1,775,000 acres; year 2000, 2,377,000 acres; and year 2020, 3,175,000 acres.

For Program B, the projected needs are: year 1980, 1,775,000 acres; year 2000, 2,552,000 acres; and for 2020, 3,410,000 acres (table 17).

### Forest

In 1970 commercial forest land occupied 2,310,000 acres, or 34 percent of the total land area. Commercial forest land includes an aggregate of 2,233,000 acres of privately owned and 77,000 acres of federally owned forests. National Forest System lands on the Holly Springs National Forest comprise 10 percent of all the public commercial forest land.

The forests of WRPA 3 are grouped into five major forest classifications. The most common types are oak-hickory, which occupies 47 percent, and oak-gum-cypress, which occupies 23 percent of the area. The oak-hickory forests are located in the northeast portion of the WRPA; oak-gum-cypress type covers the moisture-rich soils of floodplains of major streams. Elm-ash-cottonwood type occurs in the same general region on the better-drained terraces of the floodplains and oak-pine and loblolly-shortleaf pine types occur in the southern portion of the WRPA.

The forests produce a variety of forest products with lumber and woodpulp being the most important. There are presently 113 sawmills, 2 wood-preserving plants, 4 veneer plants, and 22 miscellaneous wood-using plants within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 3,495,000 acres; 2000, 2,862,000 acres; and 2020, 3,066,000 acres. Program B, for the year 1980, 3,845,000 acres; 2000, 3,205,000 acres; and 2020, 3,465,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 17.

#### Other Land

In 1970, 200,000 acres in WRPA 3 were classed as other land. Existing use as well as projected needs are presented in table 17.

#### Urban and Built-Up Areas

Urban and built-up areas in WRPA 3 comprise 355,000 acres, or 5.2 percent of total land in the WRPA (table 19). This proportion is higher than the regional average. The area includes 131,500 acres of urban land occupied by cities of 5,000 or more inhabitants and 223,500 acres of land occupied by cities less than 5,000 and built-up areas. The relatively high amount of land in urban areas of over 5,000 population is due primarily to the dominance of large cities. The planning area, for example, contains three cities with populations of more than 25,000: Memphis, Tenn., Jackson, Tenn., and West Memphis, Ark. <sup>1/</sup> The Memphis SMSA clearly dominates the planning area, encompassing a total of 104,690 acres. Urban expansion, except for Jackson, Tenn., tends to gravitate towards Memphis, which results in a concentration of built-up areas surrounding Memphis.

<sup>1/</sup> Included as a part of the Memphis SMSA although hydrologically in WRPA 2. Over 90 percent of future growth is expected in the WRPA 3 area.

Table 19 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 3

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	355,000	401,000	536,000	724,000
Program B	355,000	439,000	612,000	843,000
Built-Up <u>1/</u>				
Program A	223,500	242,800	347,900	517,500
Program B	223,500	265,300	396,100	571,000
Urban <u>2/</u>				
Program A	131,500	158,200	188,100	206,500
Program B	131,500	173,700	215,900	272,000
Residential				
Program A	48,600	61,500	75,500	84,400
Program B	48,600	67,500	86,600	110,800
Commercial				
Program A	11,000	12,900	14,900	16,200
Program B	11,000	14,100	17,000	21,300
Streets				
Program A	31,800	36,700	41,300	44,100
Program B	31,800	40,300	47,000	57,200
Industrial				
Program A	6,600	9,700	16,000	19,900
Program B	6,600	10,700	19,500	28,200
Public				
Program A	33,500	37,400	40,400	41,900
Program B	33,500	41,100	45,800	54,500

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

The five categories of urban land use for cities of 5,000 or greater population (table 19) reflect the effect of large cities on urban land use in WRPA 3. As indicated in the table, land for residential purposes is the largest category in the planning area, with 48,600 acres; and land for public purposes is second, with 33,500 acres. These two categories together constitute 62.4 percent of present urban usage. Residential land constitutes less than 40 percent of the total urban acreage, although population in urban areas of 5,000 population or greater in the planning area (803,923) is close to 64 percent of total WRPA population.

Table 19 also contains projected land use needs for urban and built-up areas in the WRPA through 2020. Under Program A, needs in total urban and built-up areas will increase by 369,000 acres, from 355,000 acres in 1970 to 724,000 acres by 2020. This amount represents an increase of approximately 104 percent. Needs for urban centers with less than 5,000 inhabitants and built-up areas will be 517,500 acres by 2020, which is 1.3 times greater than present usage. Land needs for cities with 5,000 or more inhabitants are projected to increase by 75,000 acres by 2020.

Land use subcategories will experience, for the most part, the same relative growth rates under Program B as under Program A, the only exception being the projected growth of urban industrial land need. By 2020 urban industrial land needs will be 28,200 acres, which is more than 8,000 acres greater than projected under Program A and more than four times greater than present usage.

#### Federal Lands

At the present time, WRPA 3 contains 77,000 acres of federally owned land. The Holly Springs National Forest accounts for 8,000 acres of the area. Hatchie, Lake Isom, and Reelfoot National Wildlife Refuges contain 25,000 acres. The remaining 44,000 acres is made up of administrative sites and other land uses.

#### Recreation

WRPA 3, with five State parks, 40,340 acres of lakes, and 4,985 miles of streams (822 miles suitable for high quality recreation experience) supports a variety of recreation uses. In addition, the area's 8,000 acres of National Forests are available for dispersed recreation use.

Playing outdoor games and sports are significant recreation activities in WRPA 3. There are 1,686 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

If accessible to the public, almost all land and water could be used for recreation, depending upon the needs of the person or persons involved. However, the key activities are camping, picnicking, swimming, boating, and playing outdoor games and sports. The 1970 land use for these activities in WRPA 3 was 8,000 acres. Program A needs are 39,000 acres in 1980, 66,000 acres in 2000, and 109,000 acres in 2020 (table 17).

Program B needs are 43,000 acres in 1980, 76,000 acres in 2000, and 130,000 acres in 2020.

#### Fish and Wildlife

Fish and wildlife groups include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are nearly 800,000 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat. There are over 1 million acres of upland hardwood forest which are productive big game habitat and second in game production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 124,000 acres of pine hardwood habitat and nearly 174,000 acres of pine habitat in the WRPA. The wildlife resources range from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

Since most of WRPA 3 falls in the Mississippi Flyway, it is important to waterfowl. There are 41,000 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat.

Reelfoot Lake, located within the WRPA, provides 10,000 acres of fishery habitat. There are 62,000 acres of other scattered lakes for fishing throughout the area, and 2,105 miles of streams which are capable of supporting a fishery resource. However, only 822 miles of streams are of a size suitable for sport fishing.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Many such species of non-game wildlife occur here.

The 1970 area utilized for fish and wildlife was 3,168,000 acres. Program A needs are 8,380,000 acres in 1980; 11,416,000 acres in 2000; and 15,609,000 acres in 2020. Program B needs are 9,198,000 acres in 1980; 12,987,000 acres in 2000; and 18,109,000 acres in 2020 (table 17).



Lake fishing in WRPA 3

#### Minerals

Nonmetallic minerals are produced in most counties in WRPA 3. There are no known metallic mineral deposits in the area. Neither oil nor gas is produced in the area. Extensive deposits of ball clay, a high grade ceramic raw material, are found in Weakley County, Tenn., and extend into Graves County, Ky. Sand and gravel deposits of variable quality are found throughout most of the area.

Presently, there are 2,000 acres of land used for mineral production in the area. The future needs for Program A are: 4,000 acres in 1980; 9,000 acres in 2000; and 14,000 acres by the year 2020. The projected needs for Program B are: 4,000 acres in the year 1980; 9,000 acres in the year 2000; and 14,000 in the year 2020 (table 17).

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore, the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 830,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

## Soils

The soil productivity groups in WRPA 3 were developed from three land resource areas - 131, 133, and 134. The largest acreage of SPG's in Kentucky are made up of SPG's 30, 31, 33, 37, and 32, or 80 percent of the total. The largest acreage of SPG's in Mississippi are made up of 64, 73, 81, 82, and 84, or 81 percent of the total. The largest acreage of SPG's in Tennessee are made up of C1, C2, C4, C6, and C7, and constitute 88 percent of the total.

The distribution by state and soil productivity groups is shown in table 18. The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 20 and figure 9.

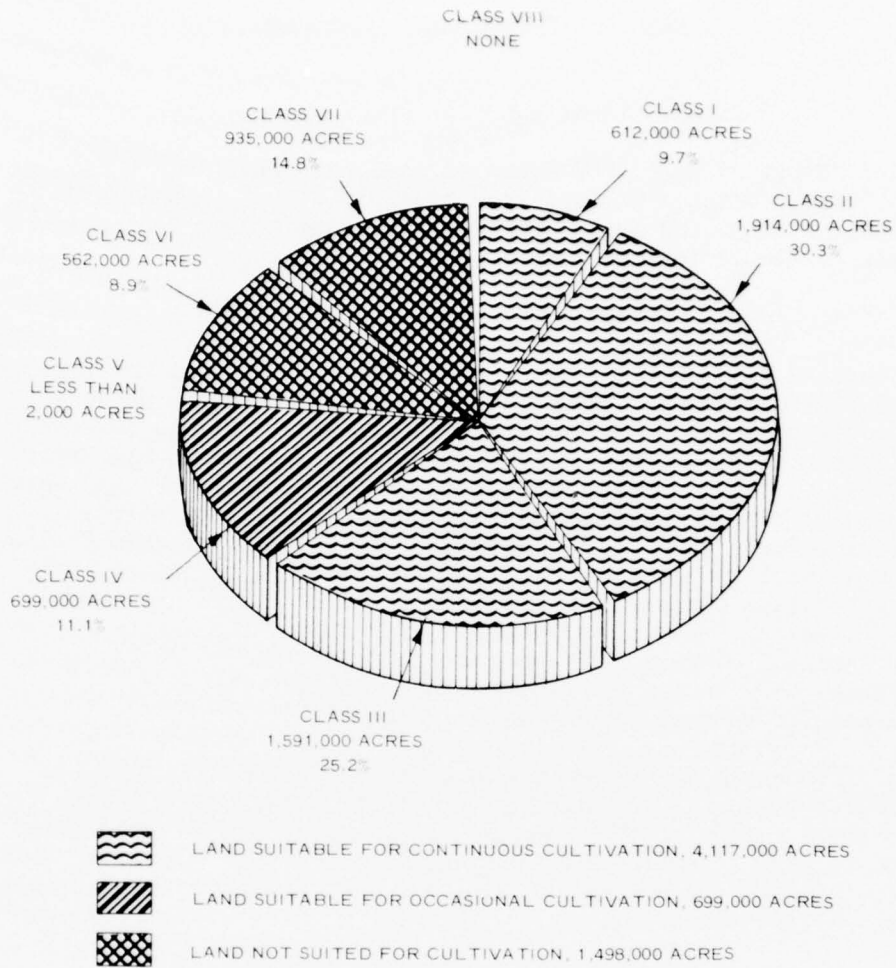
Table 20 - Agricultural Land by Capability Class, 1970, WRPA 3

Land Capability Class	Total Agricultural Land					Distribution Percent
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	
I	611,851	409,172	59,542	118,856	24,281	9.7
II	1,914,191	1,264,657	292,924	280,268	76,342	30.3
III	1,590,880	719,892	194,382	644,108	32,498	25.2
IV	698,793	343,864	144,242	189,717	20,970	11.1
Total I-IV	4,815,715	2,737,585	691,090	1,232,949	154,091	76.3
V	1,248	37	75	1,096	40	-
VI	562,415	138,024	127,760	282,054	14,577	8.9
VII	934,622	76,354	110,075	716,901	31,292	14.8
VIII	0	0	0	0	0	-
Total V-VIII	1,498,285	214,415	237,910	1,000,051	45,909	23.7
Totals	6,314,000	2,952,000	<sup>1/</sup> 929,000	<sup>2/</sup> 2,233,000	<sup>3/</sup> 200,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.



LOWER MISSISSIPPI REGION  
COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
FOR AGRICULTURAL LAND  
WRPA 3**

FIGURE 9

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 3 comprises 6,818,000 acres of land and water. Of this amount, 6,314,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. Only inventory land is considered potentially available for agricultural use.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use type by land capability classes is shown in table 20. Conservation needs estimates indicate that 2,737,585 acres are in Classes I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 409,172 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 1,264,657 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 719,892 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; 343,864 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require special conservation treatment.

In addition, 214,415 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 2,952,000 acres of cropland, 14 percent is adapted to very intensive cultivation, 43 percent to intensive, 24 percent to moderate, 12 percent to limited, and 7 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 546,848 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and, in some instances, clearing of scrub timber and brush. Of the 546,848 acres suitable for cultivation, 59,542 acres are Class I, 292,924 are Class II, and 144,242 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential Shift of Forest to Cropland

If cleared and properly cultivated, 118,856 acres now in generally level and fertile forest would make Class I cropland. Another 280,268 acres are suitable for regular cultivation as Class II cropland if simple erosion control practices are followed, and if the fertility is restored by adding fertilizers and other soil amendments. An additional 644,108 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 1,043,232 acres of forest that could be converted to cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forest and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

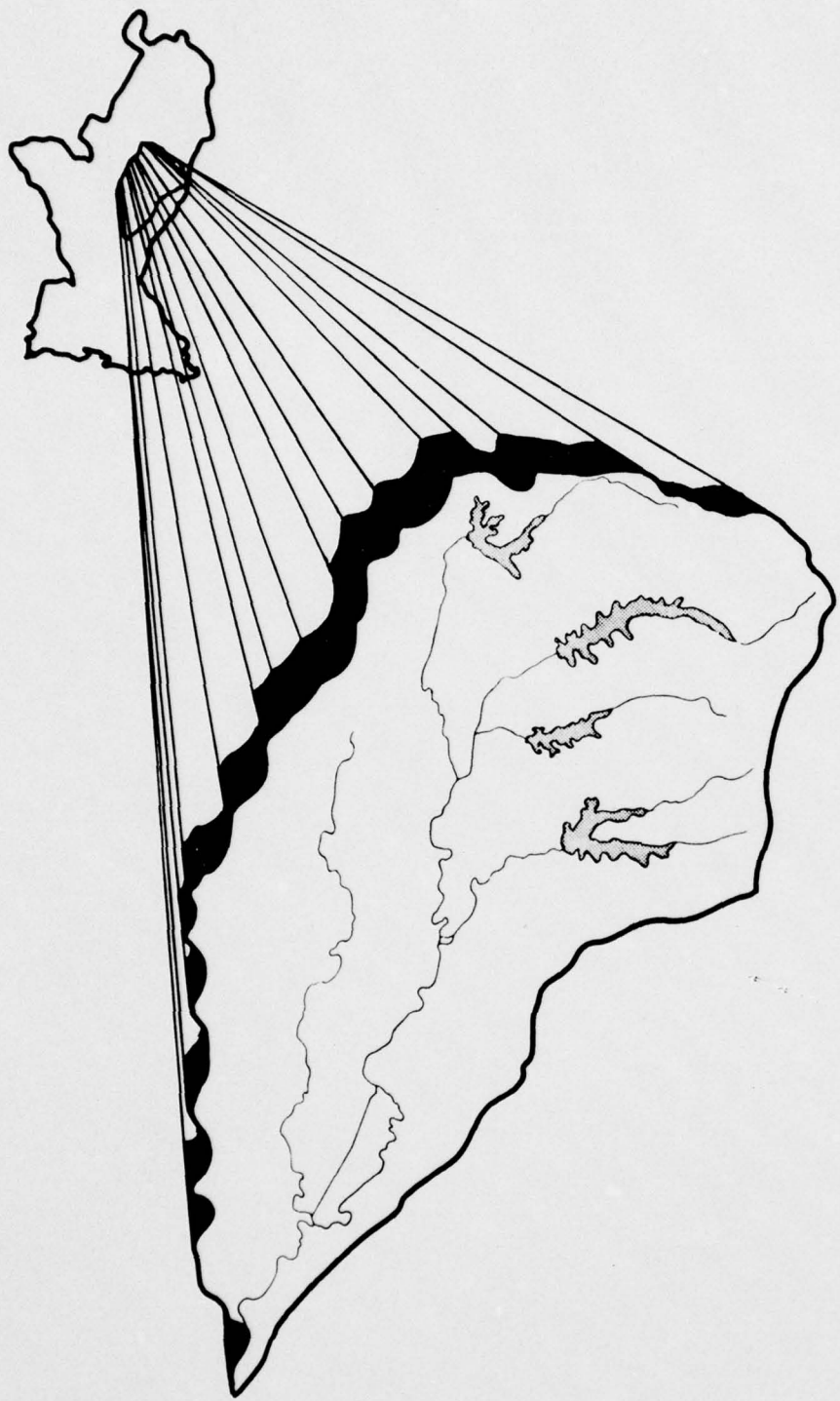
WRPA 3, with its acreage of suitable land, is well adapted for production of food and feed crops.

### Potential for Shift of Cropland to Grassland and Forest

The potential for shift of cropland to grassland and forests consists of 214,415 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope it should be kept in continuous sod or forests.

### Other Land

Other land comprises 200,000 acres in WRPA 3. No attempt was made to describe desirable physical land-use changes by capability classes due to the diversity of uses made of this land.



**W  
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4**

## WRPA 4

### DESCRIPTION

WRPA 4 is located along the east side of the Mississippi River in northwest Mississippi and contains most of the alluvial valley land in the state. It contains approximately 8,547,000 acres of land and water area or about 13,355 square miles.

The main drainage for WRPA 4 is the Yazoo River. The principal tributaries to the system include the Coldwater, Tallahatchie, Yocona, Yalobusha, Sunflower, and Steele Bayous.

The topography of the area is varied, ranging from the flat Southern Mississippi Valley alluvium to the very rolling bluff hills of the Southern Mississippi Valley silty uplands. The Southern Coastal Plains area on the eastern side of the WRPA is gently rolling to rolling.

The climate is mild, with an average annual temperature of around 65° F. The average length of growing season is about 225 to 230 days, ranging from about 215 to 240 from north to southwest. The normal annual precipitation is about 52 inches, with little variance within the WRPA.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 4 is estimated at 3,314,000 acres (table 21). However, only about 2,800,000 acres were harvested for the production of crops in 1970. Agricultural output accruing from this area ranks second in the Lower Mississippi River Basin.

In 1970 the major crops produced in terms of acreage were soybeans, cotton, hay, corn, and rice. These five crops accounted for 90 percent of farm market receipts.

Since 1954 soybean acreage has tripled, with new plantings averaging around 70,000 acres a year. Corn has been practically eliminated as a viable crop in this subregion, and cotton acreage is about one-half the size of 20 years ago. Pastured cropland has declined by about 250,000 acres, and hay crops have dropped another 100,000 acres since the 1949 Agricultural Census. The available acreage of soils by soil productivity groups (SPG's) is shown in table 22. The description of the SPG's is presented in the regional summary. The physical quantity

Table 21 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 4

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	3,314,000	3,660,000	3,680,000	3,675,000
	B	3,314,000	3,660,000	4,068,000	4,122,000
Pasture	A	943,000 <sup>1/</sup>	1,336,000	1,792,000	2,397,000
	B	943,000	1,336,000	1,925,000	2,574,000
Pastured Cropland	A	326,000	423,000	595,000	796,000
	B	326,000	423,000	639,000	855,000
Pastured Forest	A	587,000	791,000	1,111,000	1,497,000
	B	587,000	791,000	1,194,000	1,596,000
Total Pasture	A	1,856,000	2,550,000	3,498,000	4,690,000
	B	1,856,000	2,550,000	3,758,000	5,025,000
Forest	A	3,222,000 <sup>2/</sup>	4,660,000	3,934,000	4,326,000
	B	3,222,000	5,033,000	4,406,000	4,888,000
Other	A	207,000 <sup>3/</sup>	253,000	230,000	163,000
	B	207,000	253,000	230,000	163,000
Urban	A	328,000	335,000	361,000	426,000
	B	328,000	357,000	408,000	485,000
Small Water <sup>4/</sup>	A	133,000	-	-	-
	B	133,000	-	-	-
Large Water <sup>4/</sup>	A	74,000	-	-	-
	B	74,000	-	-	-
Total	A	8,547,000	-	-	-
	B	8,547,000	-	-	-
Recreation <sup>5/</sup>	A	29,000	36,000	46,000	67,000
	B	29,000	37,000	53,000	77,000
Fish & Wildlife <sup>5/</sup>	A	1,234,000	3,756,000	4,202,000	5,033,000
	B	1,234,000	4,102,000	4,762,000	5,649,000
Minerals <sup>5/</sup>	A	3,000	3,000	4,000	5,000
	B	3,000	4,000	5,000	7,000
Environmental <sup>5/</sup>	A	1,157,000	1,157,000	1,157,000	1,157,000
	B	1,157,000	1,157,000	1,157,000	1,157,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest land, forested wetlands, and 364,000 acres of Federal forest lands.

<sup>3/</sup> Includes lands not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 22 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 4

State And Soil Productivity Group	Total Agricultural				
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
<u>Mississippi</u>					
86	257,794	210,377	18,473	12,960	15,984
87	329,732	293,855	13,890	7,858	14,129
88	269,950	196,329	36,810	20,266	16,545
89	81,088	43,168	27,481	6,007	4,432
90	73,419	35,579	16,154	18,056	3,630
91	1,148,480	720,804	147,815	235,878	43,983
92	4,312	3,809	163	340	0
93	6,305	4,008	2,059	0	238
94	359,533	122,938	127,313	99,936	9,346
95	78,857	61,697	5,266	10,050	1,844
96	1,571,788	1,201,266	62,466	264,859	43,197
97	63,609	31,089	25,277	6,393	850
98	30,029	22,859	3,627	2,109	1,434
99	53,095	9,735	14,060	28,354	946
A0	247,681	75,846	83,818	79,255	8,762
A1	9,800	2,174	1,871	5,514	241
A2	44,776	25,412	8,456	10,669	239
A3	776,374	453,261	22,818	290,056	10,239
A4	66,315	17,947	25,775	20,441	2,152
A5	398,665	19,919	60,176	313,025	5,545
A6	20,514	3,049	3,206	13,795	464
A7	251,294	11,847	29,720	206,569	3,158
A8	768,180	15,163	58,537	690,966	3,514
A9	21,910	8,848	8,184	3,699	1,179
B0	666,967	44,479	137,266	474,568	10,654
B1	47,533	4,542	2,319	36,377	4,295
TOTAL	7,648,000	3,640,000 <sup>1/</sup>	943,000 <sup>2/</sup>	2,858,000 <sup>3/</sup>	207,000

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.

of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

Projected cropland needs are presented in table 21. Program A needs are 3,660,000 acres in 1980; 3,680,000 in 2000; and 3,675,000 in 2020. Program B needs are 3,660,000 acres in 1980; 4,068,000 acres in 2000; and 4,122,000 acres in 2020. Needs in 1980 for both Programs A and B are the same because of the assumption made concerning the derivation of Program B food and fiber requirements. No changes were made if the region's growth rate in production exceeded the average for the United States. Such was the case between 1970 and 1980; however, between 1980 and 2000 and between 2000 and 2020, the growth rate of the region was below that of the United States. Thus the difference in the growth rate (approximately 7 percent) was used to adjust the food and fiber requirements in the year 2000 and the year 2020. The resulting requirements were then translated into cropland needs and are consequently higher than for Program A.

#### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 4.

At the present time (1970), there are 1,856,000 acres of land utilized for the grazing of livestock within the area. Of this, 943,000 acres is permanent pasture. The remaining acreage is made up of 326,000 acres of pastured cropland and 587,000 acres of pastured forest land (table 21).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.

Primarily, there are two types of pasture--summer and winter. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 2,550,000 acres; year 2000, 3,498,000 acres; and for 2020, 4,690,000 acres (table 21).

For Program B, the projected needs are: year 1980, 2,550,000 acres; year 2000, 3,758,000 acres; and for 2020, 5,025,000 acres (table 21).



Permanent pasture of fescue in WRPA 4

#### Forest

Commercial forest land within WRPA 4 presently amounts to 3,222,000 acres, almost 35 percent of total land use. This area of commercial forest land includes an aggregate of 2,822,300 acres of privately owned and 391,700 acres of publicly owned forests. National Forest System lands on the Holly Springs, Delta, and Tombigbee National Forests comprise 30 percent of all the public commercial forest land.

The forests of WRPA 4 have been typed into five major forest classifications which represent a broad spectrum of softwood and hardwood resources. The most common types are oak-hickory, which occupies 38 percent, and oak-gum-cypress, which occupies 28 percent of the area. The remaining forests, in order of size, are loblolly-shortleaf pine (14 percent), oak-pine (12 percent), and elm-ash-cottonwood the remaining 7 percent.

The present condition of the forest resource in WRPA 4 ranges from poor in the delta to fair in the uplands. Most forest management has been directed to the pine and pine hardwood forests in the uplands, leaving the hardwood forests in a relatively poor unmanaged condition.



A well-managed loblolly pine plantation established under the Yazoo-Little Tallahatchie Flood Prevention Project

The forest produce a variety of forest products with lumber and woodpulp being the most important. There are presently 80 sawmills, 2 woodpulp mills, 3 wood-preserving plants, 3 veneer plants, and 24 miscellaneous wood-using plants within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 4,660,000 acres; 2000, 3,934,000 acres; and 2020, 4,326,000 acres. Program B, for the year 1980, 5,033,000 acres; 2000, 4,406,000 acres; and 2020, 4,888,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 21.

#### Other Land

In 1970, 207,000 acres in WRPA 4 were classed as other land. Existing as well as projected needs are presented in table 21. Needs for both programs are 253,000 acres in 1980; 230,000 acres in 2000; and 163,000 acres in 2020.

#### Urban and Built-Up Areas

Urban and built-up areas in WRPA 4 comprise 328,000 acres, or 3.8 percent of total land in the WRPA (table 21). This proportion is

slightly greater than the regional average. The area includes 28,800 acres of urban land occupied by population centers with 5,000 and more inhabitants and 299,200 acres of land in built-up areas. The predominance of the latter is due primarily to the rural nature of the planning area. Although the WRPA contains two cities with populations of more than 25,000 (Greenville and Vicksburg, Miss.), there are relatively few other urban areas of any size in the WRPA. For the most part, the planning area is characterized by small towns of less than 5,000 in population and by built-up areas.

