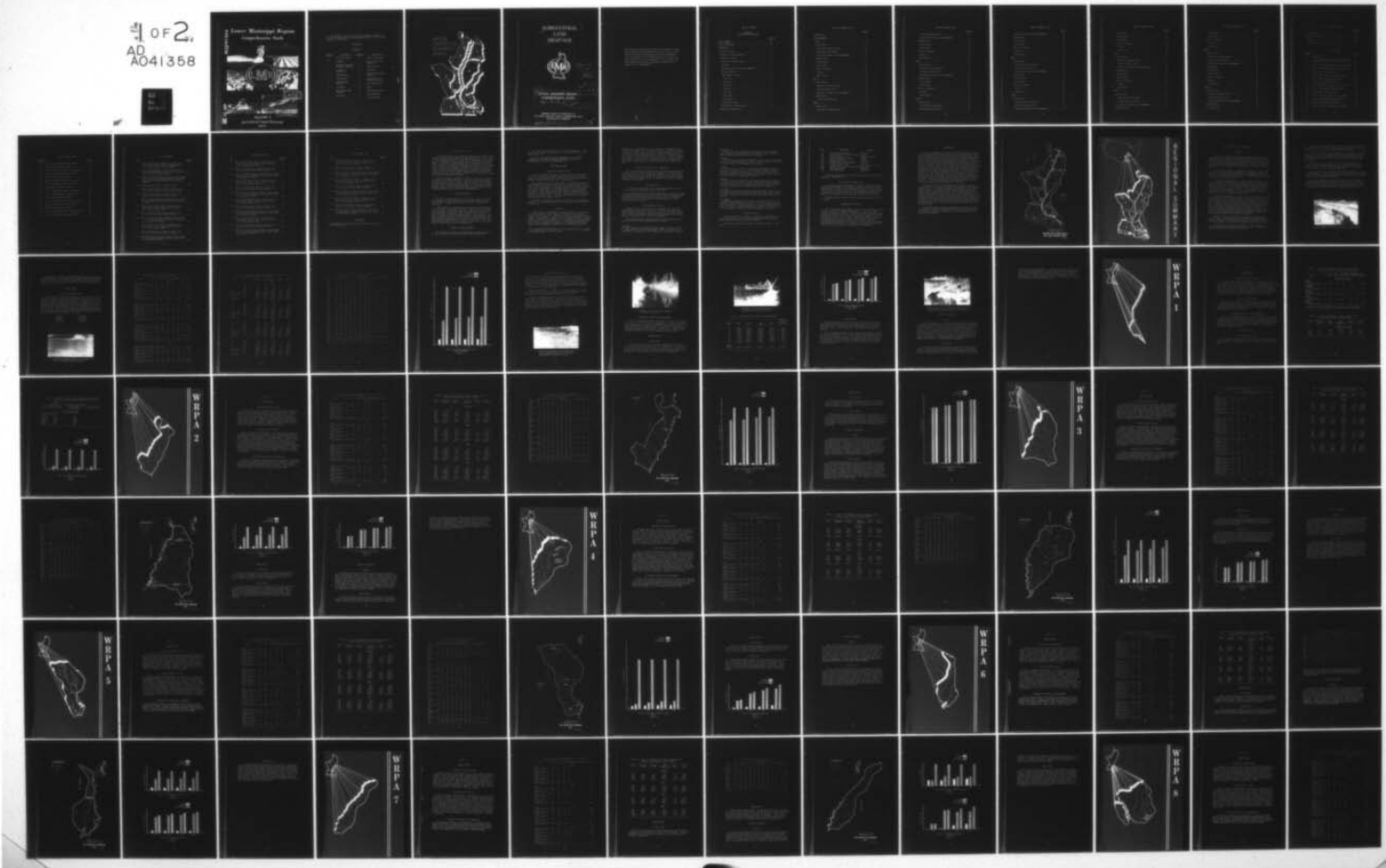
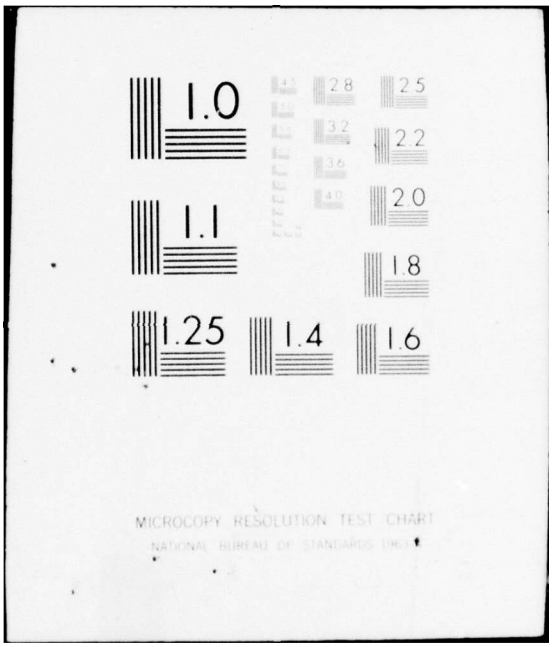
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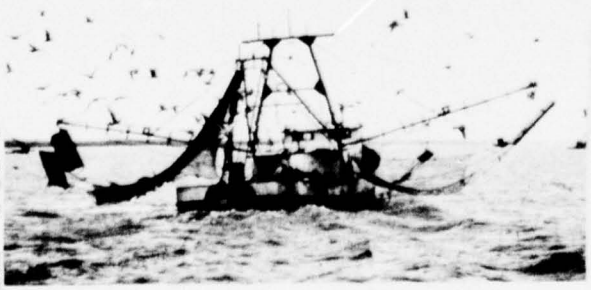
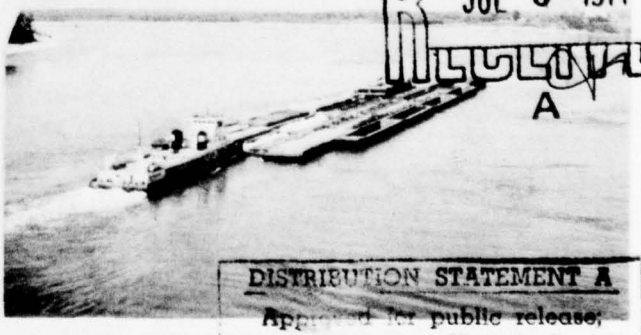
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Appendix I