Land use requirements for urban acreage occupied by cities with populations of 5,000 and larger have been subdivided into five categories: residential, commercial, streets, industrial, and public (table 23). Residential land usage is the principal category with 12,500 acres, or 43.4 percent of the total. Other categories, in order of size, are streets, with 7,100 acres; public, with 5,100 acres; industrial, with 2,300 acres; and commercial, with 1,800 acres.

Table 23 also contains projected land use needs for urban and built-up areas in WRPA 4 through 2020. Under Program A, needs in total urban and built-up areas will increase by 98,000 acres, or 29 percent, between 1970 and 2020. During the same period, the ratio of urban acreage occupied by cities of 5,000 and greater population to built-up area acreage will shift slightly toward a greater proportion of urban land. This increase corresponds with a 46.4 percent increase in population for urban areas.

Total land needs for urban areas of 5,000 or more inhabitants is expected to increase to 32,200 acres by 1980, to 39,100 acres by 2000, and to 48,400 acres by 2020. The composition of this urban land is not expected to change drastically during the 50-year period. Residential land needs will increase by the greatest amount of any usage category. In 2020 residential land needs will be 21,600 acres, compared to 12,500 acres in 1970. Industrial land usage will have the greatest percentage increase, going from 2,300 acres in 1970 to 5,300 acres in 2020 (an increase of 130 percent).

Urban and built-up area needs for Program B are expected to increase from 328,000 acres in 1970 to 485,000 acres by 2020. Urban land needs for cities with populations of 5,000 and greater will increase during the same period by 40,600 acres, and the remaining need will increase by 116,400 acres. Areas with fewer than 5,000 inhabitants and built-up areas are expected to constitute more than 85 percent of the acreage in urban and built-up areas by 2020.

Residential needs for Program B will increase 148 percent, to a total of 31,100 acres by 2020. This increase is much greater proportionately than expected under Program A. Industrial land needs for Program B will increase from 2,300 acres in 1970 to 7,600 acres in 2020, which is 2,300 acres greater than expected under Program A.

Table 23 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 4

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	328,000	355,000	361,000	426,000
Program B	328,000	357,000	408,000	485,000
Built-Up <u>1/</u>				
Program A	299,200	302,800	321,900	377,600
Program B	299,200	319,400	356,200	415,600
Urban <u>2/</u>				
Program A	28,800	32,200	39,100	48,400
Program B	28,800	37,600	51,800	69,400
Residential				
Program A	12,500	14,100	17,300	21,600
Program B	12,500	16,500	23,000	31,100
Commercial				
Program A	1,800	2,000	2,500	3,100
Program B	1,800	2,400	3,300	4,400
Streets				
Program A	7,100	7,700	8,600	9,800
Program B	7,100	9,000	11,500	14,100
Industrial				
Program A	2,300	2,700	3,800	5,300
Program B	2,300	3,200	5,000	7,600
Public				
Program A	5,100	5,700	6,900	8,600
Program B	5,100	6,500	9,000	12,200

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

### Federal Lands

At the present time, WRPA 4 contains 364,000 acres of federally owned land. The Holly Springs, Delta, and Tombigbee National Forests cover 195,000 acres of the area. The Yazoo National Wildlife Refuge covers 12,000 acres and Vicksburg National Military Park and Cemetery occupies 2,000 acres. Corps of Engineers buffer zones around Arkabutla, Sardis, Enid, and Grenada Lakes occupy most of the remaining area.

### Recreation

WRPA 4 supports a variety of recreation uses. Eight state parks provide camping, picnicking, boating, swimming, hiking, nature studies, and outdoor games and sports.

There are 73,676 acres of lakes within the WRPA which provide boating and swimming. In addition, the area contains 5,403 miles of streams, of which 1,100 miles are considered suitable in character for high quality recreation purposes. With access provided, all of these streams could be used for some type of recreation.

Three National Forests have 195,000 acres available for dispersed recreation use. There are five recreation areas on these National Forests developed for picnicking, camping, swimming, boating, hiking, bird watching, and playing outdoor games and sports.

Playing outdoor games and sports is an insignificant recreation activity in WRPA 4. There are only 21 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

Almost all land and water areas are suitable in character for some form of recreation use, depending upon the needs of the person or persons involved. However, the key activities are camping, picnicking, swimming, boating, and playing outdoor games and sports. The water area needs for recreation are in Appendix N. The 1970 land use for these activities in WRPA 4 was 29,000 acres. Program A needs are 36,000 acres in 1980, 46,000 acres in 2000, and 67,000 acres in 2020 (table 21). Program B needs are 37,000 acres in 1980, 53,000 acres in 2000, and 77,000 acres in 2020.

The fact that projected needs are less than existing use on table 21 throughout all time frames of the study does not necessarily mean that no need exists for certain types of recreation lands. In fact, there is a shortage of Type I and Type II lands in WRPA 4. The large existing supply is mostly in Type III, or resource-oriented areas. See Appendix N, Recreation, for a detailed discussion of needs by the various classes of use.

## Fish and Wildlife

Fish and wildlife groups in WRPA 4 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 1,148,000 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat. There are 1,242,000 acres of upland hardwood forest which are productive big game habitat and second in production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 384,000 acres of pine hardwood habitat and 448,000 acres of pine habitat in the WRPA. The wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

WRPA 4 falls in the Mississippi Flyway and is therefore important to both migrating and wintering waterfowl. There are 97,000 acres classified as wetlands, which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat.

Four major lakes located within the WRPA provide 94,000 acres of fishery habitat. In addition, there are 113,900 acres of other lakes suitable for fishing scattered throughout the area. There are 1,100 miles of streams in the area which are capable of supporting a fishery resource. Water surface use and habitat needs for lake areas are discussed in Appendix Q, Fish and Wildlife.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Many such species of non-game wildlife occur here, including such rare or endangered species as ospreys, eagles, and alligators (recently imported).

The 1970 area utilized for fish and wildlife was 1,234,000 acres, and projected needs for Program A are 3,756,000 acres in 1980, 4,202,000 acres in 2000, and 5,033,000 acres in 2020. Program B needs are 4,102,000 acres in 1980, 4,762,000 acres in 2000, and 5,649,000 acres in 2020 (table 21).

## Minerals

Oil and gas output in the southern part of WRPA 4 and widespread production of construction minerals define the mineral industry activity in the area. Sand and gravel is produced in more than half of the

counties to meet local needs. Clay is produced in several counties, mostly for local consumption, and stone is produced in Warren County. Cement is produced in Warren County from locally extracted minerals for regionwide markets.

The present land use of 3,000 acres for mineral production is small in comparison to other land uses. The future needs for Program A are: 3,000 acres for the year 1980, 4,000 acres for the year 2000, and 5,000 acres for the year 2020. The projected needs for Program B are: 4,000 acres for the year 1980, 5,000 acres for the year 2000, and 7,000 acres for the year 2020.

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 1,157,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

#### Soils

The soil productivity groups in WRPA 4 were developed from three land resource areas - 131, 133, and 134. The largest acreage of SPG's are made up of SPG's 91, 96, A3, A8, B0, or 55 percent of the total land.

The distribution by soil productivity groups is shown in table 22. The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 24 and figure 10.

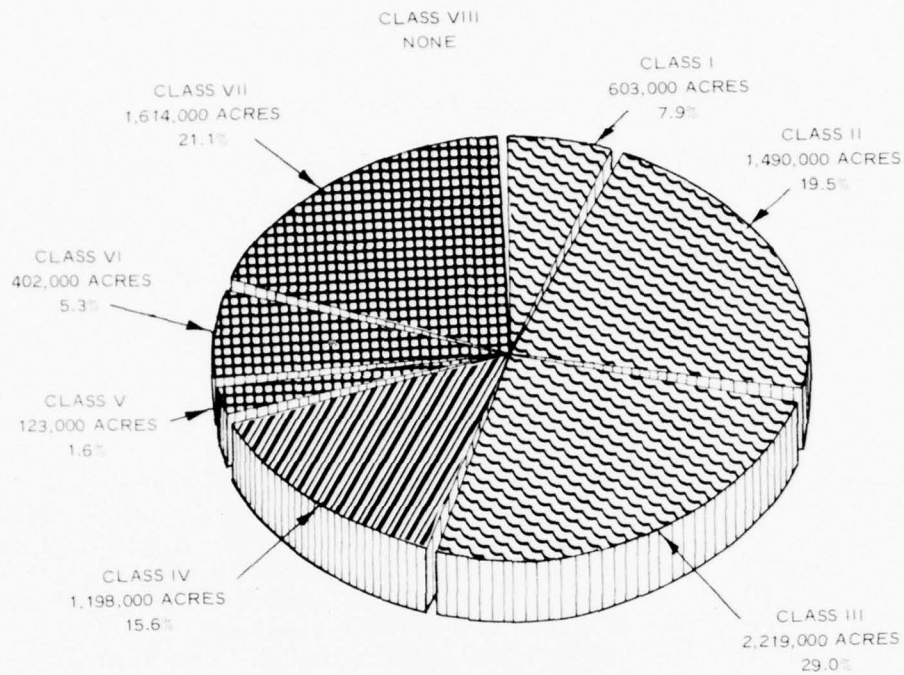
Table 24 - Agricultural Land by Capability Class, 1970, WRPA 4




Land Capability Class	Total Agricultural Land					Distribution Percent
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	
I	602,968	516,611	33,857	24,880	27,620	7.9
II	1,489,862	969,632	234,221	221,237	64,772	19.5
III	2,219,174	1,497,551	216,640	450,544	54,439	29.0
IV	1,197,742	534,856	136,358	487,536	38,992	15.6
Total I-IV	5,509,746	3,518,650	621,076	1,184,197	185,823	72.0
V	123,071	35,059	2,282	84,646	1,084	1.6
VI	401,653	21,701	67,064	307,564	5,324	5.3
VII	1,613,530	64,590	252,578	1,281,593	14,769	21.1
VIII	0	0	0	0	0	0
Total V-VIII	2,138,254	121,350	321,924	1,673,803	21,177	28.0
Totals	7,648,000	3,640,000 <sup>1/</sup>	943,000 <sup>2/</sup>	2,858,000 <sup>3/</sup>	207,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.



-  LAND SUITABLE FOR CONTINUOUS CULTIVATION. 4,316,000 ACRES
-  LAND SUITABLE FOR OCCASIONAL CULTIVATION. 1,194,000 ACRES
-  LAND NOT SUITED FOR CULTIVATION. 2,138,000 ACRES

LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 4**

FIGURE 10

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 4 comprises 8,547,000 acres of land and water. Of this amount, 7,648,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory, of which 56 percent is suitable for regular cultivation. It contains nearly one-fourth of the region's Class VII land (1.6 million acres). It occupies about 1.2 million acres of marginally cultivatable Class IV land, and this gives the subregion added leverage in options for land conversion and potential cultivated acreage (figure 10).

### Cropland Suitable for Regular Cultivation

Roughly two-thirds of the available regular cultivation land is now supporting harvested crops in WRPA 4. The existing demand on the land resources in terms of semipermanent use (harvested cropland, permanent pasture, federal lands, urban and built-up, small water, and other) indicates that about 40 percent of the land resource has the option of existing use or conversion to other use. There is a combined total of 1.1 million acres in idle cropland and forest land on farms that are not pastured.

The inventory acreage for each major agricultural land use by land capability classes is shown in table 24. Conservation needs estimates indicate that 3,518,650 acres are in Class I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 516,611 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 969,632 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 1,497,551 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; 534,856 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 121,350 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 3,640,000 acres of cropland, 14 percent is adapted to very intensive cultivation, 27 percent to intensive, 41 percent to moderate, 15 percent to limited, and 3 percent is not recommended for cultivation at all.



Soils not suitable for crop production due to slope conditions and erodibility. Best use is pasture or forest

#### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 484,718 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and, in some instances, clearing of scrub timber and brush. Of the 484,718 acres suitable for cultivation, 33,857 acres are Class I; 234,221 acres are Class II; and 216,640 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

#### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 24,880 acres now in generally level and fertile forest would make Class I cropland. Another 221,237 acres are suitable for regular cultivation as Class II cropland, if

simple erosion control practices are followed, and if the fertility is restored by adding fertilizers and other soil amendments. An additional 450,544 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 696,661 acres of forest that could be converted to good cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wet land that is physically feasible to develop for farming requires both drainage and clearing.

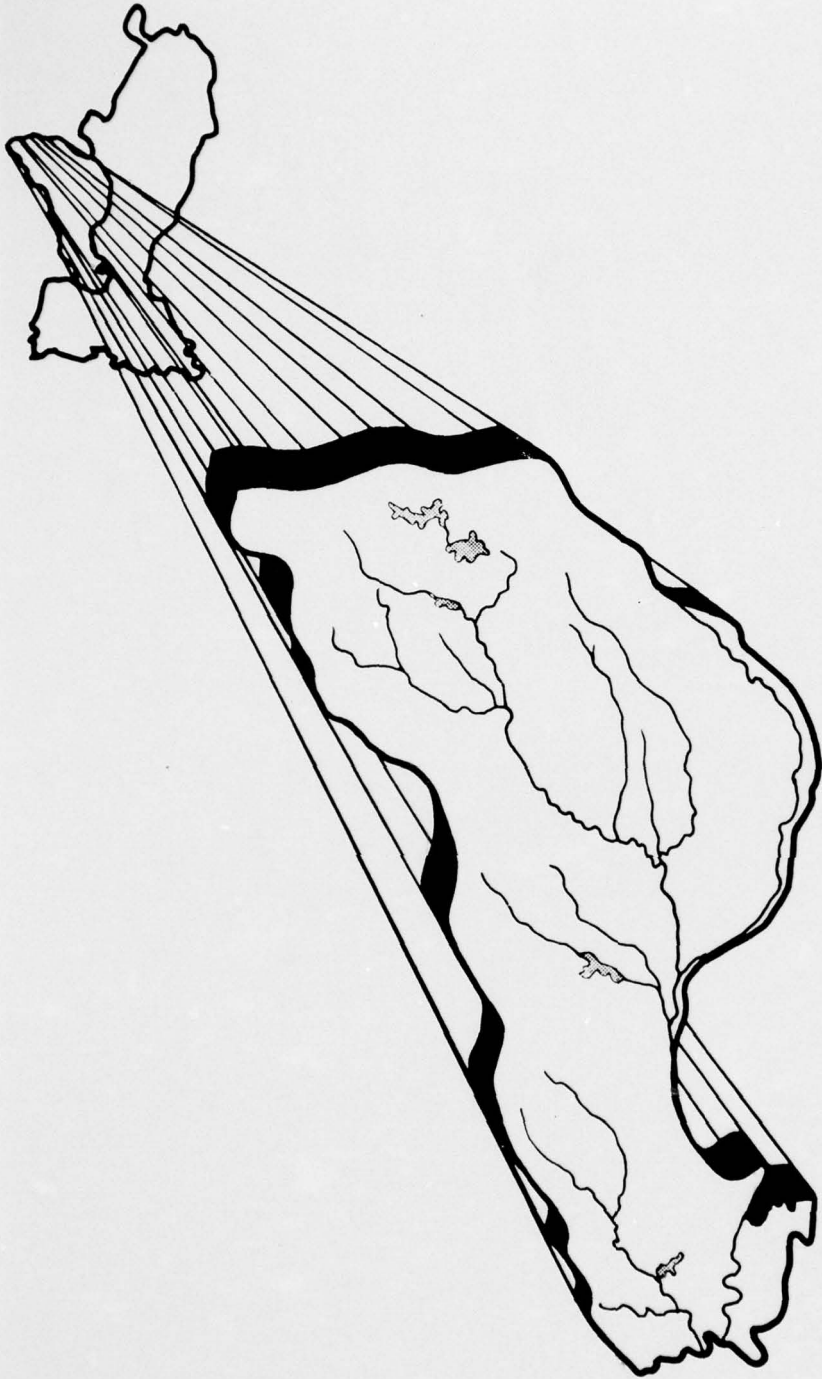
WRPA 4, with its acreage of suitable land, is well adapted for production of food and feed crops.

#### Potential for Shift of Cropland to Grassland and Forests

Partially offsetting the potential for shift of grassland and forest to cropland are 121,350 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope that it should be kept in continuous sod or forests.

#### Other Land

In 1970, 207,000 acres in WRPA 4 were classes as other land. Projected needs are for 253,000 acres in 1980, 230,000 acres in 2000, and 163,000 acres in 2020.



W  
R  
P  
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5

## WRPA 5

### DESCRIPTION

WRPA 5 is located in the west-central portion of the region. It lies in parts of two states - south-central Arkansas and north-central Louisiana. It contains about 13.1 million acres of land and water area, or about 20,413 square miles, and has the largest land area of all of the WRPA's within the region.

There is one major drainage system within the area, the Ouachita River. The Red River, a major drainage system from outside the region, crosses the southern end of the WRPA. Tributary streams are the Little Missouri River, the Saline River, Bayou Bartholomew, and Little River.

The topography of the area is varied, ranging from the flat river bottomlands to the Ouachita Mountains. The majority of the topography is made up of rolling coastal plain hills.

The climate is mild, with an average annual temperature of around 65° F. The average length of growing season is about 230 days, ranging from less than 210 days in the Ouachita Mountain area to more than 240 days at the Arkansas-Louisiana line. The normal annual precipitation is about 53 inches, ranging from about 60 inches at the southern end and about 56 inches in the northern Ouachita Mountain area to about 52 inches over most of the central area.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 5 is estimated at 732,000 acres (table 25). The entire 732,000 acres were essential for the production of crops in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 26. The description of the SPG's is presented in the regional summary. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in Appendix B, Economics.

Projected cropland needs are presented in table 25. Program A needs are 781,000 acres in 1980, 807,000 acres in 2000, and 862,000 acres in 2020. Program B needs are 781,000 acres in 1980, 872,000 acres in 2000, and 919,000 acres in 2020.

Table 25 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 5

Item	Program	1970	1980	2000	2020
		Use	Needs	Needs	Needs
		Acres	Acres	Acres	Acres
Cropland	A	732,000	781,000	807,000	862,000
	B	732,000	781,000	872,000	919,000
Pasture	A	982,000 <sup>1/</sup>	726,000	974,000	1,305,000
	B	982,000	726,000	1,047,000	1,401,000
Pastured Cropland	A	239,000	478,000	642,000	859,000
	B	239,000	478,000	689,000	922,000
Pastured Forest	A	947,000	896,000	1,202,000	1,610,000
	B	947,000	896,000	1,292,000	1,729,000
Total Pasture	A	2,168,000	2,100,000	2,818,000	3,774,000
	B	2,168,000	2,100,000	3,028,000	4,052,000
Forest	A	10,228,000 <sup>2/</sup>	14,071,000	17,273,000	19,194,000
	B	10,228,000	14,915,000	19,173,000	21,305,000
Other	A	192,000 <sup>3/</sup>	202,000	180,000	137,000
	B	192,000	202,000	180,000	137,000
Urban	A	440,000	458,000	532,000	647,000
	B	440,000	487,000	605,000	736,000
Small Water <sup>4/</sup>	A	76,000	-	-	-
	B	76,000	-	-	-
Large Water <sup>4/</sup>	A	175,000	-	-	-
	B	175,000	-	-	-
Total	A	13,064,000	-	-	-
	B	13,064,000	-	-	-
Recreation <sup>5/</sup>	A	31,000	38,000	56,000	84,000
	B	31,000	41,000	65,000	97,000
Fish & Wildlife <sup>5/</sup>	A	2,267,000	5,070,000	5,986,000	7,348,000
	B	2,267,000	5,390,000	6,786,000	8,363,000
Minerals <sup>5/</sup>	A	8,000	9,000	9,000	10,000
	B	8,000	10,000	12,000	15,000
Environmental <sup>5/</sup>	A	2,405,000	2,405,000	2,405,000	2,405,000
	B	2,405,000	2,405,000	2,405,000	2,405,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest land, forested wetlands, and 750,000 acres of Federal forest lands.

<sup>3/</sup> Includes 81,000 acres of Federal non-forest lands and lands not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 26 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 5

State And Soil Productivity Group	Total Agricultural Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
<u>Arkansas</u>					
1	151,694	8,149	46,080	93,875	3,590
2	31,605	3,757	7,065	20,783	0
3	157,308	2,599	36,452	113,807	4,450
4	11,688	0	1,382	10,306	0
5	60,115	712	8,462	50,548	393
6	19,315	647	592	18,076	0
7	3,392	0	0	3,392	0
8	488,266	2,864	34,941	445,076	5,385
10	5,556	0	173	5,383	0
11	251,197	6,255	19,968	220,762	4,212
12	2,963	0	0	2,963	0
14	131,020	8,101	10,236	110,964	1,719
15	65,296	6,978	6,381	51,937	0
16	187,365	152,958	14,648	12,649	7,110
17	355,714	189,577	13,539	137,445	15,153
18	90,774	63,089	1,002	23,343	3,340
19	8,624	2,039	1,396	5,189	0
22	1,613,197	98,334	198,363	1,298,545	17,955
23	247,624	5,734	21,738	219,023	1,129
24	116,474	15,069	21,701	78,878	826
25	1,047,532	27,601	59,666	956,179	4,086
26	1,355,405	50,737	94,222	1,206,425	4,021
27	160,327	5,811	18,834	134,447	1,235
28	35,441	6,556	16,753	11,309	823
29	238,294	1,256	9,110	226,723	1,205
Sub-Total	6,836,186	658,823	642,704	5,458,027	76,632
<u>Louisiana</u>					
39	62,649	38,077	11,034	11,791	1,747
40	68,181	32,364	16,774	17,659	1,384
41	33,965	8,224	9,362	14,787	1,592
42	35,367	18,717	7,635	8,616	399
43	31,390	12,281	6,187	12,320	602
44	171,702	13,160	14,913	141,678	1,951
45	642,262	81,546	68,305	491,608	803
46	289	0	289	0	0
47	237,663	47,844	19,904	169,519	396
48	95,494	6,257	10,360	77,055	1,822
49	1,663,450	31,156	109,235	1,510,395	12,664
50	14,866	672	1,354	12,621	219
51	132,673	6,555	18,620	106,927	571

Table 26 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 5 (Con.)

State And Soil Productivity Group	Total Agricultural				
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
53	683,991	1,484	22,621	658,831	1,055
54	582,310	972	14,324	558,062	8,952
55	11,903	257	0	11,646	0
56	235,826	12,611	8,379	214,625	211
58	1,833	0	0	1,833	0
Sub-Total	4,705,814	312,177	339,296	4,019,973	34,368
TOTAL	11,542,000	971,000 <sup>1/</sup>	982,000 <sup>2/</sup>	9,478,000 <sup>3/</sup>	111,000

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.

#### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 5.

At present time (1970), there are 2,168,000 acres of land utilized for the grazing of livestock within the area. Of this, 982,000 acres is permanent pasture. The remaining acreage is made up of 239,000 acres of pastured cropland and 947,000 acres of pasture forest land (table 25).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.

Primarily, there are two types of land used for pasture--summer and winter pastures and rangeland. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue or orchardgrass. Rangeland is managed for the adapted native grasses.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 2,100,000 acres; year 2000, 2,818,000 acres; and year 2020, 3,774,000 acres.

For Program B, the projected needs are: year 1980, 2,100,000 acres; year 2000, 3,028,000 acres; and for 2020, 4,052,000 acres (table 25).

### Forest

Commercial forest land within WRPA 5 presently amounts to 10,228,000 acres, almost 78 percent of the total land use. This area of commercial forest land includes an aggregate of 9,299,400 acres of privately owned and 928,600 acres of publicly owned forests. National Forest System lands on the Kisatchie and Ouachita National Forests comprise nearly 81 percent (658,000 acres) of all the public commercial forest land.

The forests of WRPA 5 have been typed into six major forest classifications. The most common types are loblolly-shortleaf pine, which occupies 36 percent, and oak-gum-cypress, which occupies 22 percent of the area. The loblolly-shortleaf pine forests cover the western portion of the WRPA. The oak-gum-cypress type covers the Mississippi delta and floodplains of major streams. The elm-ash-cottonwood type occurs in the same general region on the better-drained terraces of the floodplains. The oak-pine type occurs in the northeastern quarter of the WRPA, and borders the Mississippi delta. The oak-hickory type occurs as small forests throughout the northern hill portion of the WRPA, and longleaf-slash pine type is found in the southern quarter.

The present condition of the forest resource in WRPA 5 ranges from poor in the delta to good in the uplands. More interest in forest management has been directed toward the upland pine forests. Except for the industrial hardwood producers' holdings, the hardwood forests are treated as a hindrance rather than a resource.

The forests produce a variety of forest products with lumber and woodpulp being the most important. There are presently 137 sawmills, 6 woodpulp mills, 16 wood-preserving plants, 17 veneer plants, and 23 miscellaneous wood-using plants within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 14,071,000 acres; 2000, 17,273,000 acres; and 2020, 19,194,000 acres. Program B, for the year 1980, 14,915,000 acres; 2000, 19,173,000 acres; and 2020, 21,305,000 acres. In addition to these needs, forest lands satisfy needs for wild-life habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 25.



WRPA 5 contains over one-third of the region's forest land

#### Other Land

In 1970, 192,000 acres were classed as other land. Projected needs are 202,000 acres in 1980, 180,000 acres in 2000, and 137,000 acres in 2020.

#### Urban and Built-Up Areas

Urban and built-up areas in WRPA 5 comprise 440,000 acres, or nearly 4 percent of total land in the WRPA (table 25). This proportion is less than the regional average. The area includes 53,300 acres of urban land used for population centers with 5,000 or more inhabitants, and 386,700 acres of land in other urban and built-up areas. Despite its size and the seeming lack of urban development, WRPA 5 contains more cities with populations of 25,000 or more than any other planning area: El Dorado, Ark.; Hot Springs, Ark.; Pine Bluff, Ark.; Monroe, La.; and Alexandria, La. These five cities are the dominant form of urban land within the planning area. Because of the size of the planning area, however, cities with populations less than 5,000 and built-up areas constitute 386,700 acres, or 88 percent, of the total urban and built-up acreage.

The distribution of urban land occupied by cities of 5,000 and greater population among the five categories of land usage in WRPA 5 is

somewhat different from that in other planning areas. Residential land use is, as usual, the principal land use category, encompassing 23,900 acres. The significant difference is in the amount of land in the streets and public categories. Acreage in streets is 16,300 acres, while acreage in public land is 5,700 acres. Usually, these two categories have approximately the same acreage. In this case, land in streets constitutes 31 percent of total urban acreage, while public land constitutes only 11 percent.

Table 27 also contains projected land use needs for urban and built-up areas in WRPA 5 through 2020. Under Program A, needs in total urban and built-up areas will increase by 207,000 acres, or 47 percent, between 1970 and 2020. The increase will be proportionately the same in both urban and built-up areas. Built-up area needs, which include cities with populations less than 5,000, will be 570,000 acres in 2020, while urban areas with 5,000 or more will need 77,000 acres in the same year. The two increases represent a slight shift in the proportion of urban land needs to built-up area needs.

Program A does not project any drastic change in the composition of urban needs for cities 5,000 in population or greater for the planning area. Residential needs will remain the principal urban land use, with 2020 needs projected at 35,300 acres. The other categories will increase in relatively the same proportion to total urban acreage as exists in 1970. The only change will be a slight shift in the share of urban acreage from streets to public land. These two land use categories will still account for more than 70 percent of urban needs within the WRPA.

Urban and built-up area needs for Program B are expected to increase from 440,000 acres in 1970 to 736,000 acres by 2020, for a percentage increase of 67. Program B also projects a shift in the share of total urban and built-up area from built-up to urban areas with 5,000 or more inhabitants. By 2020 urban needs will amount to 14 percent of total needs, an increase of more than 2 percent over 1970.

Urban land needs for cities of 5,000 or greater, as projected under Program B, show slight shifts in subcategories. Residential land needs by 2020 are projected to increase 103 percent, to 48,600 acres, and will account for 46 percent of the total. The proportion of other land use categories to the total needs either remain the same or increase slightly. The residential needs category will increase slightly because the streets category will drop by almost 3 percent during the 50-year period.

#### Federal Lands

At present time, WRPA 5 contains 831,000 acres of federally owned land. Ownership on the Ouachita and Kisatchie National Forests accounts for 658,000 acres. Hot Springs National Park contains approximately

Table 27 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 5

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	440,000	458,000	532,000	647,000
Program B	440,000	487,000	605,000	736,000
Built-Up <u>1/</u>				
Program A	386,700	401,500	465,900	570,000
Program B	386,700	423,500	522,400	630,500
Urban <u>2/</u>				
Program A	53,300	56,500	66,100	77,000
Program B	53,300	63,500	82,600	105,500
Residential				
Program A	23,900	25,500	30,100	35,300
Program B	23,900	28,700	37,700	48,600
Commercial				
Program A	2,900	3,100	3,700	4,300
Program B	2,900	3,500	4,600	5,900
Streets				
Program A	16,300	16,900	19,000	21,600
Program B	16,300	18,900	23,700	29,300
Industrial				
Program A	4,500	4,900	5,900	7,000
Program B	4,500	5,600	7,500	9,800
Public				
Program A	5,700	6,100	7,400	8,800
Program B	5,700	6,800	9,100	11,900

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

4,000 acres and the Catahoula National Wildlife Refuge contains about 5,000 acres. Much of the remaining 164,000 acres is in buffer zones around Lake Ouachita, Lake Greeson, and DeGray Lake, which were constructed by the Corps of Engineers. All of the federal lands within WRPA 5 are included in forest, or other land categories.

#### Recreation

WRPA 5 supports a variety of recreation uses. Five State Parks and one National Park provide land and water areas for camping, picnicking, boating, swimming, hiking, nature studies, and outdoor games and sports.

There are 174,783 acres of lakes within the WRPA which, with proper access, would provide water area for boating and swimming. In addition, the area contains 14,895 miles of streams, of which 1,931 miles are considered suitable for high quality recreation purposes. All of these streams are suitable in character for some type of recreation use.

Two National Forests provide 658,000 acres for dispersed recreation use. There are 13 recreation areas on these National Forests developed for picnicking, camping, swimming, boating, hiking, bird watching, and playing outdoor games and sports.

Playing outdoor games and sports is a significant recreation activity. There are 1,935 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

Almost all land and water area are suitable in character for recreation, depending upon the needs of the person or persons involved. However, the key activities are camping, picnicking, swimming, boating, and playing outdoor games and sports. Water surface area needs for these activities may be found in the Recreation Appendix. The 1970 land use for these activities in WRPA 5 was 30,900 acres. Projected needs for Program A are 40,400 acres in 1980, 56,100 acres in 2000, and 83,500 acres in 2020. Program B needs are 40,600 acres in 1980, 64,500 acres in 2000, and 97,400 acres in 2020 (table 25).

#### Fish and Wildlife

Fish and wildlife groups in WRPA 5 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 2,363,000 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat. There are 1,991,000 acres of upland hardwood forest which are productive big game habitat and second in



WRPA 5 with its many lakes and streams has a high potential for recreational development

production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 2,049,000 acres of pine hardwood habitat and 3,825,000 acres of pine habitat in the WRPA. Since big game populations are dependent upon suitable habitat, the wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

WRPA 5 falls in the Mississippi Flyway and is therefore important to both migrating and wintering waterfowl. There are 791,000 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat.

Eleven major lakes located within the WRPA provide 122,000 acres of fishery habitat. In addition, there are 129,000 acres of other lake fishing scattered throughout WRPA 5. There are 1,931 miles of streams in the area which are capable of supporting a fishery resource. Water surface use and needs for lake habitat for fish and wildlife purposes are discussed in Appendix Q.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Many such species of non-game wildlife occur here including such rare or endangered species as the wolf, cougar, osprey, southern bald eagle, and alligator.

The 1970 area utilized for fish and wildlife was 2,267,000 acres. Projected needs for Program A needs are 5,070,000 acres in 1980; 5,986,000 acres in 2000, and 7,348,000 acres in 2020. Program B needs are 5,390,000 acres in 1980; 6,786,000 acres in 2000, and 8,363,000 acres in 2020 (table 25).

#### Minerals

Mineral output in WRPA 5 is dominated by the petroleum industry, although a wide variety of nonmetallic minerals is produced. Oil or gas is produced in about two-thirds of the counties and parishes in the southern part of the area.

Undeveloped lignite deposits exist in several parts of the area. Vanadium ore is produced from open pit mines in Garland County, Ark.

Nonmetallic minerals are produced in almost all of the counties and parishes. Barite is produced in Hot Springs County, Ark. Bromine is recovered from brine produced from the Smackover limestone in Union County, Ark.

Construction material consisting of clays, gypsum, sand, gravel, and stone are produced in essentially all of the counties and parishes in the area.

Presently, 8,400 acres of land are used for mineral production. The projected land needs for minerals for Program A for the years 1980, 2000, and 2020 are 8,700; 8,400; and 10,500 respectively. For Program B, the future needs are 9,711; 11,800; and 14,600 acres for time frames 1980, 2000, and 2020.

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 2,405,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

#### Soils

Soil productivity groups were developed from four land resource areas - 86, 119, 131, and 133. The largest acreage of SPG's in Arkansas are made up of SPG's 8, 17, 22, 25, and 26, or 71 percent of the total.

The distribution by state and soil productivity groups is shown in table 26. The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 28 and figure 11.

The production requirements or needs for agricultural commodities for Programs A and B are shown in Appendix B, Economics.

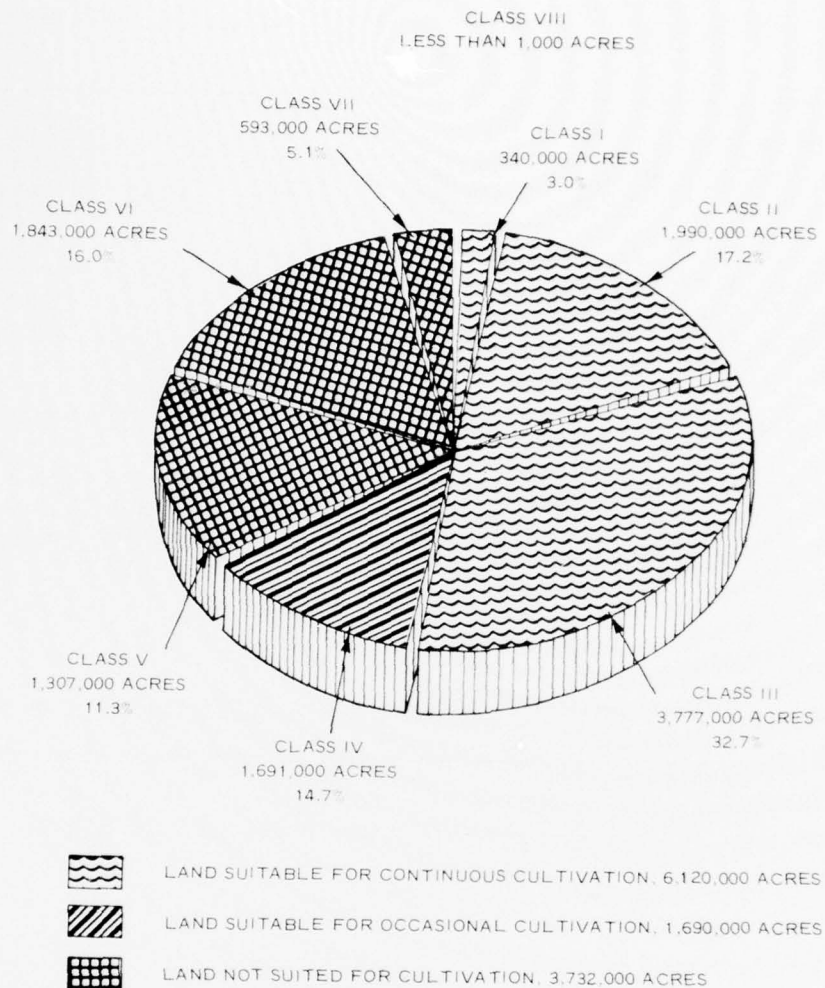
Table 28 - Agricultural Land by Capability Class, 1970, WRPA 5

Land Capability Class	Total Agricultural Land					Distribution Percent
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	
I	340,444	216,904	37,832	80,488	5,220	3.0
II	1,990,303	242,597	270,934	1,452,166	24,606	17.2
III	3,777,064	419,158	368,245	2,953,877	35,784	32.7
IV	1,690,644	39,255	137,679	1,500,888	12,822	14.7
Total I-IV	7,798,455	917,914	814,690	5,987,419	78,432	67.6
V	1,307,001	34,842	68,988	1,201,107	2,064	11.3
VI	1,843,339	17,570	78,576	1,728,689	18,504	16.0
VII	592,677	674	19,727	560,771	11,505	5.1
VIII	568	0	19	14	495	-
Total V-VIII	3,743,545	53,086	167,310	3,490,581	32,568	32.4
Totals	11,542,000	971,000 <sup>1/</sup>	982,000 <sup>2/</sup>	9,478,000 <sup>3/</sup>	111,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forests. Includes pastured forest land.



LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 5**

FIGURE 11

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 5 comprises 13,064,000 acres of land and water. Of this amount, 11,542,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. Only inventory land is considered potentially available for agricultural use.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 28. Conservation needs estimates indicate that 917,914 acres are in Class I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 216,904 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 242,597 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require special conservation practices; 419,158 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; 39,255 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 53,086 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 971,000 acres of cropland, 22 percent is adapted to very intensive cultivation, 25 percent to intensive, 43 percent to moderate, 4 percent to limited, and 6 percent is not recommended for cultivation at all.

### Potential Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 677,011 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and in some instances clearing of scrub timber and brush. Of the 677,011 acres suitable for cultivation, 37,832 acres are Class I, 270,934 acres are Class II, and 368,245 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 80,488 acres now in generally level and fertile forest would make Class I cropland. Another 1,452,166 acres are suitable for regular cultivation as Class II cropland, if simple erosion control practices are followed, and if the fertility is restored by adding fertilizers and other soil amendments. An additional 2,953,877 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 4,486,531 acres of forest that could be converted to good cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

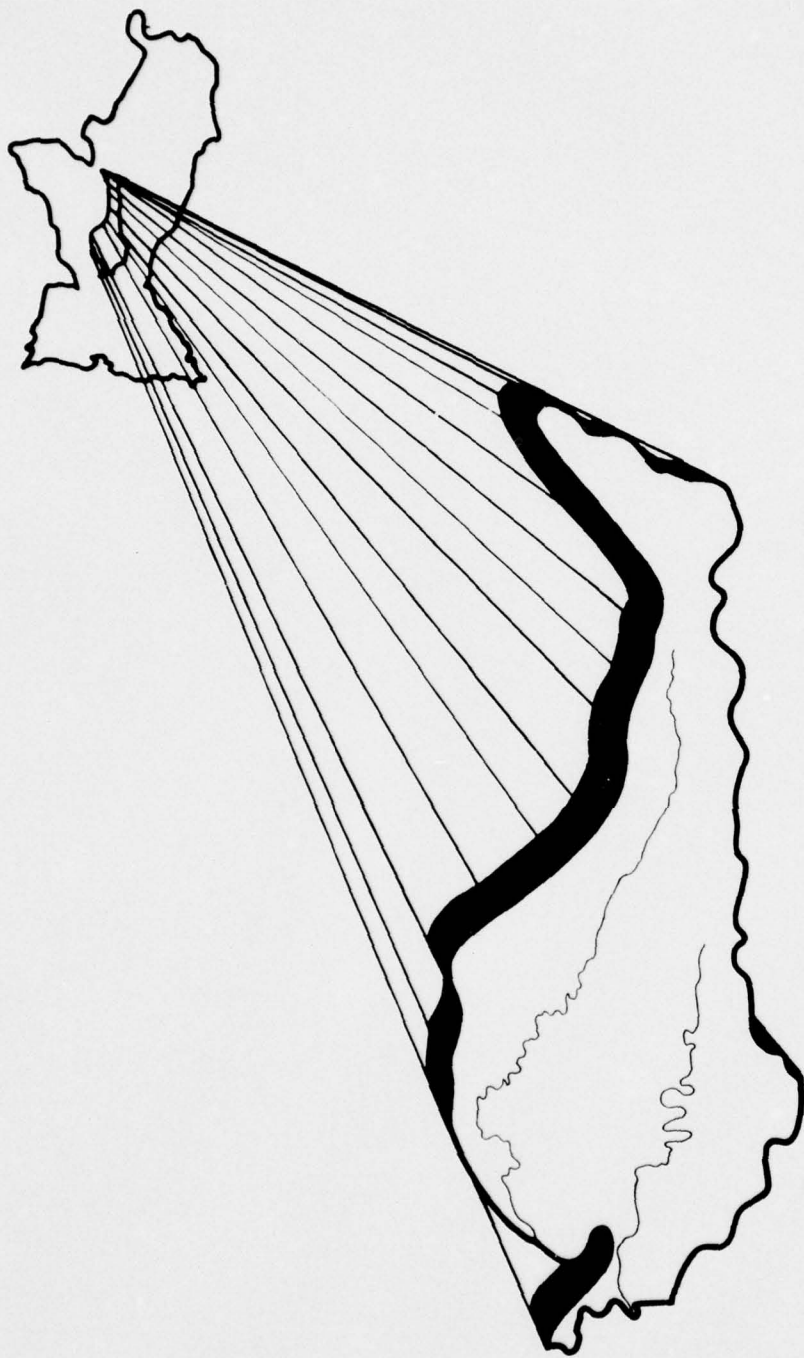
WRPA 5, with its acreage of suitable land, is well adapted for production of food and feed crops.

### Potential for Shift of Cropland to Grassland and Forest

Partially offsetting the potential for shift of grassland and forests to cropland are 53,086 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope that it should be kept in continuous sod or forests.

### Other Land

In 1970, 192,000 acres in WRPA 5 were classed as other land. No attempt was made to describe desirable physical land use changes by capability class for this category due to the diversity of uses made of this land.



**W  
R  
P  
A  
6**

## W R P A 6

### DESCRIPTION

WRPA 6 is located on the west side of the Mississippi River in southeast Arkansas and northeast Louisiana. This WRPA contains in excess of 3.5 million acres of land and water area, or about 5,520 square miles. It is the smallest of all of the areas within the region with the exception of WRPA 1.

The two primary streams of the area are the Boeuf River and the Tensas River. Bayou Macon is a tributary stream of the Tensas River.

The topography of the area is fairly flat, with about three-fourths in the Mississippi Valley alluvium. This alluvium area is broken by the rolling hills of Crowley Ridge, which is made up of silty uplands.

The climate is mild, with an average annual temperature of around 65° F. with little variance throughout the area. The average length of growing season is about 240 days, with little variation throughout the area. The normal annual precipitation is about 52 inches.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 6 is estimated at 1,908,000 acres (table 29). However, only 1,600,000 acres were harvested in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 30. The description of the SPG's is presented in the regional summary. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

Projected cropland needs are presented in table 29. Program A needs are 1,806,000 acres in 1980, 1,824,000 acres in 2000, and 2,106,000 acres in 2020. Program B needs are 1,806,000 acres in 1980, 2,016,000 acres in 2000, and 2,247,000 acres in 2020. Needs in 1980 for both Programs A and B are the same because of the assumption made concerning the derivation of Program B food and fiber requirements. No changes were made if the region's growth rate in production exceeded the average for the United States. Such was the case between 1970 and 1980; however, between 1980 and 2000 and between 2000 and 2020, the growth rate of the region was below that of the United States. Thus the difference in the growth rate (approximately 7 percent) was used to

Table 29 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 6

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	1,908,000	1,806,000	1,824,000	2,106,000
	B	1,908,000	1,806,000	2,016,000	2,247,000
Pasture	A	494,000 <sup>1/</sup>	397,000	534,000	715,000
	B	494,000	397,000	573,000	768,000
Pastured Cropland	A	118,000	169,000	228,000	305,000
	B	118,000	169,000	244,000	328,000
Pastured Forest	A	117,000	188,000	253,000	359,000
	B	117,000	188,000	272,000	364,000
Total Pasture	A	729,000	754,000	1,015,000	1,359,000
	B	729,000	754,000	1,089,000	1,460,000
Forest	A	831,000 <sup>2/</sup>	1,469,000	1,605,000	1,834,000
	B	831,000	1,513,000	1,701,000	1,981,000
Other	A	32,000 <sup>3/</sup>	95,000	102,000	115,000
	B	32,000	95,000	102,000	115,000
Urban	A	78,000	79,000	79,000	80,000
	B	78,000	79,000	82,000	88,000
Small Water <sup>4/</sup>	A	40,000	-	-	-
	B	40,000	-	-	-
Large Water <sup>4/</sup>	A	32,000	-	-	-
	B	32,000	-	-	-
Total	A	3,535,000	-	-	-
	B	3,535,000	-	-	-
Recreation <sup>5/</sup>	A	1,000	5,000	6,000	8,000
	B	1,000	5,000	7,000	9,000
Fish & Wildlife <sup>5/</sup>	A	52,000	1,061,000	1,074,000	1,171,000
	B	52,000	1,131,000	1,131,000	1,285,000
Minerals <sup>5/</sup>	A	2,000	2,000	3,000	4,000
	B	2,000	2,000	3,000	5,000
Environmental <sup>5/</sup>	A	758,000	758,000	758,000	758,000
	B	758,000	758,000	758,000	758,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest land and forested wetlands.

<sup>3/</sup> Includes lands not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 30 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 6

State And Soil Productivity Group	Total Agricultural Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
<u>Arkansas</u>					
11	28,013	20,945	6,647	421	0
12	662	0	0	662	0
14	19,466	4,153	11,383	3,930	0
15	5,193	2,126	1,663	1,404	0
16	57,539	49,950	7,589	0	0
17	603,282	521,321	43,849	38,112	0
18	85,673	72,801	2,481	10,391	0
19	4,125	0	4,125	0	0
Sub-Total	803,953	671,296	77,737	54,920	0
<u>Louisiana</u>					
39	98,464	74,783	20,552	2,830	299
40	102,629	82,488	11,653	3,928	4,560
41	152,995	101,871	24,667	23,918	2,539
42	81,813	42,818	28,276	5,739	4,980
43	128,908	93,778	15,460	17,215	2,455
44	180,776	101,163	28,850	47,824	2,939
45	1,322,926	620,638	193,475	498,070	10,743
46	11,103	8,651	1,466	986	0
47	346,988	210,770	56,950	75,916	3,352
48	24,367	8,752	4,496	10,986	133
49	20,131	8,735	1,176	10,220	0
52	5,073	257	4,541	275	0
53	27,301	0	3,265	24,036	0
54	16,392	0	15,182	1,210	0
56	55,250	0	6,254	48,996	0
58	3,931	0	0	3,931	0
Sub-Total	2,579,047	1,354,704	416,263	776,080	32,000
TOTAL	3,383,000	2,026,000 <sup>1/</sup>	494,000 <sup>2/</sup>	831,000 <sup>3/</sup>	32,000

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.

adjust the food and fiber requirements in the year 2000 and the year 2020. The resulting requirements were then translated into cropland needs and are consequently higher than for Program A.

### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 6.

At present time (1970), there are 729,000 acres of land utilized for the grazing of livestock within the area. Of this, 494,000 acres is permanent pasture. The remaining acreage is made up of 118,000 acres of pastured cropland and 117,000 acres of pastured forest land (table 29).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.

Primarily, there are two types of pasture--summer and winter. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

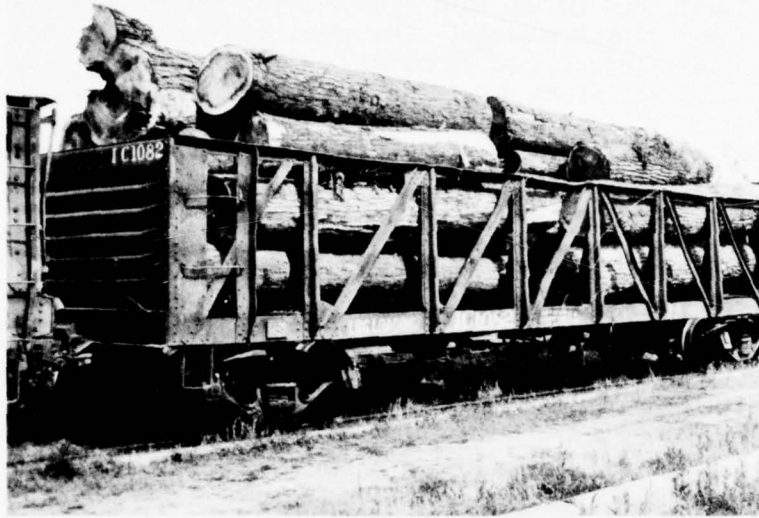
The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 754,000 acres; year 2000, 1,015,000 acres; and year 2020, 1,359,000 acres.

For Program B, the projected needs are: year 1980, 754,000 acres; year 2000, 1,089,000 acres; and for 2020, 1,460,000 acres (table 29).

### Forest

Commercial forest land within WRPA 6 presently amounts to 851,000 acres, almost 25 percent of the total agricultural land use. This area of commercial forest land includes an aggregate of 790,000 acres of privately owned and 41,000 acres of publicly owned forests.

The forests of WRPA 6 have been typed into five major forest classifications which represent a broad spectrum of softwood and hardwood resources. The most common types are oak-gum-cypress, which occupies 80 percent, and elm-ash-cottonwood, which occupies 11 percent of the area.



Hardwood logs from forest lands in WRPA 6

The present condition of the forest resource in WRPA 6 ranges from poor in the delta to fair in the uplands. Most forest management has been directed to the pine and pine hardwood forests in the uplands, leaving the hardwood forests in a relatively poor unmanaged condition.

The forests produce a variety of forest products, with lumber and woodpulp being the most important. There are presently 13 sawmills, 2 veneer plants, and 1 miscellaneous wood-using plant within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 1,469,000 acres; 2000, 1,605,000 acres; and 2020, 1,834,000 acres. Program B, for the year 1980, 1,513,000 acres; 2000, 1,701,000 acres; and 2020, 1,981,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 29.

#### Other Land

In 1970, 32,000 acres in WRPA 6 were classed as other land. Projected needs are identical for both Programs and are 95,489 acres in 1980; 102,220 acres in 2000; and 114,607 acres in 2020.

## Urban and Built-Up Areas

Urban and built-up areas in WRPA 6 comprise 78,000 acres, or 2.2 percent of total land in the WRPA (table 29). This proportion is much lower than the regional average. The area includes 6,200 acres of urban land and 71,800 acres of land in other urban and built-up areas. The dominance of the latter is due primarily to the complete absence of cities with a population greater than 15,000. Built-up area acreage in WRPA 6 is relatively low, in comparison to that in other planning areas, because of the lack of large urban areas.

Fifty percent of urban land occupied by cities with populations of 5,000 and more in WRPA 6 is residential. This percentage is significantly higher than the average for other planning areas. Residential land and other sub-categories are presented in table 31. As indicated, industrial acreage in the WRPA is slightly higher than the average for the region. This is probably due to the tendency of small industries to locate at or near urban areas.

Table 31 also contains projected land use needs for urban and built-up areas in WRPA 6 through 2020. Under Program A, needs in total urban and built-up areas will increase by only about 2.6 percent, or 2,000 acres, between 1970 and 2020. This increase is well below both the National and regional averages for urban and built-up area growth. The planning area is also the only one projected to have a decrease in the needs for land occupied by cities with less than 5,000 inhabitants and built-up areas. Actually, this decrease in acreage is due more to the increases in population that cause changes in classification. In other words, some of the towns in the planning area with less than 5,000 population will increase in size to the point that they can be classified as urban areas of 5,000 or greater. Land needs in these urban areas will increase by 6,300 acres, or 101.6 percent, between 1970 and 2020. Residential acreage will have the greatest amount of increase by 2020, but the industrial land use category will have the greatest percentage increase, doubling by the year 2020.

Urban and built-up area needs for WRPA 6, as projected by Program B, are also included in table 31. Urban and built-up area needs for the WRPA are expected to increase from 78,000 acres in 1970 to 88,000 acres by 2020. This is 12.8 percent increase, which is still quite low in comparison to regional or National averages. Acreages in built-up areas which include population centers with less than 5,000 inhabitants are expected to increase under Program B, unlike under Program A; although needs for urban areas with populations of 5,000 and more will still increase by a greater amount. Built-up needs in 2020 will be 77,500 acres, an increase of 5,700 acres over 1970; while urban needs in the same year will be 12,500 acres, an increase of 6,300 acres over 1970.