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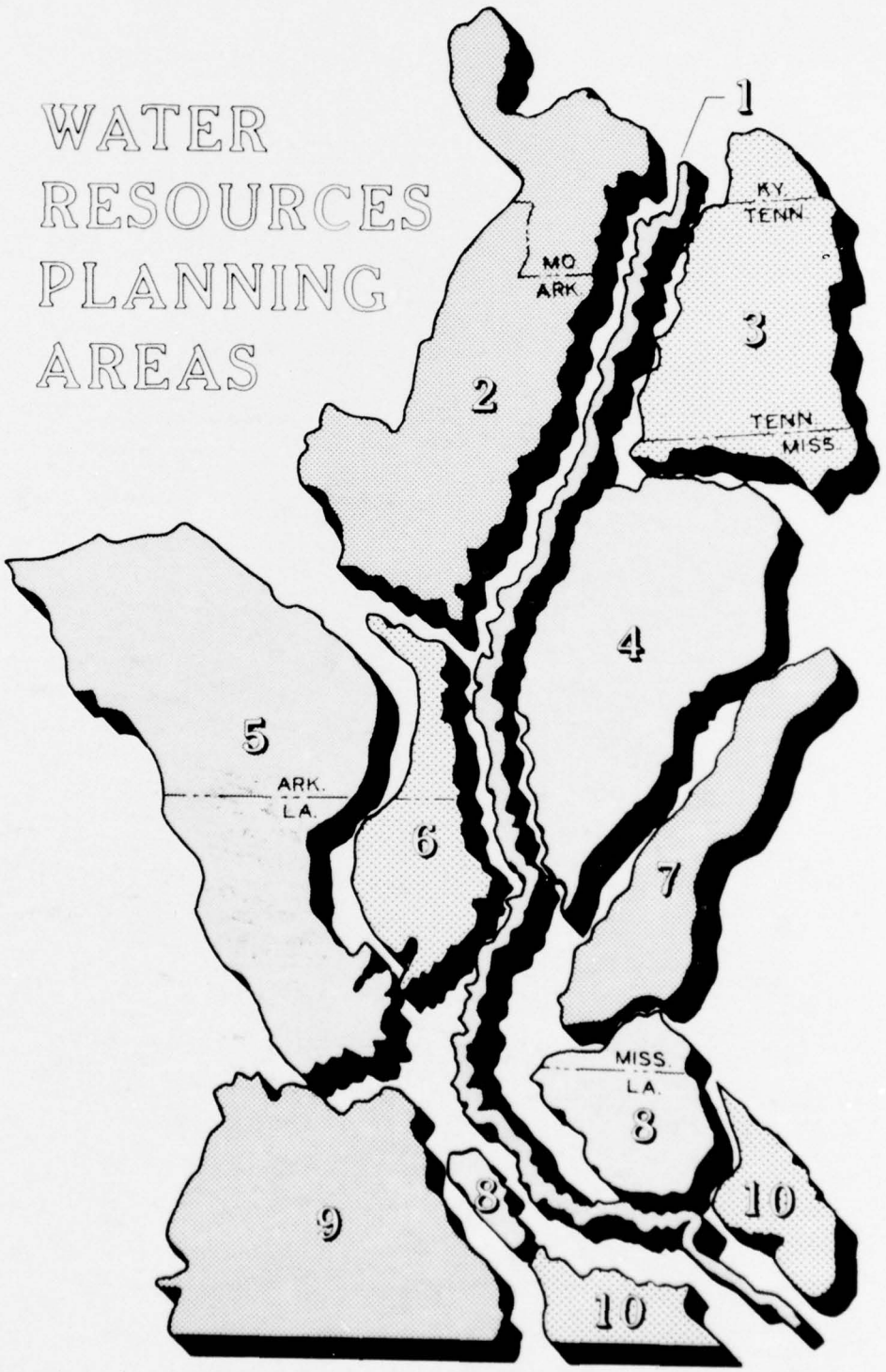
This appendix is one of a series of 22 documents comprising the complete Lower Mississippi Region Comprehensive Study. A list of the documents is shown below.