Table 31 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 6

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
<u>Total Urban And Built-Up</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	78,000	79,000	79,000	80,000
Program B	78,000	79,000	82,000	88,000
<u>Built-Up 1/</u>				
Program A	71,800	71,800	70,300	69,300
Program B	71,800	71,800	73,100	77,500
<u>Urban 2/</u>				
Program A	6,200	7,200	8,700	10,700
Program B	6,200	7,200	8,900	12,500
<u>Residential</u>				
Program A	3,100	3,500	4,200	5,200
Program B	3,100	3,600	4,300	6,100
<u>Commercial</u>				
Program A	400	500	600	700
Program B	400	500	600	800
<u>Streets</u>				
Program A	1,400	1,600	1,800	2,100
Program B	1,400	1,600	1,900	2,500
<u>Industrial</u>				
Program A	600	700	1,000	1,300
Program B	600	700	1,000	1,500
<u>Public</u>				
Program A	700	900	1,100	1,400
Program B	700	800	1,100	1,600

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

Urban land use categories for centers with 5,000 and greater populations under Program B projections will experience the same relative growth as projected under Program A. The increase in residential use needs will almost double; however, and industrial land needs, as well as streets land needs, will increase by slightly greater amounts. The differences between the two program projections do not occur until late in the study period, and the major difference at that time is in the amount of projected residential acreage.

#### Federal Lands

At the present time, WRPA 6 contains no significant amount of federally owned land.

#### Recreation

WRPA 6 supports a variety of recreation uses. Two State parks provide land and water areas for camping, picnicking, boating, swimming, hiking, nature studies, and outdoor games and sports.

There are 32,262 acres of lakes within the WRPA which provide boating and swimming. In addition, the area contains 5,629 miles of streams, of which 536 miles are considered suitable for high quality recreation purposes. All of these streams are of a character suitable for some type of recreation use, but in many instances access is a problem.

Playing outdoor games and sports is an insignificant recreation activity. There are 183 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

The 1970 land use for key recreation activities in WRPA 6 is 1,200 acres. Projected needs are presented in table 29. Program A needs are 4,900 acres in 1980; 6,200 acres in 2000; and 8,200 acres in 2020. Program B needs are 5,300 acres in 1980; 6,700 acres in 2000; and 9,300 acres in 2020.

Recreation needs for water surface are summarized in the Plan Formulation and Recreation Appendixes.

#### Fish and Wildlife

Fish and wildlife groups in WRPA 6 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 755,800 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water give these forests a high potential for productive wildlife habitat. There are



Migratory ducks and geese spend the winter months in WRPA 6

30,700 acres of upland hardwood forest which are productive big game habitat and second in production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 28,400 acres of pine hardwood habitat and 16,100 acres of pine habitat in the WRPA. The wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

WRPA 6 falls in the Mississippi Flyway and is therefore important to both migrating and wintering waterfowl. There are 85,000 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat.

Nine major lakes located within the WRPA provide 21,000 acres of fishery habitat. In addition, there are 51,000 acres of other lake fishing scattered throughout the area. There are 536 miles of streams in the area which are capable of supporting a fishery resource. Water surface use and habitat needs for lake and streams are discussed in Appendix Q, Fish and Wildlife.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Most of the other animals, especially birds, are important in satisfying nonconsumptive wildlife uses. Many species of non-game wildlife occur in WRPA 6, utilizing a broad range of habitat.

The 1970 area utilized for fish and wildlife was 52,000 acres. Projected needs for Program A needs are 1,061,000 acres in 1980; 1,074,000 acres in 2000; and 1,171,000 acres in 2020. Program B needs are 1,131,000 acres in 1980; 1,131,000 acres in 2000; and 1,283,000 acres in 2020 (table 29).

#### Minerals

Oil or gas is produced in all of the Louisiana parishes in WRPA 6. Sand and gravel are produced in small quantities in a few of the counties and parishes. Crude oil has been produced in most of the Louisiana parishes in recent years while natural gas has been produced in all of them.

At present, 1,800 acres of land are used for mineral production. Future projections for Program A indicate that 1,900 acres will be needed by 1980; 2,700 acres by 2000; and 3,600 by year 2020. For Program B, the projected needs are 2,200 by year 1980; 3,400 acres by year 2000; and 4,700 acres by year 2020.



Crude oil production in WRPA 6

## Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 758,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

## Soils

Soil productivity groups for WRPA 6 were developed from two land resource areas - 131 and 134. The largest acreage of SPG's in Arkansas is made up of SPG's 16, 17, and 18, and accounts for 93 percent of the total acreage in Arkansas. The largest acreage of SPG's in Louisiana is made up of 40, 41, 43, 44, 45, and 47, for 87 percent of the total acreage in Louisiana.

Soil distribution by state and productivity groups is shown in table 30. The distribution of agricultural land by capability classes for cropland, pasture, forest, and other is shown in table 32 and figure 12.

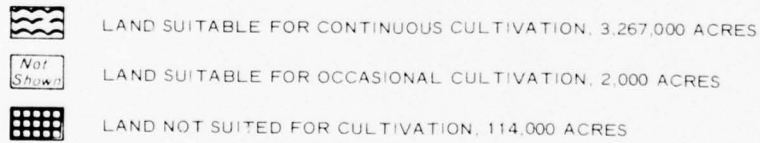
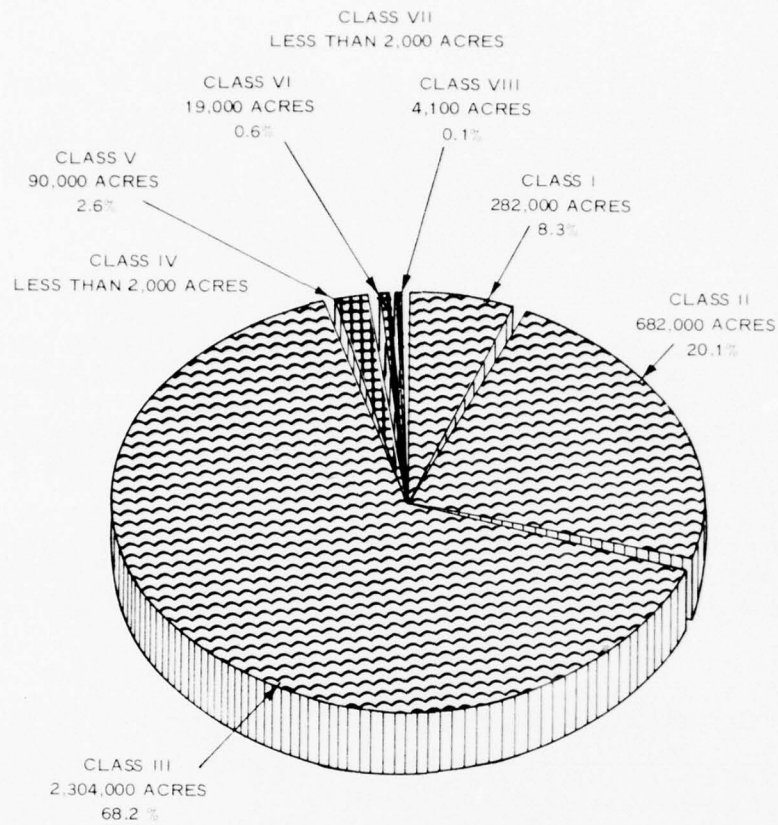
Table 32 - Agricultural Land by Capability Class, 1970, WRPA 6

Land Capability Class	Total Agricultural Land					Distribution Percent
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	
I	281,528	236,826	39,164	2,752	2,786	8.3
II	681,575	457,144	119,124	93,732	11,575	20.1
III	2,304,209	1,327,487	317,224	642,820	16,678	68.1
IV	1,549	1,549	0	0	0	0.1
Total I-IV	3,268,861	2,023,006	475,512	739,304	31,039	96.6
V	89,647	2,994	3,835	81,857	961	2.6
VI	18,788	0	14,653	4,135	0	0.6
VII	1,565	0	0	1,565	0	0.1
VIII	4,139	0	0	4,139	0	0.1
Total V-VIII	114,139	2,994	18,488	91,696	961	3.4
Totals	3,383,000	2,026,000 <sup>1/</sup>	494,000 <sup>2/</sup>	831,000 <sup>3/</sup>	32,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Includes pastured forest land.



LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 6**

FIGURE 12

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 6 comprises 3,553,000 acres of land and water. Of this amount, 3,383,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. Only inventory land is considered potentially available for agricultural use.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 32. Conservation needs estimates indicate that 2,023,006 acres are in Classes I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 236,826 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 457,144 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 1,327,487 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; 1,549 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

The balance of land classified as cropland is in Class V (2,994 acres) and is not suitable for use as cropland due largely to unfavorable soils. Thus of the 2,026,000 acres of inventory cropland, 12 percent is adapted to very intense cultivation, 23 percent to intensive, 65 percent to moderate, less than 1 percent to limited, and less than 1 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 475,512 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and, in some instances, clearing of scrub timber and brush. Of the 475,512 acres suitable for cultivation, 39,164 acres are Class I; 119,124 acres are Class II, and 317,224 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 2,752 acres now in generally level and fertile forest would make Class I cropland. Another 93,732 acres are suitable for regular cultivation as Class II cropland, if simple erosion control practices are followed and if the fertility is improved by adding fertilizers and other soil amendments. An additional 642,820 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 739,304 acres of forest that could be converted to cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

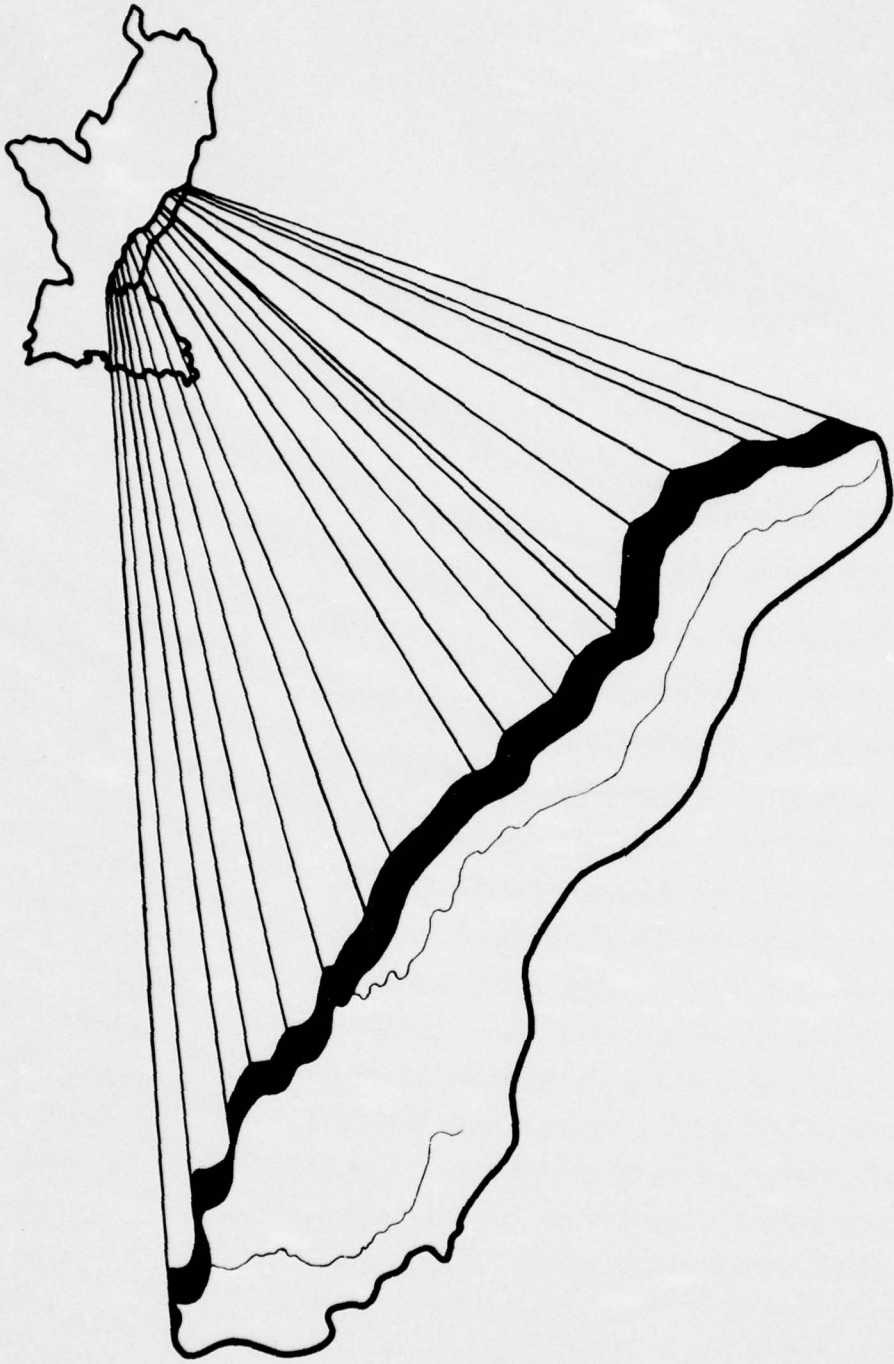
WRPA 6, with its acreage of suitable land, is well adapted for production of food and feed crops.

### Potential for Shift of Cropland to Grassland and Forest

Partially offsetting the potential for shift of grassland and forests to cropland are 2,994 acres of cropland that are best suited to grassland and forests. This is mainly land which has unfavorable soil conditions.

### Other Land

Other land comprises 32,000 acres in WRPA 6. No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of this land.



W  
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7

## WRPA 7

### DESCRIPTION

WRPA 7 is located in central and southwest Mississippi on the eastern side of the region. It is located entirely within the State of Mississippi and contains approximately 4.2 million acres or 6,574 square miles of land and water area.

This WRPA is made up of two main drainage areas-the Big Black River and a group of independent streams that drain directly into the Mississippi River. These streams include the Homochitto River, Bayou Pierre, Coles Creek, St. Catherine Creek, and Buffalo River.

The topography of the area ranges from flat unleveed Southern Mississippi Valley alluvium to the steep bluff hills of the Southern Mississippi Valley silty uplands. However, most of the area is fairly uniform and is made up of rolling hills and valleys.

The climate is mild with an average temperature of around 66° F. The average length of growing season is about 230 days, ranging from about 220 days to 240 days, north to south. The normal annual precipitation is about 55 inches, ranging from approximately 52 to near 60 inches north to south.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 7 is estimated at 337,000 acres (table 33). However, only 324,000 acres were harvested in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 34. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

Projected cropland needs are presented in table 33. Program A needs are 297,000 acres in 1980, 260,000 acres in 2000, and 263,000 acres in 2020.

Program B needs are 297,000 acres in 1980, 283,000 acres in 2000, and 289,000 acres in 2020. Needs in 1980 for both Programs A and B are the same because of the assumption made concerning the derivation of Program B food and fiber requirements. No changes were made if the

Table 33 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 7

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	337,000	297,000	260,000	265,000
	B	337,000	297,000	283,000	289,000
Pasture	A	941,000 <sup>1/</sup>	750,000	1,007,000	1,348,000
	B	941,000	750,000	1,081,000	1,448,000
Pastured Cropland	A	180,000	231,000	310,000	415,000
	B	180,000	231,000	333,000	446,000
Pastured Forest	A	694,000	921,000	1,236,000	1,655,000
	B	694,000	921,000	1,328,000	1,778,000
Total Pasture	A	1,815,000	1,902,000	2,553,000	3,418,000
	B	1,815,000	1,902,000	2,742,000	3,672,000
Forest	A	2,509,000 <sup>2/</sup>	3,296,000	3,475,000	3,589,000
	B	2,509,000	3,626,000	3,962,000	4,199,000
Other	A	30,000 <sup>3/</sup>	68,000	49,000	12,000
	B	30,000	68,000	49,000	12,000
Urban	A	116,000	121,000	156,000	151,000
	B	116,000	133,000	158,000	188,000
Small Water <sup>4/</sup>	A	56,000	-	-	-
	B	56,000	-	-	-
Large Water <sup>4/</sup>	A	38,000	-	-	-
	B	38,000	-	-	-
Total	A	4,207,000	-	-	-
	B	4,207,000	-	-	-
Recreation <sup>5/</sup>	A	1,000	4,000	6,000	9,000
	B	1,000	5,000	8,000	11,000
Fish & Wildlife <sup>5/</sup>	A	549,000	964,000	1,099,000	1,521,000
	B	549,000	1,060,000	1,278,000	1,543,000
Minerals <sup>5/</sup>	A	1,000	1,000	1,000	1,000
	B	1,000	1,000	1,000	2,000
Environmental <sup>5/</sup>	A	511,000	511,000	511,000	511,000
	B	511,000	511,000	511,000	511,000

1/ Pasture and range land.

2/ Includes pastured forest land, forested wetlands, and 197,000 acres of Federal forest lands.

3/ Includes lands not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

4/ Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

5/ Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 34 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 7

State And Soil Productivity Group	Total Agricultural Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
<u>Mississippi</u>					
59	11,244	6,962	2,816	1,466	0
60	14,651	4,395	8,419	1,381	456
61	64,054	13,489	27,839	21,214	1,512
62	111,574	37,929	44,892	28,542	211
63	38,966	16,259	12,206	9,832	669
64	569,726	131,719	182,469	250,884	4,654
66	224	0	19	205	0
67	312,803	50,499	146,469	113,128	2,707
68	4,085	609	0	3,476	0
69	26,231	3,519	1,469	20,820	423
70	101,215	36,862	45,915	16,183	2,255
71	28,081	9,869	9,184	7,689	1,339
72	66,433	11,600	15,329	39,504	0
73	404,526	72,897	149,897	177,308	4,424
74	11,460	3,111	1,322	6,800	227
75	15,998	3,463	5,186	7,349	0
76	55,562	8,403	13,666	32,822	671
77	219,556	47,135	56,928	112,130	3,363
78	30,473	0	0	30,473	0
79	581,910	17,003	81,511	481,239	2,157
80	20,814	2,468	5,585	12,537	224
81	143,791	3,994	13,990	124,463	1,344
82	757,464	13,499	62,964	678,742	2,259
83	59,406	19,266	19,376	19,870	894
84	99,477	2,050	25,165	72,262	0
85	50,276	0	8,384	41,681	211
TOTAL	3,800,000	517,000 <sup>1/</sup>	941,000 <sup>2/</sup>	2,312,000 <sup>3/</sup>	30,000

1/ Includes pastured cropland.

2/ Includes permanent pasture and range.

3/ Does not include federal forest lands. Includes pastured forest land.



Harvesting corn in WRPA 7

region's growth rate in production exceeded the average for the United States. Such was the case between 1970 and 1980; however, between 1980 and 2000 and between 2000 and 2020, the growth rate of the region was below that of the United States. Thus the difference in the growth rate (approximately 7 percent) was used to adjust the food and fiber requirements in the year 2000 and the year 2020. The resulting requirements were then translated into cropland needs and are consequently higher than for Program A.

#### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 7.

At present time (1970), there are 1,815,000 acres of land utilized for the grazing of livestock within the area. Of this, 941,000 acres is permanent pasture. The remaining acreage is made up of 180,000 acres of pastured cropland and 694,000 acres of pastured forest land (table 33).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.

Primarily, there are two types of pasture--summer and winter. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 1,902,000 acres; year 2000, 2,553,000 acres; and year 2020, 3,418,000 acres.

For Program B, the projected needs are: year 1980, 1,902,000 acres; year 2000, 2,742,000 acres; and for 2020, 3,672,000 acres (table 33).

### Forest

Commercial forest land within WRPA 7 presently amounts to 2,509,000 acres, or about 60 percent of the total land use. This area of commercial forest land includes an aggregate of 2,297,900 acres of privately owned and 211,000 acres of publicly owned forests. National Forest System lands on the Homochitto National Forest comprises 71 percent of all the public commercial forest land.

The forests of WRPA 7 have been typed into six major forest classifications. The most common types are oak-hickory, which occupies 32 percent, and loblolly-shortleaf pine, which occupies 30 percent of the area. The oak-hickory forest occurs in the western portion of the WRPA along the bluffs bordering the delta. Oak-pine forests are found bordering the oak-hickory type on the west side of the WRPA and along the eastern boundary of the area, loblolly-shortleaf pine forests occur in the central portion of the WRPA and oak-gum-cypress type is found on the floodplains of major streams. The elm-ash-cottonwood type occurs in the same general region on the better-drained terraces of the floodplains. A small amount of longleaf-slash pine type occurs in the southern portion of the WRPA.

The present condition of the forest resource in WRPA 7 ranges from poor in the delta to fair in the uplands. More interest in forest management has been directed toward the upland pine forests. Except for the industrial hardwood producers' holdings, the hardwood forests are treated as a hindrance rather than a resource. The forests produce a variety of forest products, with lumber and woodpulp being the most important. There are presently 42 sawmills, two woodpulp mills, five wood-preserving plants, two veneer plants, and four miscellaneous wood-using plants within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 3,296,000 acres; 2000, 3,475,000 acres; and 2020, 3,588,000 acres. Program B, for the year 1980, 3,626,000 acres; 2000, 3,962,000 acres; and 2020, 4,199,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 33.

#### Other Land

This category of land includes farmsteads, farm roads, feed lots, ditch banks, fence and hedge rows, rural nonfarm residences, investment tracts, coastal dunes, marshes not used for grazing, strip mines, borrow and gravel pits, and the like. In 1970, 30,000 acres were classed as other land.

Projected needs for both programs are 68,000 acres in 1980; 49,000 acres in 2000; and 12,000 acres in 2020.

#### Urban and Built-Up Areas

Urban and built-up areas in WRPA 7 comprise 116,000 acres, or 2.8 percent of total land in the WRPA (table 35). This proportion is much lower than the required average. The area includes 6,300 acres of urban land occupied by population centers with 5,000 or more inhabitants and 109,700 acres of land in other urban and built-up areas. The dominance of the latter areas is due primarily to the total lack of cities with populations of 25,000 or more. The area, however, does contain cities with populations approaching 25,000. For this reason, built-up areas within the WRPA consist of some suburban clusters around larger cities, and towns of less than 5,000 in population. Cities with less than 5,000 inhabitants and built-up areas presently constitute 94.6 percent of the total land in urban and built-up areas.

The five urban land use categories for cities of 5,000 persons and above reflect the absence of large cities in the planning area (table 35). As indicated, the 3,200 acres of residential land account for slightly more than half of all land in these urban areas. The second largest use category is streets, with a present acreage of 1,500.

Table 35 also contains land use needs for urban and built-up areas in WRPA 7 through 2020. As indicated, Program A needs in total urban and built-up areas will increase by 30.2 percent, 35,000 acres, between 1970 and 2020. Although the major portion of this increase will be in areas with populations less than 5,000 inhabitants and built-up areas, the remaining urban needs will more than double.

Projections on the composition of urban lands used for population centers of 5,000 and more are also presented in table 35. Under

Table 35 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 7

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	116,000	121,000	136,000	151,000
Program B	116,000	133,000	158,000	188,000
Built-Up <u>1/</u>				
Program A	109,700	113,300	125,500	136,300
Program B	109,700	123,500	142,500	163,900
Urban <u>2/</u>				
Program A	6,300	7,700	10,500	14,700
Program B	6,300	9,500	15,500	24,100
Residential				
Program A	3,200	3,900	5,200	7,200
Program B	3,200	4,800	7,700	11,800
Commercial				
Program A	300	400	500	700
Program B	300	500	800	1,100
Streets				
Program A	1,500	1,800	2,400	3,100
Program B	1,500	2,200	3,500	5,000
Industrial				
Program A	600	700	1,000	1,400
Program B	600	900	1,400	2,400
Public				
Program A	700	900	1,400	2,300
Program B	700	1,100	2,100	3,800

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

Program A projections, residential acreage will remain the principal land use category. Needs for residential land will increase by 4,000 acres over the study period. The increase in residential acreage will not be in so great a proportion as the increase in land needs for public use. Public land needs will increase to 2,300 acres by 2020, and will represent more than 4 percent of total urban land, a significant increase considering the small amount of urban land in the WRPA.

Table 35 also includes needs for urban and built-up land in WRPA 7, using Program B projections. These projections are larger due to the nature of Program B. Urban and built-up area needs for the WRPA are expected to increase from 116,000 acres in 1970 to 188,000 acres by 2020, which is an increase of 62 percent. The expected increase in built-up area needs for all but centers of 5,000 and greater population during the same period is 54,200 acres, or 49.4 percent; and the expected increase in other needs is 17,800 acres, or more than 280 percent. Urban land needs will definitely exceed built-up area needs.

Projected needs for the five land use categories are also included in table 35. The source for the increases shown is in residential land, which will increase from 3,200 acres in 1970 to 11,800 acres by 2020. This increase will be to supply increased urban populations. Urban population concentrated in areas of 5,000 and more persons is projected to increase from 42,994 in 1970 to 131,041 in 2020. All categories will also increase by correspondingly high amounts. Even commercial needs, which usually grow in relatively small amounts, will increase from 300 acres to 1,100 acres. The 800-acre increase is the greatest percentage increase in commercial land needs in the Lower Mississippi Region.

#### Federal Lands

At the present time, WRPA 7 contains 197,000 acres of federally owned land. The Homochitto National Forest accounts for 150,000 acres of the area. The remaining 47,000 acres is in the Natchez Trace Parkway (8,000 acres) administrative sites, and other uses.

#### Recreation

WRPA 7 supports a variety of recreation uses. The Natchez Trace National Parkway provides 8,000 acres for camping, picnicking, boating, swimming, hiking, nature studies, and outdoor games and sports.

There are 38,562 acres of lakes within the WRPA which provide water area suitable in character for boating and swimming. In addition, the area contains 1,071 miles of streams, of which 450 miles are considered suitable in character for high quality recreation purposes. With proper access, all of these streams are suitable for some type of recreation. The Homochitto National Forest has 150,400 acres available for dispersed recreation use. There are three recreation areas on the Forest developed

for picnicking, camping, swimming, boating, hiking, bird watching, and playing outdoor games and sports.

Playing outdoor games and sports is an insignificant recreation activity in WRPA 7. There are only 54 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

The 1970 land use for key recreation activities in WRPA 7 was 1,200 acres. Projected needs are presented in table 33. Program A needs are 4,400 acres in 1980; 6,300 acres in 2000; and 9,300 acres in 2020. Program B needs are 4,900 acres in 1980; 7,500 acres in 2000; and 11,000 acres in 2020.

Water surface area needs for recreation may be found in the Recreation Appendix.