Main Report

Appendixes

Appendix	Description	Appendix	Description
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

WATER RESOURCES PLANNING AREAS



AGRICULTURAL LAND DRAINAGE.



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Appendix I.

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This report was prepared at field level by the Lower Mississippi Region Comprehensive Study Coordinating Committee and is subject to review by interested Federal agencies at the departmental level, by Governors of the affected States, and by the Water Resources Council prior to its transmittal to the President of the United States for his review and ultimate transmittal to the Congress for its consideration.

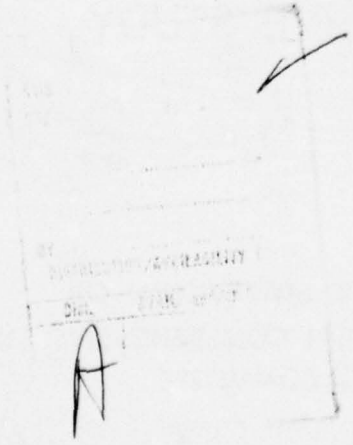


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PHOTOGRAPHS

All photographs in this appendix were furnished by USDA, Soil Conservation Service.

INTRODUCTION

The alluvial valley of the Lower Mississippi Region is the greatest delta in the United States and one of the greatest in the world. It has a dramatic development history. More than two centuries of effort have gone into building of levees, drainage works, land clearing, and development. The physical and engineering lessons learned have been invaluable, but even more valuable insights have been obtained in the complex social, economic, and political requirements associated with this development. Flood control, drainage, and land clearing are interrelated steps in the full development of agriculture and society in the region. A large part of the task of complete and fully unified development of the Lower Mississippi land and water resources lies in the future despite significant past and present efforts.

Excess water imposes limitations on the use of nearly one-fifth of the land area of the United States. In the Lower Mississippi Region, high water tables, overflow, wetness, and poor internal soil drainage are dominant excess water problems on about 57 percent of the land area. Soil erosion and resultant sediment movement also aggravates drainage problems. Excess water on agricultural land causes substantial losses to the production of food, fiber, and related products.

PURPOSE AND SCOPE

The purpose of this appendix is to define the status of existing land drainage in the Lower Mississippi Region and to quantify future needs for land drainage consistent with the study's objectives and projections.

Studies leading to compilation of this appendix involved preparation of a present and projected inventory of agricultural lands having a wetness hazard. The primary source of information utilized was the U. S. Department of Agriculture 1967 Conservation Needs Inventory, adjusted for land clearing, and supplemented by other pertinent information. Inasmuch as the Lower Mississippi Region is predominantly agricultural, primary emphasis herein is placed on drainage problems and needs related to agriculture. Only cursory examination of other drainage problems and needs is made. Drainage of urban areas is not considered to be within the scope of this appendix.

RELATION TO OTHER APPENDIXES

This appendix is concerned with agricultural drainage problems in the region as related to the overall plan of water and land use.

This appendix provided inputs to the following appendixes: Land Resources (F), Coastal and Estuarine (O), Plan Formulation (T), and Health Aspects (M).

Inputs to this report from other appendixes are as follows: Economics (B), Regional Climatology, Hydrology and Geology (C), Land Resources (F), and Fish and Wildlife (Q).