#### Fish and Wildlife

Fish and wildlife groups in WRPA 7 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 449,800 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat, if undisturbed. There are 799,600 acres of upland hardwood forest which are productive big game habitat and second in production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 455,500 acres of pine hardwood habitat and 754,100 acres of pine habitat in the WRPA. Since big game populations are dependent upon suitable habitat, the wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

WRPA 7 falls in the Mississippi Flyway and is therefore important to both migrating and wintering waterfowl. The WRPA contains 49,000 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat.

Lake Mary and Rodney Lake are the only two major lakes within the WRPA. A total of 94,000 acres of lake fishing are scattered within the area. There are 450 miles of streams in the area which are capable of supporting a fishery resource. Water surface needs for fish and wildlife are in Appendix Q, Fish and Wildlife.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Most of the other animals, especially birds, are important in satisfying nonconsumptive wildlife uses. Many species of non-game wildlife occur in WRPA 7, utilizing a broad range of habitat.

The area utilized for fish and wildlife in 1970 was 549,000 acres. Projected needs also are for Program A 964,000 acres in 1980; 1,099,000 acres in 2000; and 1,321,000 acres in 2020. Program B needs are 1,060,000 acres in 1980; 1,278,000 acres in 2000; and 1,543,000 acres in 2020 (table 33).

#### Minerals

Crude oil or natural gas is produced in about half of the counties in WRPA 7. The bulk of the output from oil and gas comes from the southwestern cluster of counties.

Small amounts of clay, sand, and gravel are produced in all of the counties of the area to satisfy local needs.

Presently, there are only 800 acres of land used for mineral production. Projected needs for Program A are 900 acres for the year 1980, 1,100 acres for year 2000, and 1,400 acres for the year 2020. For Program B, the future needs are 1,000, 1,300, and 1,700 acres for the years 1980, 2000, and 2020, respectively.

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are nonrenewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 511,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

#### Soils

Soil productivity groups for this Mississippi WRPA were developed from three land resource areas - 131, 133, and 134. The largest acreage of SPG's is made up of SPG's 62, 64, 67, 70, 73, 77, 79, 81, and 82, or 84 percent of the total.

The distribution by soil productivity groups is shown in table 34. The distribution of land by agricultural capability classes for cropland, pasture, forest, and other is shown in table 36 and figure 13.

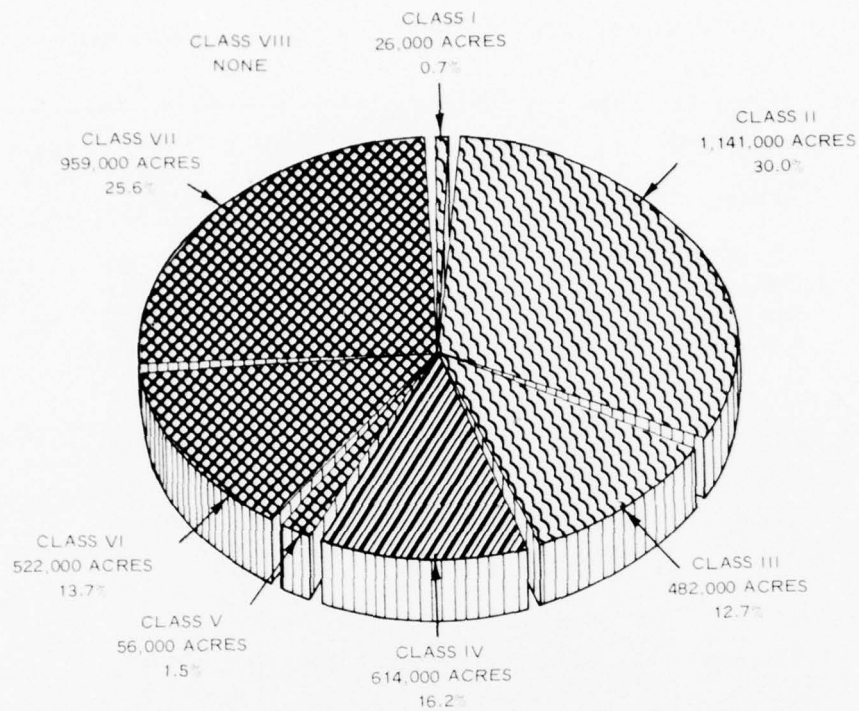
Table 36 - Agricultural Land by Capability Class, 1970, WRPA 7




Land Capability Class	Total Agricultural Land					Distribution Percent
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	
I	26,432	14,781	9,669	1,482	500	0.7
II	1,140,409	280,526	348,332	502,117	9,434	30.0
III	482,331	78,487	195,645	203,944	4,255	12.7
IV	614,182	106,249	202,856	297,411	7,666	16.2
Total I-IV	2,263,354	480,043	756,502	1,004,954	21,855	59.6
V	56,069	3,484	1,614	48,967	2,004	1.5
VI	521,674	17,392	80,779	421,112	2,391	13.7
VII	958,903	16,081	102,105	836,967	3,750	25.2
VIII	0	0	0	0	0	-
Total V-VIII	1,536,646	36,957	184,498	1,307,046	8,145	40.4
Totals	3,800,000	517,000 <sup>1/</sup>	941,000 <sup>2/</sup>	2,312,000 <sup>3/</sup>	30,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forests. Includes pastured forest land.



-  LAND SUITABLE FOR CONTINUOUS CULTIVATION, 1,649,000 ACRES
-  LAND SUITABLE FOR OCCASIONAL CULTIVATION, 614,000 ACRES
-  LAND NOT SUITED FOR CULTIVATION, 1,537,000 ACRES

LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 7**

FIGURE 13

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 7 comprises 4,207,000 acres of land and water. Of this amount, 3,800,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. Only inventory land is considered potentially available for agricultural use.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 36. Conservation needs estimates indicate that 480,043 acres are in Classes I through IV which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 14,781 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices, 280,526 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment, 78,487 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; and 106,249 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 36,957 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 517,000 acres in cropland, 3 percent is adapted to very intensive cultivation, 54 percent to intensive, 15 percent to moderate, 21 percent to limited, and 7 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 553,646 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and in some instances clearing of timber and brush. Of the 553,646 acres suitable for cultivation, 9,669 acres are Class I, 348,332 acres are Class II, and 195,645 acres are Class III land.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 1,482 acres now in generally level and fertile forest would make Class I cropland. Another 502,117 acres are suitable for regular cultivation as Class II cropland, if simple erosion control practices are followed, and if the fertility level is raised by adding fertilizers or other soil amendments. An additional 203,944 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 707,543 acres of forest that could be converted to cropland.

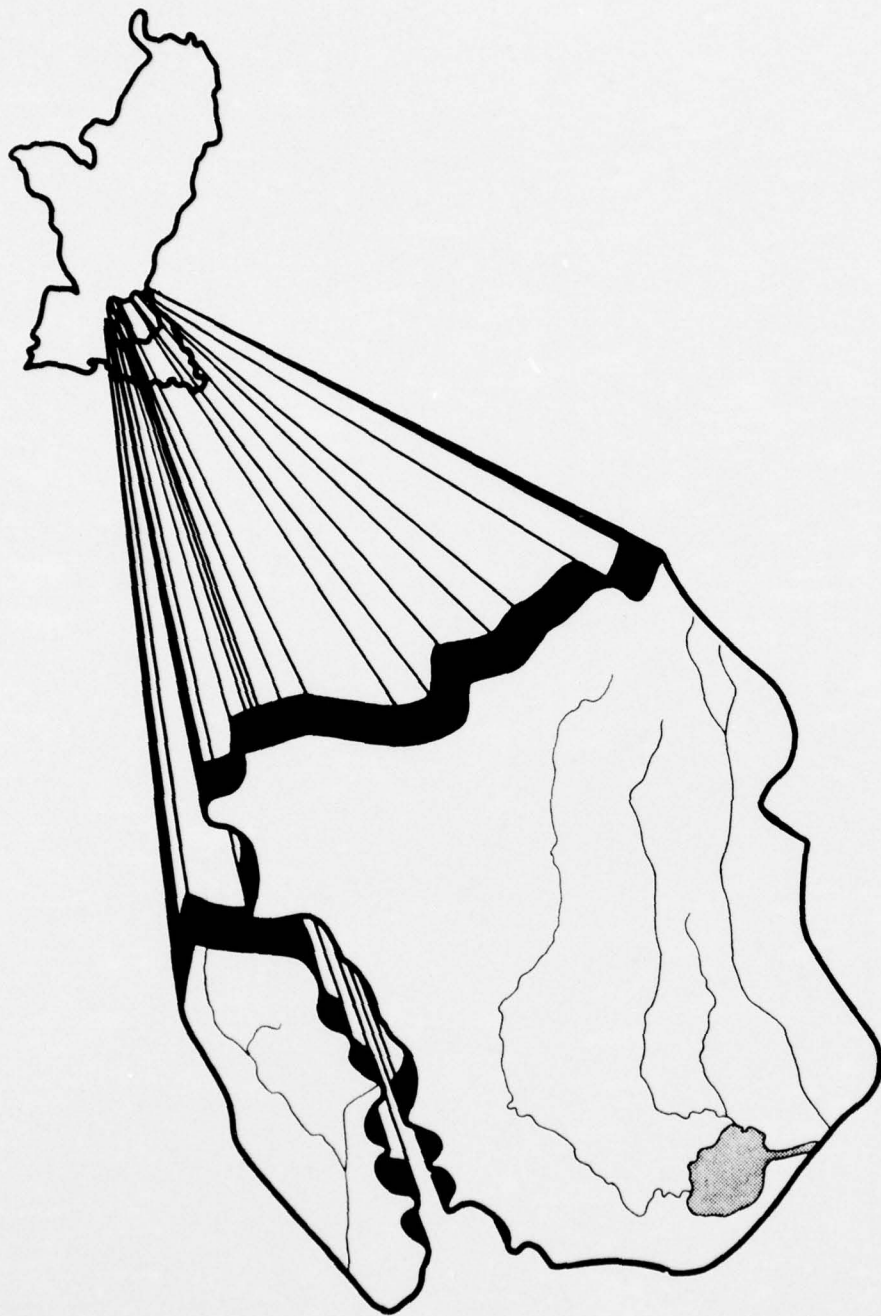
The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

### Potential for Shift of Cropland to Grassland and Forest

Partly offsetting the potential for shift of grassland and forests to cropland are 36,957 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope that it should be kept in continuous sod or forests.

### Other Land

No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of other land.



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## WRPA 8

### DESCRIPTION

WRPA 8 is located in the southeastern portion of the region. It includes the northern portion of Louisiana that lies east of the Mississippi River, an area west of the Mississippi River and east of the Morganza Floodway, and the extreme southwestern part of Mississippi. It contains about 3.65 million acres of land and water area or about 5,705 square miles.

There are two main drainages in the area. One drains into Lake Maurepas and/or Lake Pontchartrain, and the other into the Atchafalaya River System. The Amite, Tickfaw, and Natalbany Rivers drain into Lake Maurepas. The Tangipahoa River drains into Lake Pontchartrain and Bayou Grosse Tete drains into the Atchafalaya River.

The topography of the area varies from sea level swamps to rolling hills of the Southern Mississippi Valley silty uplands land resource area.

The climate is mild to hot with an average annual temperature of around 68° F. The average length of growing season is about 255 days ranging from less than 240 days to 270 days north to south. The normal annual precipitation is about 58 inches.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 8 is estimated at 329,000 acres (table 37). The entire 329,000 acres were essential for the production of crops in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 38. The description of the SPG's is presented in the regional summary. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

Projected cropland needs are presented in table 37. Program A needs are 249,000 acres in 1980, 209,000 acres in 2000, and 205,000 acres in 2020. Program B needs are 249,000 acres in 1980, 243,000 acres in 2000, and 228,000 acres in 2020. Needs in 1980 for both programs A and B are the same because of the assumption made concerning the derivation of Program B food and fiber requirements. No changes were made if

Table 37 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 8

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	329,000	249,000	209,000	205,000
	B	329,000	249,000	243,000	228,000
Pasture	A	655,000 <sup>1/</sup>	436,000	580,000	770,000
	B	655,000	436,000	623,000	826,000
Pastured Cropland	A	54,000	260,000	346,000	460,000
	B	54,000	260,000	372,000	494,000
Pastured Forest	A	650,000	460,000	612,000	812,000
	B	650,000	460,000	658,000	872,000
Total Pasture	A	1,359,000	1,156,000	1,538,000	2,042,000
	B	1,359,000	1,156,000	1,653,000	2,192,000
Forest	A	2,265,000 <sup>2/</sup>	3,268,000	3,539,000	3,810,000
	B	2,265,000	3,529,000	3,999,000	4,305,000
Other	A	48,000 <sup>3/</sup>	59,000	47,000	21,000
	B	48,000	59,000	47,000	21,000
Urban	A	182,000	206,000	260,000	333,000
	B	182,000	222,000	292,000	380,000
Small Water <sup>4/</sup>	A	45,000	-	-	-
	B	45,000	-	-	-
Large Water <sup>4/</sup>	A	73,000	-	-	-
	B	73,000	-	-	-
Total	A	3,651,000	-	-	-
	B	3,651,000	-	-	-
Recreation <sup>5/</sup>	A	2,000	17,000	27,000	43,000
	B	2,000	18,000	31,000	50,000
Fish & Wildlife <sup>5/</sup>	A	969,000	3,658,000	4,687,000	6,096,000
	B	969,000	3,941,000	5,243,000	6,916,000
Minerals <sup>5/</sup>	A	4,000	5,000	6,000	8,000
	B	4,000	5,000	7,000	9,000
Environmental <sup>5/</sup>	A	1,203,000	1,203,000	1,203,000	1,203,000
	B	1,203,000	1,203,000	1,203,000	1,203,000

1/ Pasture and range land.

2/ Includes pastured forest land, forested wetlands, and 1,000 acres of Federal forest lands.

3/ Includes lands (predominately marsh) not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

4/ Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

5/ Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 38 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 8

State And Soil Productivity Group	Total Agricultural Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
<u>Louisiana</u>					
39	205,077	104,857	69,623	22,000	8,597
40	8,968	2,050	5,281	1,237	400
41	248,110	39,608	80,200	122,146	6,156
42	79,307	24,038	33,801	20,926	542
43	19,743	1,701	13,139	4,730	173
44	269,241	33,999	68,232	158,896	8,114
45	309,418	53,155	88,605	166,793	865
47	456,998	26,189	61,827	363,077	5,905
48	237,407	25,839	59,677	151,083	808
49	182,763	24,464	29,432	127,731	1,136
52	2,961	0	1,567	1,109	285
53	249,555	2,449	30,611	216,148	347
54	56,013	0	7,959	46,582	1,472
56	380,085	0	18,260	361,825	0
58	214,079	0	0	204,624	9,455
Sub-Total	2,919,725	338,349	568,214	1,968,907	44,255
<u>Mississippi</u>					
61	8,380	2,681	1,300	4,399	0
62	96,058	12,215	20,202	60,936	2,705
63	4,912	736	436	3,740	0
64	68,581	5,383	14,581	48,617	0
67	71,509	11,712	16,058	43,115	624
69	30,965	2,449	5,881	22,219	416
72	24,463	737	4,588	19,138	0
73	40,499	4,368	12,733	23,398	0
77	221	0	0	221	0
79	39,072	1,701	6,690	30,681	0
82	45,615	2,669	4,317	38,629	0
Sub-Total	430,275	44,651	86,786	295,093	3,745
TOTAL	3,350,000	383,000 <sup>1/</sup>	655,000 <sup>2/</sup>	2,264,000 <sup>3/</sup>	48,000

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forest lands. Includes pastured forest land.

the region's growth rate in production exceeded the average for the United States. Such was the case between 1970 and 1980; however, between 1980 and 2000 and between 2000 and 2020, the growth rate of the region was below that of the United States. Thus the difference in the growth rate (approximately 7 percent) was used to adjust the food and fiber requirements in the year 2000 and the year 2020. The resulting requirements were then translated into cropland needs and are consequently higher than for Program A.

#### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 8.

At present time (1970), there are 1,359,000 acres of land utilized for the grazing of livestock within the area. Of this, 655,000 acres is permanent pasture. The remaining acreage is made up of 54,000 acres of pastured cropland and 650,000 acres of pastured forest land (table 37)

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on pastured forest land.



Summer pasture in WRPA 8

Primarily, there are two types of pasture--summer and winter. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 1,156,000 acres; year 2000, 1,538,000 acres; and year 2020, 2,042,000 acres.

For Program B, the projected needs are: year 1980, 1,156,000 acres; year 2000, 1,653,000 acres; and for 2020, 2,192,000 acres (table 37).

#### Forest

Commercial forest land within WRPA 8 presently amounts to 2,265,000 acres, in excess of 62 percent of total land use. This area of commercial forest land includes an aggregate of 2,198,000 acres of privately owned and 67,000 acres of publicly owned forests.

The forests of WRPA 8 have been typed into six major forest classifications which represent a broad spectrum of softwood and hardwood resources. The most common types are oak-gum-cypress which occupies 38 percent of the area and loblolly-shortleaf pine which occupies 27 percent of the area. Oak-hickory forests are located in the northwest portion of the WRPA. Oak-gum-cypress and elm-ash-cottonwood types occur on the Mississippi delta and floodplains of major streams with the latter occurring on the better-drained terraces of the floodplains. Oak-pine type is found in the eastern portion of the WRPA. Loblolly-shortleaf pine is found throughout the central portion and longleaf-slash pine is found in the southern portion of the WRPA.

The forests produce a variety of forest products with lumber and woodpulp being the most important. There are presently 26 sawmills, three woodpulp mills, six wood-preserving plants, two veneer plants, and one miscellaneous wood-using plant within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 3,268,000 acres; 2000, 3,539,000 acres; and 2020, 3,810,000 acres. Program B, for the year 1980, 3,529,000 acres; 2000, 3,999,000 acres; and 2020, 4,305,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 37.

## Other Land

This category of land includes farmsteads, farm roads, feed lots, ditch banks, fence and hedge rows, rural nonfarm residences, investment tracts, coastal dunes, marshes not used for grazing, strip mines, borrow and gravel pits, and the like. In 1970, 48,000 acres were classed as other land. Projected needs, which are the same for both Programs A and B, are 58,737 acres in 1980; 46,580 acres in 2000; and 20,993 acres in 2020.

## Urban and Built-Up Areas

Urban and built-up areas in WRPA 8 comprise 182,000 acres, or 5 percent of total land in the WRPA (table 37). This proportion is greater than the regional average. The area includes 30,900 acres of urban land used by cities of 5,000 or more inhabitants and 151,100 acres of land used by cities less than 5,000 in population and built-up areas. The relatively high amount of land in the first category is due primarily to the dominant influence of the City of Baton Rouge, which has a population of 188,520. There are no other cities in the WRPA with a population greater than 15,000. The second category contains a high amount of suburban land, and land in towns of less than 5,000 population.

Urban land used by cities of 5,000 population and greater is broken down into five categories of use in table 39. This breakdown clearly shows the influence of Baton Rouge within the WRPA. As indicated, the principal category is residential, encompassing 12,600 acres, or 40.8 percent of the total. This percentage is lower than the regional average. The streets category is second, with 9,800 acres, which is higher than normal. Usually when streets have an increased share of total urban land, it is at the expense of public land. This is the case in WRPA 8.

Table 39 contains projected land use needs for urban and built-up areas in WRPA 8 through 2020. Total urban and built-up areas for Program A will increase by 157,000 acres, or 83 percent, between 1970 and 2020. The major portion of this increase will be in areas with populations less than 5,000 persons, which by 2020 will be 291,200 acres. Remaining needs will increase by 10,900 acres in 2020. These figures reflect the tendency of population to migrate from urban to suburban or built-up areas.

The five use categories listed under urban on table 39 indicate that residential needs by 2020 will increase by only 4,700 acres, which is 43 percent of total projected increase in urban acreage. Only such land use categories as streets increase at greater rates than residential land needs.

Table 39 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 8

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	182,000	206,000	260,000	333,000
Program B	182,000	222,000	292,000	380,000
Built-Up <u>1/</u>				
Program A	151,100	172,300	222,400	291,200
Program B	151,100	186,300	250,700	329,500
Urban <u>2/</u>				
Program A	30,900	33,700	37,600	41,800
Program B	30,900	35,700	41,300	50,500
Residential				
Program A	12,600	13,900	15,500	17,300
Program B	12,600	14,700	17,000	20,900
Commercial				
Program A	1,300	1,500	1,700	1,900
Program B	1,300	1,600	1,900	2,400
Streets				
Program A	9,800	10,500	11,500	12,600
Program B	9,800	11,100	12,600	15,100
Industrial				
Program A	3,000	3,300	3,800	4,400
Program B	3,000	3,500	4,200	5,300
Public				
Program A	4,200	4,500	5,100	5,600
Program B	4,200	4,800	5,600	6,800

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

Program B projected needs are also included in table 39. By its nature, Program B projects greater needs than Program A. Urban and built-up area needs for the WRPA are expected to increase from 182,000 acres in 1970 to 380,000 acres by 2020, an increase of 108.8 percent. Projected needs under Program B are not significantly greater than those under Program A. This is because the economy of the area under both programs is more similar. Urban needs for population centers of 5,000 and more under Program B are expected to increase 19,600 acres by 2020, which is much greater than the projected increase under Program A; however, other areas are expected to grow at slower rates, a fact which compensates overall growth.

Land use categories shown under urban on table 39 will experience, for the most part, the same relative increase under Program B as under Program A. Residential needs will increase by the greatest amount under Program B, jumping from 12,600 acres in 1970 to 20,900 in 2020. For the most part, land needs for each category increase by amounts necessary for each category to maintain almost identical proportions in 2020 as in 1970. The greatest shift in share involves residential and street needs. Residential needs are projected to increase from 40.8 percent in 1970 to 41.4 percent in 2020, while street needs are expected to increase from 31.7 percent in 1970 to 29.9 percent in 2020.

#### Federal Lands

In 1970, WRPA 8 contained 1,000 acres of federally owned land. The acreage is made up of administrative sites and other land uses.

#### Recreation

WRPA 8 supports a variety of recreation uses. There are 73,080 acres of lakes within the WRPA which provide boating and swimming. In addition, the area contains 4,862 miles of streams, of which 400 miles are considered suitable for high quality recreation purposes. All of these streams are suitable in character for some type of recreation use.

Playing outdoor games and sports is a significant recreation activity. There are 353 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

Almost all land and water is suitable in character for recreation, depending upon the needs of the person or persons involved. However, the key activities are camping, picnicking, swimming, boating, and playing outdoor games and sports. The 1970 land use for these activities in WRPA 8 was 2,200 acres. Projected needs for Program A are 16,900 acres in 1980, 27,000 acres in 2000, and 42,800 acres in 2020. Program B needs are 18,400 acres in 1980; 30,800 acres in 2000; and 49,500 acres in 2020 (table 37).

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LOWER MISSISSIPPI REGION COMPREHENSIVE STUDY COORDINA--ETC F/G 8/6  
LOWER MISSISSIPPI REGION COMPREHENSIVE STUDY. APPENDIX F. LAND --ETC(U)  
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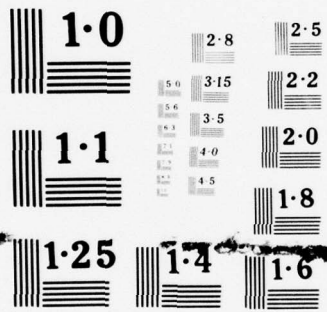
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## Fish and Wildlife

Fish and wildlife groups in WRPA 8 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 988,400 acres of bottomland hardwood forests within the WRPA. These forests are the most productive wildlife habitat in the area. There are 311,400 acres of upland hardwood forest which are productive big game habitat and second in production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 274,540 acres of pine hardwood habitat and 690,800 acres of pine habitat in the WRPA. Since big game populations are dependent upon suitable habitat, the wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

Most of WRPA 8 falls in the Mississippi Flyway. The WRPA is therefore important to both migrating and wintering waterfowl. There are 734,315 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, raccoon, skunk, beaver, opossum, foxes, and bobcat.

Two major lakes located within the WRPA provide 61,000 acres of fishery habitat. In addition, there are 57,000 acres of other lake fishing scattered within the area. There are 400 miles of streams in the area which are capable of supporting a fishery resource. Water surface use and needs for lake habitat for fish and wildlife purposes are discussed in Appendix Q, Fish and Wildlife.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Most of the animals, especially birds, are important in satisfying nonconsumptive wildlife uses. Many species of non-game wildlife occur in WRPA 8 utilizing a broad range of habitat.

In 1970, 969,000 acres in WRPA 8 were utilized for fish and wildlife. Projected needs for Program A are 3,658,000 acres in 1980, 4,687,000 acres in 2000; and 6,096,000 acres in 2020. Under Program B, 3,941,000 acres will be needed in 1980; 5,243,000 acres will be needed in 2000; and 6,916,000 acres will be needed in 2020.

## Minerals

In WRPA 8 petroleum or natural gas is produced in most of the parishes in Louisiana and in Amite County, Miss. Crude oil is produced

mainly in the western part of the area. Natural gas is also recorded in the same area.

Sand and gravel are mined generally throughout the WRPA, and clay is produced in five parishes in Louisiana. Lime is produced in East Baton Rouge Parish, La., and salt is produced in Ascension and Iberville Parishes, La.

Presently, 3,800 acres of land are used for mineral production. For Program A, the future need is for 4,500 acres for mineral production in 1980; 6,000 acres by 2000; and 7,800 by 2020. For Program B, 4,900 acres are projected to be needed by 1980; 7,100 by 2000; and 9,400 by 2020.

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are nonrenewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 1,203,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

#### Soils

Soil productivity groups for this Louisiana-Mississippi WRPA were developed from three land resource areas - 131, 133, and 134. The largest acreage of SPG's in Louisiana is made up of SPG's 39, 41, 44, 45, 47, 48, 53, 56, and 58, or 88 percent of the Louisiana total. The largest acreage of SPG's in Mississippi is made up of 62, 64, 67, 73, and 82, or 75 percent of that state's total.

The distribution by state and soil productivity groups is shown in table 38. The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 40 and figure 14.

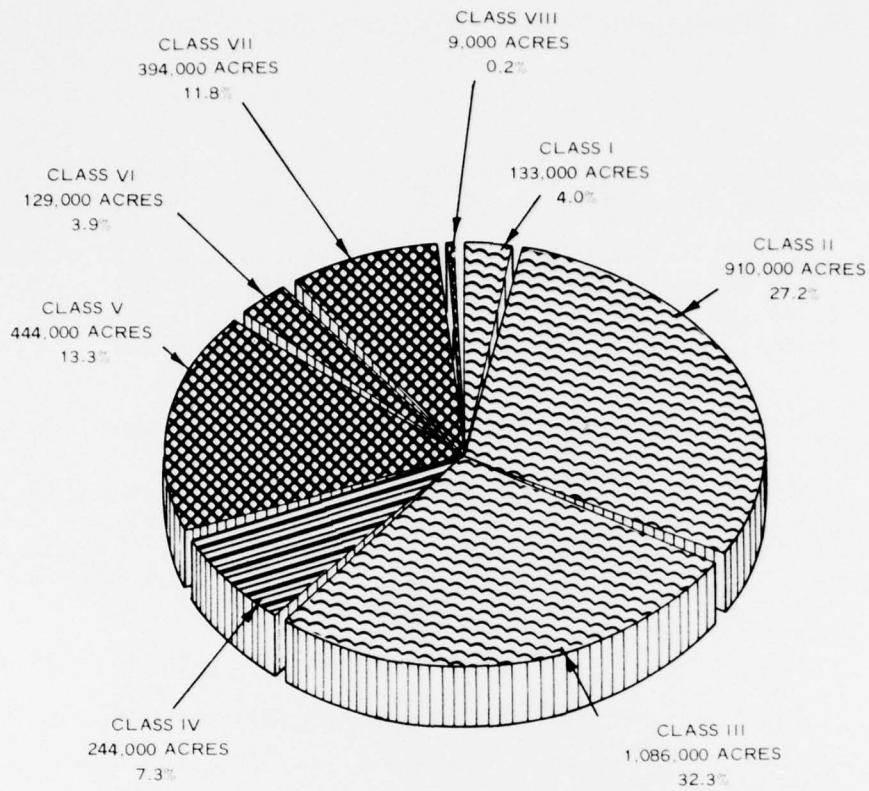
Table 40 - Agricultural Land by Capability Class, 1970, WRPA 8




Land Capability Class	Total Agricultural Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	Distribution Percent
I	132,831	74,652	45,031	8,927	4,221	4.0
II	910,085	142,131	279,747	469,438	18,769	27.2
III	1,086,220	139,910	232,466	706,137	7,707	32.3
IV	244,270	15,928	42,239	184,941	1,162	7.3
Total I-IV	2,373,406	372,621	599,483	1,369,443	31,859	70.8
V	444,359	4,233	28,685	410,156	1,285	13.3
VI	129,233	3,096	17,780	107,721	636	3.9
VII	394,259	3,050	9,010	376,653	5,546	11.8
VIII	8,743	0	42	27	8,674	0.2
Total V-VIII	976,594	10,379	55,517	894,557	16,141	29.2
Totals	3,350,000	383,000 <sup>1/</sup>	655,000 <sup>2/</sup>	2,264,000 <sup>3/</sup>	48,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forests. Includes pastured forest land.



-  LAND SUITABLE FOR CONTINUOUS CULTIVATION, 2,129,000 ACRES
-  LAND SUITABLE FOR OCCASIONAL CULTIVATION, 244,000 ACRES
-  LAND NOT SUITED FOR CULTIVATION, 976,000 ACRES

LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 8**

FIGURE 14

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 8 comprises 3,651,000 acres of land and water. Of this amount, 3,350,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. Since inventory land is that which is considered potentially available for agricultural use, this section is concerned with only the inventory portion of land.

### Cropland Suitable for Regular Cultivation

The 1970 inventory acreage for each major agricultural land use by land capability classes is shown in table 40. Conservation needs estimates indicate that 372,621 acres are in Classes I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 74,652 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 142,131 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 139,910 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; and 15,928 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 10,379 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus, of the 383,000 acres of cropland, 19 percent is adapted to very intensive cultivation, 37 percent to intensive, 37 percent to moderate, 4 percent to limited, and 3 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 557,244 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and, in some instances, clearing of timber and brush. Of the 557,244 acres suitable for cultivation, 45,031 acres are Class I; 279,747 acres are Class II; 232,466 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 8,927 acres not in generally level and fertile forest would make Class I cropland. Another 469,438 acres are suitable for regular cultivation as Class II cropland if simple erosion control practices are followed, and if the fertility level is raised by adding fertilizers or other soil amendments. An additional 706,137 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 1,184,502 acres of forest that could be converted to cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

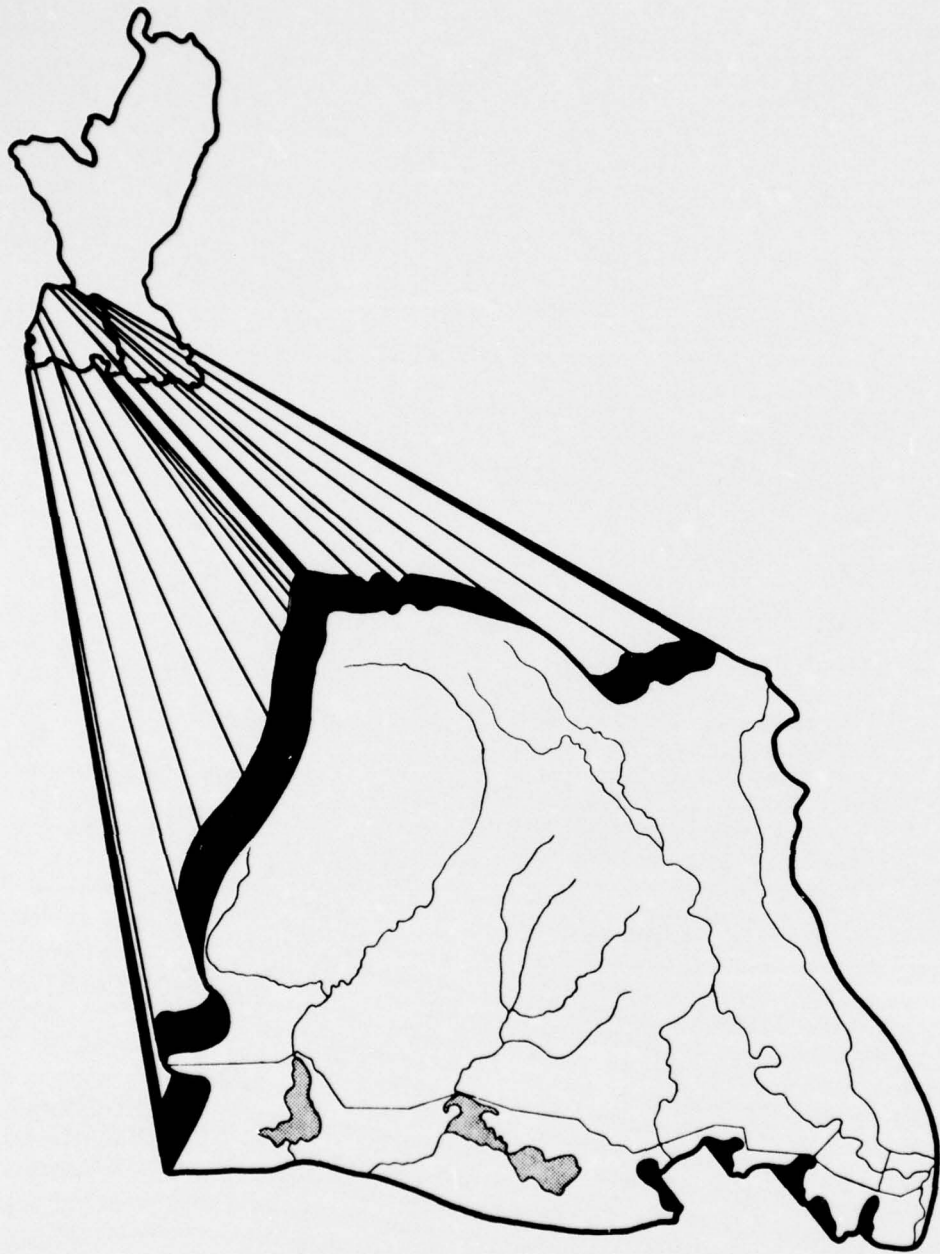
WRPA 8, with its acreage of suitable land, is well adapted for production of food and feed crops.

### Potential for Shift of Cropland to Grassland and Forest

Partly offsetting the potential for shift of grassland and forests to cropland are 10,379 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope that it should be kept in continuous sod or forests.

### Other Land

Other land comprises 48,000 acres in WRPA 8. Other land is defined as all agricultural land not classified as cropland, pasture and range, or forest and woodland. This land use includes acreages devoted to farmsteads, farm roads, ditch banks, feed lots, fence and hedge rows, nonfarm residences, investment tracts, coastal dunes, marshes not used for grazing, strip mines, and borrow and gravel pits. No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of this land.



**W  
R  
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9**

## WRPA 9

### DESCRIPTION

WRPA 9 is located in the southwest corner of the region and in the southwest portion of Louisiana. This WRPA contains approximately 8.5 million acres of land and water area or about 13,296 square miles.

There are four major drainage areas within the WRPA that drain directly into the Gulf of Mexico. These are the Calcasieu River, the Mermentau River, the Vermilion River, and Bayou Teche, and the area that drains into the Atchafalaya River.

The topography of the area is flat to slightly rolling, ranging from the coastal marshes through the coastal prairies to the rolling coastal plains.

The climate is mild to hot, with an average annual temperature of 69° F. The average length of growing season is about 270 days, ranging from 240 to 300 days from north to south. The normal annual precipitation is about 60 inches, with little variation throughout the area.

### LAND USE

#### Cropland

The 1970 cropland use in WRPA 9 is estimated at 1,827,000 acres (table 41). The entire 1,827,000 acres were essential for the production of crops in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 42. The description of the SPG's is presented in the regional summary. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in the Economics Appendix.

Projected cropland needs are presented in table 41. Program A needs are 2,853,000 acres in 1980; 2,877,000 acres in 2000; and 2,862,000 acres in 2020.

Program B needs are 2,853,000 acres in 1980; 3,026,000 acres in 2000; and 3,098,000 acres in 2020. Needs in 1980 for both Programs A and B are the same because of the assumption made concerning the derivation of Program B food and fiber requirements. No changes were made if the region's growth rate in production exceeded the average for the United States. Such was the case between 1970 and 1980; however,

Table 41 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 9

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	1,827,000	2,853,000	2,877,000	2,862,000
	B	1,827,000	2,853,000	3,026,000	3,098,000
Pasture	A	911,000 <sup>1/</sup>	777,000	1,042,000	1,393,000
	B	911,000	777,000	1,119,000	1,496,000
Pastured Cropland	A	749,000	954,000	1,278,000	1,710,000
	B	749,000	954,000	1,374,000	1,836,000
Pastured Forest	A	383,000	493,000	661,000	883,000
	B	383,000	493,000	710,000	949,000
Total Pasture	A	2,043,000	2,224,000	2,981,000	3,986,000
	B	2,043,000	2,224,000	3,203,000	4,281,000
Forest	A	3,442,000 <sup>2/</sup>	4,446,000	4,780,000	5,135,000
	B	3,442,000	4,757,000	5,258,000	5,700,000
Other	A	807,000 <sup>3/</sup>	734,000	752,000	787,000
	B	807,000	734,000	752,000	787,000
Urban	A	236,000	243,000	271,000	314,000
	B	236,000	260,000	307,000	352,000
Small Water <sup>4/</sup>	A	138,000	-	-	-
	B	138,000	-	-	-
Large Water <sup>4/</sup>	A	400,000	-	-	-
	B	400,000	-	-	-
Total	A	8,510,000	-	-	-
	B	8,510,000	-	-	-
Recreation <sup>5/</sup>	A	3,000	21,000	30,000	42,000
	B	3,000	23,000	34,000	49,000
Fish & Wildlife <sup>5/</sup>	A	1,889,000	4,503,000	5,091,000	5,972,000
	B	1,889,000	4,818,000	5,767,000	6,709,000
Minerals <sup>5/</sup>	A	7,000	11,000	16,000	24,000
	B	7,000	11,000	18,000	26,000
Environmental <sup>5/</sup>	A	1,855,000	1,855,000	1,855,000	1,855,000
	B	1,855,000	1,855,000	1,855,000	1,855,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest land, forested wetlands, and 372,000 acres of Federal forest lands.

<sup>3/</sup> Includes lands (predominately marsh) not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 42 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 9

State And Soil Productivity Group	Total Agricultural Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
Louisiana					
39	34,238	19,661	11,275	0	3,302
40	40,146	32,643	4,839	536	2,128
41	112,680	68,335	36,156	3,082	5,107
42	6,963	1,575	4,974	414	0
43	178,962	125,709	42,439	6,838	3,976
44	352,264	178,367	91,630	74,072	8,195
45	647,576	262,534	64,306	309,734	11,002
46	21,432	11,745	0	6,259	3,428
47	2,508,302	1,733,065	197,073	539,564	38,600
48	7,353	1,763	4,096	1,109	385
49	1,070,940	106,656	64,805	894,263	5,216
50	16,939	0	7,249	9,690	0
51	63,447	3,776	1,689	57,982	0
52	99,290	20,685	64,406	7,563	6,636
53	442,192	8,981	14,614	418,378	219
54	134,494	505	7,511	125,019	1,459
55	7,258	0	0	7,258	0
56	422,955	0	16,388	406,068	499
58	1,196,569	0	277,550	202,171	716,848
TOTAL	7,364,000	2,576,000 <sup>1/</sup>	911,000 <sup>2/</sup>	3,070,000 <sup>3/</sup>	807,000

1/ Includes pastured cropland.

2/ Includes permanent pasture and range.

3/ Does not include federal forest lands. Includes pastured forest land.

between 1980 and 2000 and between 2000 and 2020, the growth rate of the region was below that of the United States. Thus the difference in the growth rate (approximately 7 percent) was used to adjust the food and fiber requirements in the year 2000 and the year 2020. The resulting requirements were then translated into cropland needs and are consequently higher than for Program A.



Sugarcane is one of the most important agricultural crops in WRPA 9

#### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 9.

At the present time (1970), there are 2,043,000 acres of land utilized for the grazing of livestock within the area. Of this, 911,000 acres is permanent pasture, including grazed marshlands. The remaining acreage is made up of 749,000 acres of pastured cropland and 383,000 acres of pastured forest land (table 41).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on grazed marshland.

Primarily, there are two types of land used for pasture--summer and winter pastures and grazed marshland. Summer pastures generally utilize introduced perennial grasses and legumes while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue. Grazed marshland is managed for the adapted native grasses.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 2,224,000 acres; year 2000, 2,981,000 acres; and year 2020, 3,986,000 acres.

For Program B, the projected needs are: year 1980, 2,224,000 acres; year 2000, 3,203,000 acres; and for 2020, 4,281,000 acres (table 41).

#### Forest

Commercial forest land within WRPA 9 presently amounts to 3,442,000 acres, or about 40 percent of the total land area. This area of commercial forest land includes an aggregate of 3,217,000 acres of privately owned and 225,000 acres of federally owned forests. National Forest System lands comprise about 79 percent of all the federal commercial forest land. The remaining 21 percent is in Fort Polk Army Reservation.

The forests of WRPA 9 have been typed into six major forest classifications which represent a broad spectrum of softwood and hardwood resources. The most common types are loblolly-shortleaf pine and oak-



Oak-gum-cypress forests in WRPA 9

gum-cypress. Southern pine types, which include loblolly-shortleaf and longleaf-slash pine, account for 42 percent of the forests within the WRPA. Oak-gum-cypress type occupies 31 percent of the forested area. Loblolly-shortleaf pine forests are found throughout the WRPA. Longleaf-slash pine forests occur in the southeastern portion of the area, and oak-pine occurs in the northwestern portion. Oak-gum-cypress and elm-ash-cottonwood forests are found along the floodplains of major streams and a small amount of oak-hickory type is found along the western boundary of the WRPA.

The present condition of the forest resource in WRPA 9 ranges from poor in the hardwood forests to good in the pine forests. Most forest management has been directed to the pine and pine hardwood forests, leaving the hardwood forests in a relatively poor unmanaged condition.

The forests produce a variety of products, with lumber and woodpulp being the most important. There are presently 12 sawmills, 2 woodpulp mills, 7 wood-preserving plants, and 3 veneer plants within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 4,446,000 acres; 2000, 4,780,000 acres; and 2020, 5,135,000 acres. Program B, for the year 1980, 4,757,000 acres; 2000, 5,258,000 acres; and 2020, 5,700,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 41.

#### Other Land

In 1970, 807,000 acres in WRPA 9 were classed as other land. Projected needs for this category of land use are 734,000 acres in 1980; 752,000 acres in 2000; and 787,000 acres in 2020.

#### Urban and Built-Up Areas

Urban and built-up areas in WRPA 9 comprise 236,000 acres, or 2.8 percent of total land in the WRPA (table 41). This proportion is less than the regional average. The area includes 42,300 acres of urban land used by cities of 5,000 or more inhabitants and 193,700 acres of land used by cities with less than 5,000 population and built-up areas. The relatively high amount of land in the first category is due primarily to the presence of three cities in the WRPA with populations greater than 25,000: Lafayette, Lake Charles, and New Iberia, La. There are presently 6,800 acres of land in cities with populations of 15,000 to 24,999; and there are presently 17,500 acres of land in cities of 5,000 to 14,999 in population.

Residentially oriented land in urban centers with 5,000 or more inhabitants (residential and streets usages) account for 37,800 acres,

or more than 75 percent, of the total land in these areas. This is due primarily to the fact that more than half of the population in WRPA 9 is concentrated in areas greater than 5,000 in population. Of the other three classes of use, public land is presently the largest, with 5,300 acres; and commercial acreage is the smallest, with 2,300 acres.

Table 43 contains projected land use needs under Program A for urban and built-up areas in WRPA 9 through 2020. As indicated, total urban and built-up areas will increase by 78,000 acres, or 33 percent between 1970 and 2020. The bulk of this increase will be in cities with less than 5,000 inhabitants in size and in built-up areas which by 2020 will occupy 249,800 acres. This is 56,100 acres greater than present usage. Urban needs for cities with populations of 5,000 and greater will increase by 21,900 acres by 2020.

Of the 21,900 acres of larger urban areas projected for 2020 under Program A, 10,400 acres will be needed for residential usage. Street needs by 2020 will increase by 5,500 acres. These two increases cause a slight shift in the share of urban land. More than 75 percent of urban acreage is now in these two classes; by 2020 that percentage will be 75 percent. Commercial, industrial, and public land needs gain from this slight shift in land usage.

Program B projected needs to the year 2020 are also included in table 43. By its nature, Program B projects greater needs than Program A. Urban and built-up area needs for the WRPA are expected to increase from 236,000 acres in 1970 to 352,000 acres by 2020, an increase of 49.2 percent. Urban needs for centers of population of 5,000 and greater will represent 26.5 percent of projected total urban and built-up area needs. Such an increase represents a very great shift in the composition of urban and built-up land.

Under Program B, there will be little shift in the relative positions of the five listed land use subcategories, as indicated in table 43. Residential needs will be 43,900 acres; streets, servitudes, and rights-of-way needs will be 26,100 acres; public land needs will be 72,300 acres; industrial needs will be 6,000 acres; and commercial needs will be 5,100 acres.

#### Federal Lands

At the present time, WRPA 9 contains 372,000 acres of federally owned land. National Forest ownership covers 177,000 acres of the area. The remaining 195,000 acres is made up of National Parks, National Wildlife Refuges, Corps of Engineers' flood gates, military bases, and administrative sites. Of the total federal land, 225,000 acres are in forest and 147,000 acres are nonforest. Most of the nonforest acreage is in Sabine National Wildlife Refuge (143,000 acres of marshland).

Table 43 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 9

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	236,000	243,000	271,000	314,000
Program B	236,000	260,000	307,000	352,000
Built-Up <u>1/</u>				
Program A	193,700	195,900	215,400	249,800
Program B	193,700	208,200	234,900	258,600
Urban <u>2/</u>				
Program A	42,300	47,100	55,600	64,200
Program B	42,300	51,800	72,100	93,400
Residential				
Program A	19,600	21,900	25,900	30,000
Program B	19,600	24,100	33,700	43,900
Commercial				
Program A	2,300	2,500	3,000	3,500
Program B	2,300	2,800	4,000	5,100
Streets				
Program A	12,300	13,600	15,700	17,800
Program B	12,300	15,100	20,600	26,100
Industrial				
Program A	2,800	3,100	3,800	4,400
Program B	2,800	3,300	4,600	6,000
Public				
Program A	5,300	6,000	7,200	8,500
Program B	5,300	6,500	9,200	12,300

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

## Recreation

WRPA 9 supports a variety of recreation uses. Three State Parks provide land and water areas for camping, picnicking, boating, swimming, hiking, nature studies, and outdoor games and sports.

There are 399,529 acres of large lakes within the WRPA which provide water areas for boating and swimming. In addition, the area contains 9,775 miles of streams, of which 928 miles are considered suitable for high quality recreation purposes. All of these streams are suitable in character for some type of recreation use.

The Kisatchie National Forest has 177,000 acres available for dispersed recreation use. There are three recreation areas in this forest developed for picnicking, camping, swimming, boating, hiking, bird watching, and playing outdoor games and sports.

Playing outdoor games and sports is a significant recreation activity. There are 370 acres developed for games such as golf, tennis, football, baseball, and sports such as track. Almost all land and water is suitable in character for recreation, depending upon the needs of the person or persons involved. However, the key activities are camping, picnicking, swimming, boating, and playing outdoor games and sports. The 1970 land use for these activities in WRPA 9 is 3,400 acres. Projected needs for Program A are 21,000 acres in 1980; 29,800 acres in 2000; and 42,200 acres in 2020. Program B needs are 22,700 acres in 1980; 34,200 acres in 2000; and 48,600 acres in 2020 (table 41).

## Fish and Wildlife

Fish and wildlife groups in WRPA 9 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 1,323,900 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat. There are 233,800 acres of upland hardwood forest which are productive big game habitat and second in production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 419,400 acres of pine hardwood habitat and 1,464,600 acres of pine habitat in the WRPA. Since big game populations are dependent upon suitable habitat, the wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

Most of WRPA 9 falls in the Mississippi Flyway. The WRPA is, therefore, important to both migrating and wintering waterfowl. There are



Wetlands in WRPA 9

1,079,972 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, nutria, raccoon, skunk, beaver, opossum, foxes, and bobcat.

Four major lakes located within the WRPA provide 140,000 acres of fishery habitat. In addition, there are 398,000 acres of other lake fishing scattered within the area. There are 928 miles of streams in the area which are capable of supporting a fishery resource. Water surface use and needs for lake habitat for fish and wildlife purposes are discussed in Appendix Q, Fish and Wildlife.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Most of the animals, especially birds, are important in satisfying nonconsumptive wildlife uses. Many rare or endangered species such as the wolf, osprey, alligators, and bald eagle are found here.

The 1970 area utilized for fish and wildlife was 1,889,000 acres. Projected needs for Program A are 4,503,000 acres in 1980; 5,091,000 acres in 2000; and 5,972,000 acres in 2020. Program B needs are

4,818,000 acres in 1980; 5,767,000 acres in 2000, and 6,709,000 acres in 2020 (table 41).

#### Minerals

Crude oil and natural gas are produced in all parishes in WRPA 9. Offshore production has become particularly important in recent years. This area was the leading producer of natural gas in the Lower Mississippi Region in the late 1960's. In the past, about 27 percent of the crude oil produced in this region was recovered in WRPA 9.

Both salt and sulfur are mined in the area. Salt resources are almost unlimited. Cement and lime are also produced. Sand, gravel, clay, and stone (shell) are all mined in most of the area.

At present there are 6,500 acres of land used for mineral production in WRPA 9. In the future for Program A it is projected that 10,600 acres will be needed for mineral production in 1980; 16,400 acres by year 2000; and 23,600 acres by year 2020. For Program B the need is expected to be 11,000 acres by 1980; 17,500 acres by 2000; and 25,600 acres by 2020.

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 1,855,000 acres. Composition of this acreage may be found in Appendix U.

#### Soils

Soil productivity groups for this Louisiana planning area were developed from five land resource areas - 131, 133, 134, 150, and 151. The largest acreage of SPG's is made up of SPG's 44, 45, 47, 49, 53, 56, and 58, or 90 percent of the total.

The distribution by soil productivity groups is shown in table 42. The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 44 and figure 15.

The production requirements or needs for agricultural commodities for Programs A and B for 1970 and for future time frames 1980, 2000, and 2020 are shown in Appendix B, Economics.

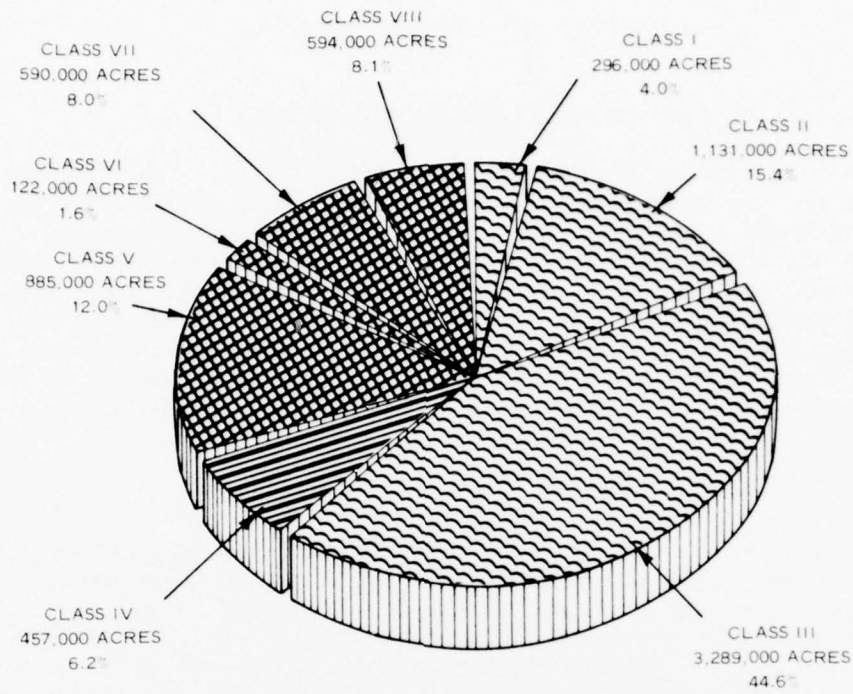
Table 44 - Agricultural Land by Capability Class, 1970, WRPA 9

Land Capability Class	Total Agricultural					Distri- bution Percent
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	
I	296,385	202,167	71,071	11,686	11,461	4.0
II	1,131,156	392,699	180,118	538,986	19,353	15.4
III	3,288,641	1,771,323	359,976	1,103,511	53,831	44.6
IV	456,505	198,142	28,388	226,812	3,163	6.2
Total I-IV	5,172,687	2,564,331	639,553	1,880,995	87,808	70.2
V	885,329	11,178	32,704	834,257	7,190	12.0
VI	121,941	491	9,959	109,033	2,458	1.7
VII	589,971	0	228,784	244,488	116,699	8.0
VIII	594,072	0	0	1,227	592,845	8.1
Total V-VIII	2,191,313	11,669	271,447	1,189,005	719,192	29.8
Totals	7,364,000	2,576,000 <sup>1/</sup>	911,000 <sup>2/</sup>	3,070,000 <sup>3/</sup>	807,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forests. Includes pastured forest land.



LAND SUITABLE FOR CONTINUOUS CULTIVATION, 4,716,000 ACRES



LAND SUITABLE FOR OCCASIONAL CULTIVATION, 457,000 ACRES



LAND NOT SUITED FOR CULTIVATION, 2,191,000 ACRES

LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 9**

FIGURE 15

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 9 comprises 8,510,000 acres of land and water. Of this amount, 7,364,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. The inventory acreage was obtained by subtracting 372,000 acres of federal land, 236,000 acres of urban and built-up areas, and 538,000 acres of water from the total area. Since inventory land is that which is considered potentially available for agricultural use, this section is concerned only with the inventory portion of land. Approximately 815,000 acres of land and water in this WRPA (almost 10 percent of the total) are located in the Atchafalaya Basin floodways which restricts its use for some purposes.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 44. Conservation needs estimates indicate that 2,564,331 acres are in Classes I through IV which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 202,167 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 392,699 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 1,771,323 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; and 198,142 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 11,669 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 2,576,000 acres of cropland, 8 percent is adapted to very intensive cultivation, 15 percent to intensive, 68 percent to moderate, 8 percent to limited, and less than 1 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 611,165 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and in some instances clearing of timber and brush. Of the 611,165 acres suitable for cultivation, 71,071 acres are Class I, 180,118 acres are Class II, and 359,976 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

#### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 11,686 acres now in generally level and fertile forest would make Class I cropland. Another 538,986 acres are suitable for regular cultivation as Class II cropland, if simple erosion control practices are followed, and if the fertility level is raised by adding fertilizers or other soil amendments. An additional 1,103,511 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 1,654,183 acres of forest that could be converted to cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

WRPA 9, with its acreage of suitable land, is well adapted for production of food and feed crops.

#### Potential for Shift of Cropland to Grassland and Forest

Partly offsetting the potential for shift of grassland and forests to cropland is 11,669 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope that it should be kept in continuous sod or forests.

#### Other Land

Other land comprises 807,000 acres in WRPA 9. No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of this land.



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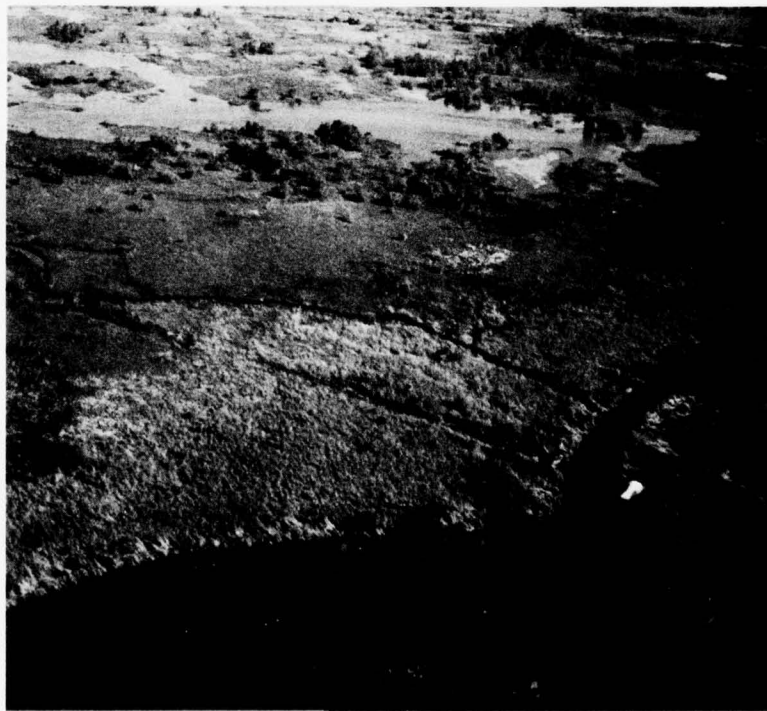
## WRPA 10

### DESCRIPTION

WRPA 10 is located in the southeast corner of the region. It is entirely within the State of Louisiana and is located in the southeast portion of the state. This WRPA contains approximately 4.9 million acres of land and water area or about 7,729 square miles.

There are three main drainage areas for the WRPA. These are the area drained by the Tchefuncte River and Lacombe Bayou directly into Lake Pontchartrain, the remaining area east of the Mississippi River that drains directly into the Gulf of Mexico through Bayou Terre aux Boeufs and waterways from New Orleans to the Gulf, and that part west of the Mississippi River that drains directly into the Gulf of Mexico through a number of bayous and waterways, the largest of which is Bayou Lafourche.

The topography of the area is flat to slightly rolling. Coastal marsh, delta areas, and large water areas make up most of the WRPA.



A typical marsh area in WRPA 10

The climate is mild to hot with an average temperature of around 69° F. The average length of growing season is about 270 days, ranging from around 240 to 300 days north to south. The normal annual precipitation is about 62 inches to 64 inches northeast to southeast.

## LAND USE

### Cropland

The 1970 cropland use in WRPA 10 is estimated at 310,000 acres (table 45). However, only 214,000 acres were harvested in 1970. The available acreage of soils by soil productivity groups (SPG's) is shown in table 46. The description of the SPG's is presented in the Regional Summary. The physical quantity of agricultural products accruing from the WRPA for the year 1970 and the projected requirements for 1980, 2000, and 2020 are presented in Appendix B, Economics.

Projected cropland needs are presented in table 45. Program A needs are 195,000 acres in 1980, 180,000 acres in 2000, and 173,000 acres in 2020. Program B needs are 195,000 acres in 1980, 206,000 acres in 2000, and 196,000 acres in 2020. Needs in 1980 for both Programs A and B are the same because of the assumption made concerning the derivation of Program B food and fiber requirements. No changes were made if the region's growth rate in production exceeded the average for the United States. Such was the case between 1970 and 1980; however, between 1980 and 2000 and between 2000 and 2020, the growth rate of the region was below that of the United States. Thus the difference in the growth rate (approximately 7 percent) was used to adjust the food and fiber requirements in the year 2000 and the year 2020. The resulting requirements were then translated into cropland needs and are consequently higher than for Program A.

### Pasture

The production of livestock and livestock products is an important part of the agricultural economy of WRPA 10.

At present time (1970), there are 283,000 acres of land utilized for the grazing of livestock within the area. Of this, 202,000 acres is permanent pasture, including grazed marshlands. The remaining acreage is made up of 49,000 acres of pastured cropland and 32,000 acres of pastured forest land (table 45).

Land management for pasture varies from very intense on permanent type pasture, which generally requires annual fertilization, weed control, and rotation grazing, to practically no management (except proper grazing) as on grazed marshland.

Table 45 - Current Land Use And Projected Land Needs For Specific Uses, WRPA 10

Item	Program	1970	1980	2000	2020
		Use Acres	Needs Acres	Needs Acres	Needs Acres
Cropland	A	310,000	195,000	180,000	173,000
	B	310,000	195,000	206,000	196,000
Pasture	A	202,000 <sup>1/</sup>	211,000	282,000	379,000
	B	202,000	211,000	305,000	406,000
Pastured Cropland	A	49,000	65,000	87,000	117,000
	B	49,000	65,000	94,000	125,000
Pastured Forest	A	32,000	42,000	57,000	76,000
	B	32,000	42,000	61,000	82,000
Total Pasture	A	283,000	318,000	426,000	572,000
	B	283,000	318,000	458,000	613,000
Forest	A	1,317,000 <sup>2/</sup>	1,553,000	1,684,000	1,439,000
	B	1,317,000	1,677,000	1,886,000	1,626,000
Other	A	1,681,000 <sup>3/</sup>	1,671,000	1,664,000	1,653,000
	B	1,681,000	1,671,000	1,664,000	1,653,000
Urban	A	250,000	260,000	327,000	419,000
	B	250,000	280,000	365,000	476,000
Small Water <sup>4/</sup>	A	219,000	-	-	-
	B	219,000	-	-	-
Large Water <sup>4/</sup>	A	939,000	-	-	-
	B	939,000	-	-	-
Total	A	4,947,000	-	-	-
	B	4,947,000	-	-	-
Recreation <sup>5/</sup>	A	3,000	41,000	64,000	101,000
	B	3,000	44,000	73,000	118,000
Fish & Wildlife <sup>5/</sup>	A	1,360,000	8,639,000	11,046,000	14,319,000
	B	1,360,000	9,329,000	12,278,000	16,259,000
Minerals <sup>5/</sup>	A	14,000	17,000	23,000	50,000
	B	14,000	24,000	40,000	58,000
Environmental <sup>5/</sup>	A	1,162,000	1,162,000	1,162,000	1,162,000
	B	1,162,000	1,162,000	1,162,000	1,162,000

<sup>1/</sup> Pasture and range land.

<sup>2/</sup> Includes pastured forest land, forested wetlands, and 17,000 acres of Federal forest lands.

<sup>3/</sup> Includes 41,000 acres of Federal non-forest land and lands (predominately marsh) not used for any other purpose. Needs for wetlands are included in the Fish and Wildlife category.

<sup>4/</sup> Needs for water surface area are developed in various appendixes and summarized in Appendix T, Plan Formulation.

<sup>5/</sup> Under agricultural and forestry definition of land uses, these acreages are multi-use with other land use categories.

Table 46 - Land Classification, CNI Data, By Soil Productivity Group, 1970, WRPA 10

State And Soil Productivity Group	Total Agricultural				
	Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres
Louisiana					
39	88,942	75,415	6,187	2,364	4,976
41	18,779	4,216	5,658	8,905	0
42	75,885	56,126	7,487	7,829	4,443
43	56,497	50,850	990	823	3,834
44	40,969	7,629	4,656	27,606	1,078
45	210,186	105,024	22,263	78,012	4,887
47	274,899	9,183	61,700	202,151	1,865
48	4,726	2,774	1,062	890	0
49	77,434	14,733	13,449	48,533	719
52	1,422	0	908	0	514
53	76,776	5,785	7,764	63,227	0
54	3,060	0	2,342	0	718
56	213,517	27,265	11,000	172,141	3,111
58	2,357,908	0	56,534	687,519	1,613,855
TOTAL	3,501,000	359,000 <sup>1/</sup>	202,000 <sup>2/</sup>	1,300,000 <sup>3/</sup>	1,640,000

1/ Includes pastured cropland.

2/ Includes permanent pasture and range.

3/ Does not include federal forest lands. Includes pastured forest land.

Primarily, there are two types of land used for pasture--summer and winter pastures and grazed marshland. Summer pastures generally utilize introduced perennial grasses and legumes, while winter pastures utilize annuals such as oats, winter wheat, ryegrass, and legumes, as well as perennials such as tall fescue. Grazed marshland is managed for the adapted native grasses.

The principal use of pasture is the production of beef cattle. Dairying is second in importance and swine, sheep, and poultry production are minor uses.

The projected needs for pasture and other forage-producing lands for Program A are: year 1980, 318,000 acres; year 2000, 426,000 acres; and year 2020, 572,000 acres.

For Program B, the projected needs are: year 1980, 318,000 acres; year 2000, 458,000 acres; and for 2020, 613,000 acres (table 45).

## Forest

Commercial forest land within WRPA 10 presently amounts to 1,317,000 acres, almost 27 percent of the total land use. Almost all of the commercial forest land in the WRPA is in private ownership, most of it being in miscellaneous land uses.

The forests of WRPA 10 have been typed into six major forest classifications which represent a broad spectrum of softwood and hardwood resources. The most common type is oak-gum-cypress which occupies 65 percent of the area. Longleaf-slash pine occupies 11 percent and elm-ash-cottonwood, loblolly-shortleaf pine, oak-pine, and oak-hickory types occupy the remaining 24 percent of the forest lands. Oak-gum-cypress type is located on the floodplains of major streams; elm-ash-cottonwood type occurs in the same general region of the better-drained terraces of the floodplains. The oak-pine and loblolly-shortleaf pine types occur in the northern and central portion of the WRPA. Longleaf-slash pine forests are found in the southeast portion of the WRPA and oak-hickory type occurs in the northern portion.

The present condition of the forest resource in WRPA 10 ranges from poor in the hardwood forests to good in the pine forests. Most forest management has been directed to the pine forests, leaving the hardwood forests in a relatively poor unmanaged condition.

The forest produces a variety of products with lumber and woodpulp being the most important. There are presently three sawmills, six wood-preserving plants, and one veneer plant within the WRPA.

Future needs for forest land to meet the demand for forest products are as follows: Program A, for the year 1980, 1,553,000 acres; 2000, 1,684,000 acres; and 2020, 1,439,000 acres. Program B, for the year 1980, 1,677,000 acres; 2000, 1,886,000 acres; and 2020, 1,626,000 acres. In addition to these needs, forest lands satisfy needs for wildlife habitat, recreation, and environmental purposes. These needs are discussed in appropriate sections and displayed in table 45.

## Other Land

In 1970, 1,681,000 acres were classed as other land in WRPA 10. Projected needs are 1,671,000 acres in 1980, 1,664,000 acres in 2000, and 1,653,000 acres in 2020.

## Urban and Built-Up Areas

Urban and built-up areas in WRPA 10 currently comprise 230,000 acres, which is 4.6 percent of total land in the WRPA (table 45). This proportion is greater than the regional average. The area includes 160,200 acres utilized by urban centers of 5,000 and greater population

and 69,800 acres of land in other urban and built-up uses. This WRPA is the only area in the region with more land in urban centers of 5,000 and above in population than in other urban and built-up areas. These larger urban areas constitute 69.3 percent of total urban and built-up area land. This high proportion is due primarily to two factors: the dominance of the New Orleans SMSA and the relatively small amount of useful land. The New Orleans SMSA includes the incorporated areas of New Orleans, Kenner, Gretna, Harahan, and Westwego. Unincorporated urban areas outside the SMSA include Metairie, Harvey, Marrero, Terrytown, Little Farms, and Jefferson Heights. The area, in addition, contains the City of Houma (25,000 and over) and numerous urban areas in the 5,000 to 14,999 population class and the 15,000 to 24,999 population class.

The population of WRPA 10 is 1,308,744, of which 980,838 is located in urban areas of 5,000 or greater population. It can be expected that a sizeable portion of the remaining population is located in suburban clusters around the larger cities. The three major categories of use by urban centers of 5,000 and above population are residential, with 67,600 acres; streets, with 40,900 acres; and public land, with 35,800 acres.

Table 47 contains projected land use needs for urban and built-up areas in WRPA 10 through 2020. Under Program A, total urban and built-up areas will increase by 189,000 acres, or 82.2 percent, between 1970 and 2020. The major portion of this increase will be in urban needs for centers of population of 5,000 and above, which by 2020 will be 269,800 acres. This is 109,600 acres greater than 1970 usage. Remaining needs will increase by 79,400 acres by 2020.

The five categories under urban land needs will shift slightly during the 30-year period. Although residential acreage will increase its needs in proportion to total urban needs, needs by streets and public usage will decline so that the three main land-usage categories will have a slightly smaller share of total urban land. Both commercial and industrial land needs will gain from the shift.

Program B projected needs are also included in table 47. By its nature, Program B projects greater needs than Program A. Urban and built-up area needs for the WRPA are expected to increase from 230,000 acres in 1970 to 476,000 acres by 2020, an increase of 10 percent. This increase is due primarily to a projected increase in the economy that is greater than the expected national average.

Since urban land needs for population centers of 5,000 and more persons will almost double by 2020, all urban land use categories are expected to be approximately double 1970 usage by 2020. The most significant exception is the streets category, which will increase to only 76,000 acres from its present 40,900 acres. The shift in share, as in

Table 47 - Land Use Distribution of Urban And Built-Up Areas,  
WRPA 10

<u>Item</u>	<u>1970</u>	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total Urban And Built-Up	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Program A	230,000	260,000	327,000	419,000
Program B	230,000	280,000	365,000	476,000
Built-Up <u>1/</u>				
Program A	69,800	85,800	111,700	149,200
Program B	69,800	89,300	121,000	163,500
Urban <u>2/</u>				
Program A	160,200	174,200	215,300	269,800
Program B	160,200	190,700	244,000	312,500
Residential				
Program A	67,600	73,600	91,300	114,700
Program B	67,600	80,500	103,400	132,800
Commercial				
Program A	10,400	11,400	14,200	17,900
Program B	10,400	12,500	16,100	20,800
Streets				
Program A	40,900	44,100	53,400	65,400
Program B	40,900	48,500	60,700	76,000
Industrial				
Program A	5,500	6,000	7,500	9,600
Program B	5,500	6,700	8,700	11,400
Public				
Program A	35,800	39,100	48,900	62,200
Program B	35,800	42,500	55,100	71,500

1/ Includes cities less than 5,000 population.

2/ Cities having 5,000 or more inhabitants.

Program A, is found in projected needs for industrial and commercial land use.

#### Federal Lands

In 1970, WRPA 10 contained 58,000 acres of federally owned land. The Delta and Gulf Islands National Wildlife Refuges account for 53,000 acres of the ownership, which is made up of marsh lands. The remaining 5,000 acres is made up of administrative sites and other land uses.

#### Recreation

WRPA 10 supports a variety of recreation uses. Two State Parks provide land and water areas for camping, picnicking, boating, swimming, hiking, nature studies, and outdoor games and sports.

There are 938,946 acres of lakes within the WRPA which provide water surface area for boating and swimming. In addition, the area contains 8,373 miles of streams, of which 329 miles are considered suitable for high quality recreation purposes. All of these streams are suitable in character for some type of recreation use.

Playing outdoor games and sports is a significant recreation activity. There are 790 acres developed for games such as golf, tennis, football, baseball, and sports such as track.

Almost all land and water area may be used for recreation, depending upon the needs of the person or persons involved. However, the key activities are camping, picnicking, swimming, boating, and playing outdoor games and sports. The 1970 land use for these activities in WRPA 10 is 3,000 acres. Projected needs are presented in table 45. Program A needs are 40,500 acres in 1980; 64,400 acres in 2000; and 101,400 acres in 2020. Program B needs are 43,900 acres in 1980; 73,200 acres in 2000, and 117,900 acres in 2020 (table 45).

#### Fish and Wildlife

Fish and wildlife groups in WRPA 10 include small game, big game, waterfowl, fur animals, fish, and other wildlife. Commonly hunted small game animals in the area include squirrel, bobwhite quail, mourning dove, and cottontail rabbit.

There are 970,400 acres of bottomland hardwood forests within the WRPA. High soil fertility, abundant mast, and adequate water make these forests productive wildlife habitat. There are 49,800 acres of upland hardwood forest which are productive big game habitat and second in production only to the bottomland hardwood forests. These forests constitute high quality deer and turkey range. There are 28,500 acres of pine hardwood habitat and 268,300 acres of pine habitat in the WRPA.

Since big game populations are dependent upon suitable habitat, the wildlife resource ranges from excellent in the bottomland hardwood forests of the delta to poor in the pine and pine hardwood forests of the northern counties.

Most of WRPA 10 falls in the Mississippi Flyway. It is therefore important to both migrating and wintering waterfowl. There are 820,000 acres classified as wetlands which constitute important waterfowl habitat within the WRPA.

Common fur-bearing animals within the area are mink, otter, muskrat, nutria, raccoon, skunk, beaver, opossum, foxes, and bobcat. Nutria is the most important fur-bearing animal in the area.

Four major lakes located within the WRPA provide 467,000 acres of fishery habitat. In addition, there are 691,000 acres of other lake fishing scattered within the area. There are 329 miles of streams in the area which are capable of supporting a fishery resource. Appendix Q, Fish and Wildlife, contains details of fish and wildlife needs.

All types of animals not considered as game, fish, or fur-bearing animals are considered as other wildlife. Most of the animals, especially birds, are important in satisfying nonconsumptive wildlife uses. Many species of nongame wildlife occur in WRPA 10. Several species such as the cougar, wolf, peregrine falcon, southern bald eagle, osprey, brown pelican, and bachmanni squirrel that are classed as rare or endangered are found here.

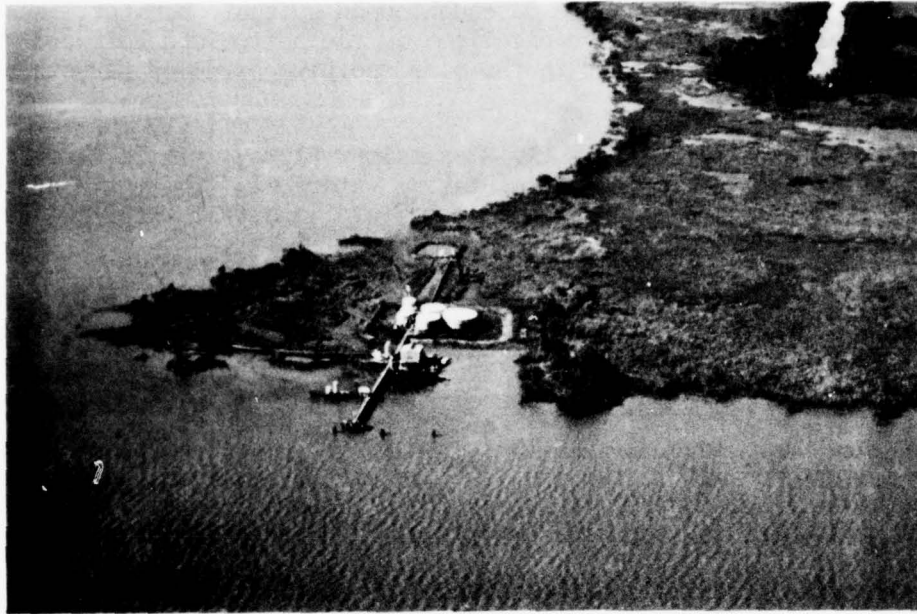
The 1970 area utilized for fish and wildlife was 1,360,000 acres. Program A needs are 8,639,000 acres in 1980; 11,046,000 acres in 2000; and 14,319,000 acres in 2020. Program B needs are 9,329,000 acres in 1980; 12,278,000 acres in 2000; and 16,259,000 acres in 2020 (table 45).

#### Minerals

All parishes in WRPA 10 have produced petroleum and natural gas in the past. In 1968 and 1969 the value of mineral production in Plaquemines Parish exceeded \$1 billion. Crude oil has been produced in prolific quantity in the area. Natural gas is second only to petroleum.

Clay, sand, gravel, and stone (shell) are produced in most parishes in the area. Lime is produced in Orleans Parish. Salt is mined in Assumption, Jefferson, and Plaquemines Parishes and the resource base is immense. Sulfur is produced in Jefferson, Lafourche, Plaquemines, and Terrebonne Parishes.

At present 14,100 acres are used for mineral production in the area. Projected area needed for minerals for Program A is 17,400 acres for 1980; 23,100 acres for year 2000; and 29,500 acres for year 2020.



Crude oil production in WRPA 10

Projected needs for Program B are 23,900 acres in 1980; 40,200 acres in 2000; and 57,500 acres for 2020.

#### Environmental

Environmental land needs consist of the areas occupied by unique botanical systems, lands bordering lakes or streams of outstanding natural beauty, and other items. These resources exist now and are non-renewable. Therefore the 1970, 1980, 2000, and 2020 needs are of the same magnitude, 1,162,000 acres. Composition of this acreage may be found in Appendix U, The Environment.

#### Soils

WRPA 10 soil productivity groups were developed from five land resource areas - 131, 133, 134, 151, and 152. The largest acreage of SPG's is made up of SPG's 39, 42, 45, 47, 49, 53, 56, and 58, or 96 percent of the total.

The distribution by soil productivity groups is shown in table 45. The distribution of land by capability classes for cropland, pasture, forest, and other is shown in table 48 and figure 16.

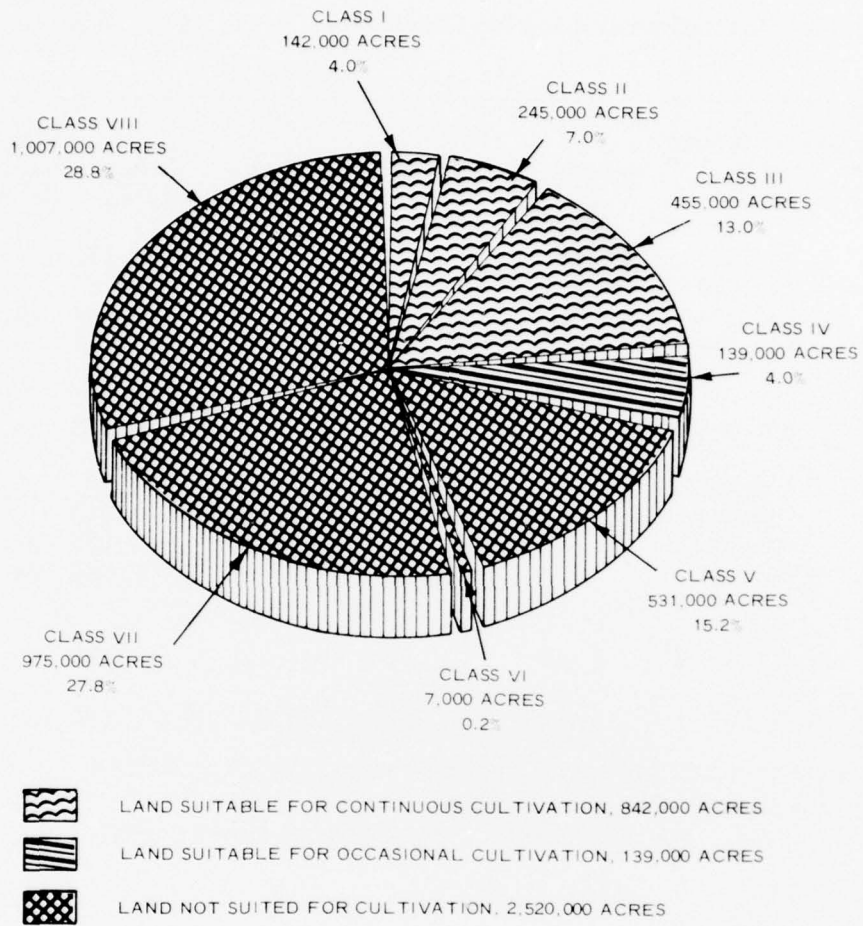
Table 48 - Agricultural Land by Capability Class, 1970, WRPA 10

Land Capability Class	Total Agricultural Land Acres	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	Distribution Percent
I	142,371	98,078	24,458	15,554	4,281	4.0
II	244,769	129,408	25,226	82,541	7,594	7.0
III	455,585	123,982	54,023	271,108	6,472	13.0
IV	138,849	2,025	26,540	109,076	1,208	4.0
Total I-IV	981,574	353,493	130,247	478,279	19,555	28.0
V	531,122	5,507	7,212	510,006	8,397	15.2
VI	6,541	0	4,709	1,380	452	0.2
VII	974,957	0	58,918	307,029	609,010	27.8
VIII	1,006,806	0	914	3,306	1,002,586	28.8
Total V-VIII	2,519,426	5,507	71,753	821,721	1,620,445	72.0
Totals	3,501,000	359,000 <sup>1/</sup>	202,000 <sup>2/</sup>	1,300,000 <sup>3/</sup>	1,640,000	100.0

<sup>1/</sup> Includes pastured cropland.

<sup>2/</sup> Includes permanent pasture and range.

<sup>3/</sup> Does not include federal forests. Includes pastured forest land.



LOWER MISSISSIPPI REGION  
 COMPREHENSIVE STUDY  
**LAND CAPABILITY CLASSES  
 FOR AGRICULTURAL LAND  
 WRPA 10**

FIGURE 16

## LAND RESOURCE DEVELOPMENT POTENTIAL

### Availability of Land for Development

WRPA 10 comprises 4,947,000 acres of land and water. Of this amount, 3,501,000 acres are classified as agricultural land as defined by the Conservation Needs Inventory. Only inventory land is considered potentially available for agricultural use.

### Cropland Suitable for Regular Cultivation

The inventory acreage for each major agricultural land use by land capability classes is shown in table 48. Conservation needs estimates indicate that 353,493 acres are in Classes I through IV, which are the lands deemed suitable for row crops when managed within their capabilities. Of this amount, 98,078 acres are Class I, or land which is suitable for continuous cultivation requiring only good cultural practices; 129,408 acres are Class II, or land having certain limitations such as soil slope or erosion that restrict the choice of crops or require moderate conservation treatment; 123,982 acres are Class III, or land having severe limitations that restrict the choice of crops or require special conservation practices; and 2,025 acres are Class IV, or land having very severe limitations that restrict the choice of plants or require very special conservation treatment.

In addition, 5,507 acres are in Classes V through VIII and are not suitable for use as cropland due largely to slope conditions or unfavorable soils. Thus of the 359,000 acres of cropland, 27 percent is adapted to very intensive cultivation, 36 percent to intensive, 34 percent to moderate, 1 percent to limited, and 2 percent is not recommended for cultivation at all.

### Potential for Shift from Grassland to Cropland

Additional areas shown by land capability estimates as being susceptible and feasible for development as cropland consist of 103,707 acres of grassland pasture. Much of this acreage could be put into cultivation by simply turning under the sod. The balance would require the application of drainage or erosion control practices and in some instances clearing of timber and brush. Of the 103,707 acres suitable for cultivation, 24,458 acres are Class I, 25,226 acres are Class II, and 54,023 acres are Class III.

Development of suitable grassland into cropland and its incorporation into the cropping system might take several years. The increasing demand for additional products will influence the conversion. The conversion of pasture to crops would reduce the acreage available to pasture unless additional land was diverted to pasture from some other use.

### Potential for Shift of Forest to Cropland

If cleared and properly cultivated, 15,554 acres now in generally level and fertile forest would make Class I cropland. Another 82,541 acres are suitable for regular cultivation as Class II cropland, if simple erosion control practices are followed, and if the fertility level is raised by adding fertilizers or other soil amendments. An additional 271,108 acres of forest can be converted into Class III cropland with permanent cultivation, but special erosion control and soil management practices would be required. Here in the aggregate are 369,203 acres of forest that could be converted to cropland.

The new areas of land suitable for farming that could be brought into cultivation primarily by clearing forests and installation of necessary drainage systems are quite large. Much of the undeveloped wetland that is physically feasible to develop for farming requires both drainage and clearing.

WRPA 10, with its acreage of suitable land, is well adapted for production of food and feed crops.

### Potential for Shift of Cropland to Grassland and Forest

Partly offsetting the potential for shift of grassland and forest to cropland is 5,507 acres of cropland that are best suited to grassland and forests. This is mainly land which has so much slope that it should be kept in continuous sod or forests.

### Other Land

Other land comprises 1,640,000 acres in WRPA 10. Other land is defined as all agricultural land not classified as cropland, pasture and range, or forest and woodland. This land use includes acreages devoted to farmsteads, farm roads, ditch banks, feed lots, fence and hedge rows, nonfarm residences, investment tracts, coastal dunes, marshes not used for grazing, strip mines, and borrow and gravel pits. No attempt was made to describe desirable physical land use changes by capability classes due to the diversity of uses made of this land.



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## A D D E N D U M

### COMPARISON OF PROGRAMS A AND B WITH 1972 OBERS PROJECTIONS <sup>1/</sup>

Revised OBERS projections were released after the main text of the Land Resources and Economic Appendixes were prepared. Estimates of crop and livestock production and value and farm earnings reported in Appendix B, Economics, were prepared in 1970. The estimates were used in the analysis of the region's potential for producing prespecified levels of output to satisfy national food and fiber demands in the projection years, and in an evaluation of efficiency gains that could be achieved through resource development. The 1972 OBERS projections of food and fiber output assigned the Lower Mississippi Region differs from those originally used in the Lower Mississippi Region Study. These differences were compared to determine their extent and their possible effects on the need for resource development.

The differences in estimates of crop production used in preparing the main text of the Land Resources Appendix and those from OBERS are presented in table 49. Appendix F estimates are higher than OBERS for cotton, oats, barley, irish potatoes, tobacco, rye, peanuts, and hay for all time frames. They are lower than OBERS estimates for corn in 1980 and 2000, and for sorghum, rice, sweet potatoes, sugarcane, wheat, and soybeans in each of the projection years.

The net land effect of differences between the two sets of estimates was determined by translating the production into acreages of harvested cropland in a manner similar to that used in the budgeting model. The revised OBERS projections result in a greater requirement for harvested cropland in each projection period as shown in table 50.

Revised Program A harvested cropland needs are 19.2 million acres in 1980, 20.4 million acres in 2000, and 21.1 million acres in 2020. Revised Program B needs are 19.2 million acres in 1980, 21.9 million acres in 2000, and 22.6 million acres in 2020. The acreage adjustments are the same for both Programs A and B in each respective time frame since Program B estimates were predicated upon an approximate 7 percent increase in Program A crop requirements and translated into acreage requirements.

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<sup>1/</sup> 1972 OBERS projections: Economic Activity in the United States by BEA Economic Areas, Water Resources Regions, Subareas, and States, Historical and Projected, 1929-2020, United States Water Resources Council, Washington, D. C., 1972.

Table 49 - Difference in Crop Production Between Study and OBERS Estimates, Lower Mississippi Region, 1980, 2000, and 2020, Program A <sup>1/</sup>

Crop	Unit	Study estimate is more or less than OBERS		
		1980	2000	2020
Cotton	Bale	1,822,000	1,821,000	1,865,000
Corn	Bushel	-19,584,000	- 993,000	5,943,000
Sorghum	Bushel	-18,016,000	-30,620,000	-43,421,000
Oats	Bushel	33,000	1,111,000	2,018,000
Rice	Bushel	-13,225,000	-17,628,000	-22,496,000
Barley	Bushel	214,000	362,000	440,000
Irish Potatoes	Bushel	265,000	585,000	821,000
Sweet Potatoes	Bushel	- 5,283,000	- 5,429,000	- 6,787,000
Tobacco	Pound	2,967,000	3,125,000	3,344,000
Sugarcane	Ton	- 6,567,000	- 6,871,000	- 7,349,000
Wheat	Bushel	- 4,369,000	-13,779,000	-21,556,000
Rye	Bushel	148,000	204,000	244,000
Peanuts	Pound	1,396,000	2,387,000	3,219,000
Soybeans	Bushel	-28,456,000	-59,558,000	-79,446,000
Hay	Ton	363,000	539,000	775,000

<sup>1/</sup> Study estimates are presented in Economics Appendix B. OBERS estimates from published and unpublished sources.

Differences between Appendix B, Economics, and 1972 OBERS estimates of livestock production are presented in table 51. Livestock production estimates used in Appendix B were lower than OBERS estimates for beef, chickens, broilers, turkeys, eggs, and milk, and higher for pork and lamb.

The net pasture land effects of differences between the two sets of estimates were determined using only cattle and calves, whereas the pasture land acreages shown in the Land Resources Appendix included milk cows. This results in a slight under-statement of need for pasture, but the difference is considered insignificant. The revised pasture land needs for both Programs A and B are presented in table 52. Program A needs (revised) are 21.2 million acres in 1980, 30.0 million acres in 2000, and 41.6 million acres in 2020. Program B needs (revised) are 21.2 million acres in 1980, 32.1 million acres in 2000, and 44.6 million acres in 2020.

An analysis of the livestock situation in the Lower Mississippi Region is presented in subsequent paragraphs to aid in determining the portion of the region's land resource base which should be allocated to pastures in the future.

Table 50 - Projected Harvested Cropland Needs Due to Differences in Crop Requirements Between Study and OBERS Estimates, Lower Mississippi Region, 1980, 2000, and 2020, Programs A and B

WRPA	Time Frame	PROGRAM A			PROGRAM B		
		Original Acres	OBERS Adjustment Acres	Estimated Need Acres	Original Acres	OBERS Adjustment Acres	Estimated Need Acres
1	1980	188,000	-	188,000	188,000	-	188,000
	2000	188,000	-	188,000	188,000	-	188,000
	2020	188,000	-	188,000	188,000	-	188,000
2	1980	6,673,000	528,000	7,201,000	6,673,000	528,000	7,201,000
	2000	6,854,000	764,000	7,618,000	7,378,000	764,000	8,142,000
	2020	6,760,000	1,001,000	7,761,000	7,215,000	1,001,000	8,216,000
3	1980	1,634,000	460,000	2,094,000	1,634,000	460,000	2,094,000
	2000	1,583,000	587,000	2,170,000	1,698,000	587,000	2,285,000
	2020	1,571,000	775,000	2,346,000	1,684,000	775,000	2,459,000
4	1980	3,660,000	-115,000	3,545,000	3,660,000	-115,000	3,545,000
	2000	3,680,000	594,000	4,274,000	4,068,000	594,000	4,662,000
	2020	3,675,000	782,000	4,457,000	4,122,000	782,000	4,904,000
5	1980	781,000	-189,000	592,000	781,000	-189,000	592,000
	2000	807,000	-247,000	560,000	872,000	-247,000	625,000
	2020	862,000	-293,000	569,000	919,000	-293,000	626,000
6	1980	1,806,000	419,000	2,225,000	1,806,000	419,000	2,225,000
	2000	1,824,000	550,000	2,374,000	2,016,000	550,000	2,566,000
	2020	2,106,000	531,000	2,637,000	2,247,000	531,000	2,778,000
7	1980	297,000	-100,000	197,000	297,000	-100,000	197,000
	2000	260,000	-113,000	147,000	283,000	-113,000	170,000
	2020	263,000	-159,000	104,000	289,000	-159,000	130,000
8	1980	249,000	-32,000	217,000	249,000	-32,000	217,000
	2000	209,000	-39,000	170,000	243,000	-39,000	204,000
	2020	205,000	-12,000	193,000	228,000	-12,000	216,000
9	1980	2,853,000	-180,000	2,673,000	2,853,000	-180,000	2,673,000
	2000	2,877,000	-254,000	2,623,000	3,026,000	-254,000	2,772,000
	2020	2,862,000	-284,000	2,578,000	3,098,000	-284,000	2,814,000
10	1980	195,000	76,000	271,000	195,000	76,000	271,000
	2000	180,000	70,000	250,000	206,000	70,000	276,000
	2020	173,000	69,000	242,000	196,000	69,000	265,000
Region	1980	18,336,000	867,000	19,203,000	18,336,000	867,000	19,203,000
	2000	18,462,000	1,912,000	20,374,000	19,978,000	1,912,000	21,890,000
	2020	18,665,000	2,410,000	21,075,000	20,186,000	2,410,000	22,596,000

Table 51 - Difference in Livestock Production Between Study and OBERS Estimates, Lower Mississippi Region, 1980, 2000, and 2020, Program A <sup>1/</sup>

Livestock and Products	Unit	Study Estimate is More or Less Than OBERS		
		1980	2000	2020
Beef and Veal <sup>2/</sup>	Pound	-479,568,000	-749,873,000	-1,107,321,000
Pork <sup>2/</sup>	Pound	69,052,000	167,686,000	274,728,000
Lamb and Mutton <sup>2/</sup>	Pound	531,000	1,101,000	1,544,000
Chickens <sup>2/</sup>	Pound	-350,603,000	-566,831,000	-800,554,000
Broilers <sup>2/ 3/</sup>	Pound			
Turkeys <sup>2/</sup>	Pound	-8,430,000	-14,917,000	-22,497,000
Eggs	Dozen	-60,431,000	-146,680,000	-234,435,000
Milk	Pound	-196,498,000	-210,356,000	-231,824,000

<sup>1/</sup> Study estimates are presented in Economics Appendix B. OBERS estimates from published and unpublished sources.

<sup>2/</sup> Net liveweight production.

<sup>3/</sup> Included with chickens.

Most livestock enterprises have increased in importance as a source of farm income in the region. The most important enterprises are cattle and calves, commercial laying flocks, and broilers. Beef production is the most important source of livestock income and this situation is anticipated to prevail in future years. This enterprise will therefore place the greatest pressure on the use of the factors of production--land, labor, and capital.

The typical plantation located in the delta portion of the region is a medium to large crop farm producing cotton, soybeans, sugarcane, rice, corn, and other minor crops. Little, if any, livestock, other than workstock, was found on these farms prior to the last two decades. With the imposition of acreage controls on cotton, which drastically reduced the acreage of this crop, many farmers turned to livestock, especially beef cattle as a supplemental enterprise. Farmers outside the delta area of the region have also turned to beef and other livestock enterprises to supplement their farming operations.

Although beef production has increased, sizeable quantities of land and other resources that might be used to expand beef cattle production are currently idle or in low productivity uses. Inventory numbers of cattle and calves have been increasing during the period 1950 to 1970 and the projections reveal that this trend will continue. However, the extent to which, or conditions under which, land and other resources may be used for beef production in the future are uncertain.

Beef cow enterprises vary widely in size and importance on individual farms. In general, beef cow enterprises of the following types are

Table 52 - Projected Pasture Land Needs Due to Differences in Cattle And Calf Numbers Between Study and OBERS Estimates, Lower Mississippi Region, 1980, 2000, and 2020, Programs A and B

WRPA	Time Frame	PROGRAM A			PROGRAM B		
		Original	OBERS Adjustment	Estimated Need	Original	OBERS Adjustment	Estimated Need
		Acres	Acres	Acres	Acres	Acres	Acres
1	1980	197,000	-	197,000	197,000	-	197,000
	2000	197,000	-	197,000	197,000	-	197,000
	2020	197,000	-	197,000	197,000	-	197,000
2	1980	1,380,000	105,000	1,485,000	1,380,000	105,000	1,485,000
	2000	1,854,000	110,000	1,964,000	1,967,000	117,000	2,084,000
	2020	2,484,000	123,000	2,607,000	2,668,000	131,000	2,799,000
3	1980	1,775,000	674,000	2,449,000	1,775,000	674,000	2,449,000
	2000	2,377,000	1,133,000	3,510,000	2,552,000	1,203,000	3,755,000
	2020	3,175,000	1,721,000	4,896,000	3,410,000	1,848,000	5,258,000
4	1980	2,550,000	1,552,000	4,082,000	2,550,000	1,552,000	4,082,000
	2000	3,498,000	2,724,000	6,222,000	3,758,000	2,926,000	6,684,000
	2020	4,690,000	4,243,000	8,933,000	5,025,000	4,569,000	9,594,000
5	1980	2,100,000	798,000	2,898,000	2,100,000	798,000	2,898,000
	2000	2,818,000	1,110,000	3,928,000	3,028,000	1,191,000	4,219,000
	2020	3,774,000	1,562,000	5,336,000	4,052,000	1,678,000	5,730,000
6	1980	754,000	293,000	1,047,000	754,000	293,000	1,047,000
	2000	1,015,000	418,000	1,433,000	1,089,000	451,000	1,540,000
	2020	1,359,000	602,000	1,961,000	1,460,000	645,000	2,105,000
7	1980	1,902,000	1,139,000	3,041,000	1,902,000	1,139,000	3,041,000
	2000	2,553,000	1,976,000	4,529,000	2,742,000	2,123,000	4,865,000
	2020	3,418,000	3,052,000	6,470,000	3,672,000	3,275,000	6,947,000
8	1980	1,156,000	670,000	1,826,000	1,156,000	670,000	1,826,000
	2000	1,538,000	976,000	2,514,000	1,653,000	1,047,000	2,700,000
	2020	2,042,000	1,414,000	3,456,000	2,192,000	1,520,000	3,712,000
9	1980	2,224,000	1,381,000	3,605,000	2,224,000	1,381,000	3,605,000
	2000	2,981,000	1,974,000	4,955,000	3,203,000	2,120,000	5,323,000
	2020	3,986,000	2,772,000	6,758,000	4,281,000	2,975,000	7,256,000
10	1980	318,000	204,000	522,000	318,000	204,000	522,000
	2000	426,000	289,000	715,000	458,000	310,000	768,000
	2020	572,000	407,000	979,000	613,000	439,000	1,052,000
Region	1980	14,356,000	6,796,000	21,152,000	14,356,000	6,796,000	21,152,000
	2000	19,257,000	10,710,000	29,967,000	20,647,000	11,488,000	32,135,000
	2020	25,697,000	15,896,000	41,593,000	27,570,000	17,080,000	44,650,000

important in the region: (1) small, supplemental enterprises on row crop farms; (2) larger, joint enterprises on row crop farms; (3) joint enterprises with swine on general livestock farms or with poultry on poultry farms; (4) major enterprises on part-time or part-retirement farms; (5) major enterprises on specialized beef cattle farms; and (6) major enterprises on large cattle ranches.

In general, beef cow enterprises in the Lower Mississippi Region have not competed effectively for resources that can be used in the production of cotton, tobacco, sugarcane, or rice under the cost price relationships that have prevailed until recently. Some exceptions to these general conditions may apply in certain WRPA's. Beef cattle enterprises are competing effectively for some of these resources at present and are expected to bid even more competitively for such resources in the future.

The consensus appears to be that soybeans are the major competition of beef cattle enterprises for much of the available cropland, labor, and capital in the Lower Mississippi Region that are not used for crops or specialty enterprises. Should the recent expansion in national and regional soybean production continue and cause a decline in soybean prices, it appears that beef cow enterprises may constitute a profitable alternative for additional quantities of land.

On open land not well adapted to the mechanized production of row crops, forage crops, as the basis for beef cow enterprises, appears to be one of the more profitable alternatives. Whether cattle or crops are likely to be more profitable in a given situation depends to some extent on the acreage of land involved and the organizational setup of the management unit. If there is enough land to provide feed for a cow herd of sufficient size to justify ownership of a good herd size, and particularly if available machinery, labor, and management ability are not fully utilized in other farming operations, beef cattle may be a better or as good alternative.

Cow-calf operations in the region in the past have been heavily oriented toward the production of relatively light-weight, low-quality stocker calves--weaned calves that receive a high-roughage ration during a growout period prior to being placed on a fattening program. In general, both the average weight and grade of weaned calves have been lower in some WRPA's than in others. Significant changes in both the grade and type of cattle produced in the region have occurred during recent years and will continue.

A large proportion of the feeder cattle produced in the region are weaned and sold during the late summer or fall months. Feeder cattle are generally in abundant supply in most WRPA's from July through October. Because the winters are briefer and milder in the region than in

much of the rest of the nation, cow-calf operators are in a favorable competitive position to supply more feeder cattle during the summer--the period during which fewest feeders are currently available.

Unlike the production of feeder cattle, which is an important and expanding agricultural activity in the region, cattle feeding remains a relatively minor enterprise. There are few major concentrations of cattle on feed in the region. Cattle feeding enterprises based on high-concentrate rations are not likely to compete successfully for a major share of the resources available to farmers in the region. In most of the region, much of any further expansion in cattle feeding will be based primarily on increased use of pasture, sorghum grain, and silage.

In brief, most farm-oriented cattle-feeding enterprises in the region are secondary and supplementary to other enterprises in the overall farm organization, and supplementarity is expected to be an important factor in the anticipated moderate expansion in the number and size of farmer-feeder operations. Some increase in the number of large commercial feedlots is likely to occur in some WRPA's, but no major increase is expected.

## LAND TREATMENT NEEDS

In many areas soil erosion and excess runoff have been reduced through the use of land treatment measures and other improvements. Land treatment measures are basic to the proper use of the land resource base. These measures protect and improve the soil and water resources and provide the highest feasible degree of runoff retardation, sediment control, and water management.

There are presently 19,339,000 acres of agricultural land in the region considered to be adequately treated according to the Conservation Needs Inventory. This is slightly more than 33 percent of the total 57,920,000 acres of agricultural land in the region. This consists of cropland, pasture land, forest land, and other land and is shown in table 53.

Lands considered as adequately treated in 1970 will, in most all cases, need additional or continuing treatment at some future time. These needs are constantly changing on all lands in the region and will vary, dependent on climatic conditions, land resource areas, land capability classes, the existing land use, and past management practices. Therefore, future land treatment is not precluded on lands considered as being adequately treated at present. This does, however, indicate the magnitude of future land treatment needs.

Measures for treatment of cropland will consist of one or more of the following: residue and annual cover; sod in rotation; contouring only; stripping, terracing, or diversions; permanent cover (changing from cropland to permanent grass or forest cover); drainage systems; and improved irrigation water management practices for land being irrigated.

Table 53 - Lands Adequately Treated, 1970, Lower Mississippi Region

<u>WRPA</u>	<u>Cropland</u> <u>Acres</u>	<u>Pasture</u> <u>Acres</u>	<u>Forest</u> <u>Acres</u>	<u>Other</u> <u>Acres</u>	<u>Total</u> <u>Acres</u>
1	24,000	16,000	158,000	14,000	212,000
2	2,637,000	163,000	637,000	157,000	3,594,000
3	1,126,000	248,000	1,122,000	121,000	2,617,000
4	1,120,000	186,000	533,000	129,000	1,968,000
5	419,000	268,000	2,313,000	57,000	3,057,000
6	618,000	93,000	203,000	26,000	940,000
7	183,000	116,000	1,016,000	10,000	1,325,000
8	187,000	199,000	848,000	34,000	1,268,000
9	548,000	340,000	1,452,000	195,000	2,535,000
10	205,000	93,000	334,000	1,191,000	1,823,000
Total	7,067,000	1,722,000	8,616,000	1,934,000	19,339,000

Measures for treatment of pasture land are as follows: protection of plant cover from over-grazing, improvement of present plant cover, brush control, re-establishment of vegetative cover, and changes in land use.

Measures for treatment of forest land consist of: establishment and reinforcement of forest stands; forest management and improvement for multiple uses; supervised harvesting; treatment to improve forage (grazing); reduction or elimination of grazing; protection from fire, insects, and diseases; and urban-environmental forestry.

The treatment needs for other lands will depend primarily upon the past use and expected future use of this land. As with other land uses, the objective would be to protect this land from erosion and deterioration and from causing damage to adjacent lands. In many instances some of this land can be used very effectively for establishing wildlife food and cover areas.

The installation of land treatment practices result in reduced production costs, increased yields, more intensive use of land, and improved quality of farm products. These items will increase the net returns for crops and grasslands and result in greater farm income to landowners. Also, land treatment measures will result in improvement of the soil texture, reduced loss of top soil, improved water holding capacity, reduced damages from flooding, and sediment deposition. Land treatment measures are installed by landowners, through conservation farm plans, in cooperation with Soil and Water Conservation Districts. Technical assistance is provided by the Soil Conservation Service.

The present land treatment needs for the region are shown in table 54 and consist of the remaining lands not adequately treated in 1970.

Table 54 - Lands Needing Treatment, 1970, Lower Mississippi Region

WRPA	Cropland Acres	Pasture Acres	Forest Acres	Other Acres	Total Acres
1	194,000	16,000	721,000	48,000	979,000
2	3,935,000	530,000	1,678,000	90,000	6,233,000
3	1,826,000	681,000	1,111,000	79,000	3,697,000
4	2,520,000	757,000	2,325,000	78,000	5,680,000
5	552,000	714,000	7,165,000	54,000	8,485,000
6	1,408,000	401,000	628,000	6,000	2,443,000
7	334,000	825,000	1,296,000	20,000	2,475,000
8	196,000	456,000	1,416,000	14,000	2,082,000
9	2,028,000	571,000	1,618,000	612,000	4,829,000
10	154,000	109,000	966,000	449,000	1,678,000
Total	13,147,000	5,060,000	18,924,000	1,450,000	38,581,000

It is not possible to project future land treatment needs without assuming a projected land use for planning objectives by future time frames; therefore, no specific future land treatment needs are shown in this appendix. The land treatment needs and costs for the formulated land use plan for the various planning objectives by future time frames are shown in Appendix T, Plan Formulation.

WATER  
RESOURCES  
PLANNING  
AREAS