DEFINITION OF TERMS

Lands With A Wetness Hazard

These are wetlands with either a surface or internal drainage problem. They are usually lowlands covered with shallow and sometimes temporary or intermittent waters, often referred to as swamps, bogs, wet meadows, potholes, sloughs, and river overflow lands. 1/

When considered strictly in the light of land drainage, wetland is often thought of as land on which excess water imposes limitations to some of its potential uses. It is land characterized by being constantly or periodically submerged or of having a constant or occasional high water table. Within the scope of this definition, wetland includes agricultural lands on which excess water inhibits optimum agricultural production; overflow plains of streams, and estuaries and coastal littoral; and, such other tracts of low, wet, soft land variously known as swamps, marshes, bogs, morass, and fens.

Wetlands can be drained or filled to create land for agricultural, industrial, or residential expansion, or for purposes of vector control and other uses.

Drainage

Land drainage is the removal, by artificial means, of excess water from on or within the soil to improve the condition of the land for agricultural and other uses. The sources of excess water may be precipitation, irrigation waste, overland flow or underground seepage from deep aquifers, floodwater from channels, or water applied for special purposes. Land drainage is accomplished by means of constructed engineering works and may represent deepening, widening, or straightening of a natural channel; the enlargement or rehabilitation of existing channels; the

1/ U. S. Department of the Interior, Fish and Wildlife Service, Wetlands of the United States, Circular 39, 1956.

construction of open channels; the installation of underground tile or conduits; the construction of drainage wells; the installation of pumps for removal of water; the construction of a farm drainage system such as V and W type ditches along with dragline ditches; or a combination of these methods. Associated works may include dikes or levees, floodgates, water control structures, low water weirs, pipe drops and other erosion and sediment control structures, bridges and culverts, land leveling, and removal of snags, brush, or other obstructions which impede water flow.

Drainage Not Needed or Not Recommended

This is land on which drainage measures have already been installed or drainage is not needed. Land on which drainage is not needed or recommended includes all forest, other miscellaneous lands, such as marsh land, some of the pasture land, and the naturally well drained cropland. Water problems may continue to exist on some of these lands but agricultural use is not expected.

Drainage Needed

This includes cropland and pasture needing drainage for the efficient and economical production of crops and forage.

Beneficial effects of agricultural drainage are increased net income from agricultural land due to increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increase in land values all through reduction in excess moisture content of the soil.

Land Capability Classes

Subclass letter w shown with classes II through VIII indicates a wetness hazard or shows that water in or on the soil interferes with plant growth or cultivation. In most of these soils the wetness hazard can be reduced by drainage. Major works of improvement would be needed, however, to adequately drain classes Vw through VIIIw.

Land capability classes and subclasses listed below define the severity of the soil wetness limitations in the region.

Class IIw

Soils with moderate limitatations that reduce the choice of plants or require moderate conservation practices. Wetness in this soil is correctable by drainage but exists permanently as a moderate limitation.

Class IIIw

Soils with severe limitations that reduce the choice of plants, require special conservation practices, or both. A wetness hazard or some continuing waterlogging exists after drainage.

Class IVw

Soils with very severe limitations that reduce the choice of plants, require very careful management, or both. Excessive wetness exists with a continuing hazard of waterlogging after drainage.

Class Vw

Soils subject to little or no erosion but with other limitations impractical to correct. Use is limited largely to pasture, range, or woodland, or wildlife food and cover. Usually level or nearly level soils with ponded areas where drainage for cultivated crops is not feasible but where soils are suitable for grasses.

Class VIw

Soils with severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover. Excessive wetness or overflow is a limitation that cannot be corrected without major works of improvement.

Class VIIw

Soils with very severe limitations that make them unsuited to cultivation and that restrict their use largely to pasture, range, woodland, or wildlife. Wetness and overflow are more severe than in classes Vw and VIw.

Class VIIIw

Soils and landforms with limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply, or aesthetic purposes. Excessive wetness hazard is most severe and is a limitation that usually cannot be economically corrected. Most unclassified tidal marsh is included in this class.

Land Resource Areas

Land resource areas are units of land that are characterized by particular patterns or soil (including slope and erosion), climate, water resources, land use, and type of farming.

Eleven major land resource areas are found in the region. These are:

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

A more detailed discussion of these land resource areas is found in Appendix F, Land Resources.

Water Resource Planning Areas

For planning purposes the region was divided into 10 Water Resource Planning Areas (WRPA's) whose boundaries generally follow major hydrologic boundaries. WRPA 1 is the exception consisting of the area along the main stem of the Mississippi River lying between the landside toes of the main stem levees where levees exist, and where no levees exist, WRPA 1 has its boundaries as the top bank of the Mississippi River.

The Water Resource Planning Areas and Land Resource Areas are shown in figure 1.

PRESENTATION OF MATERIAL

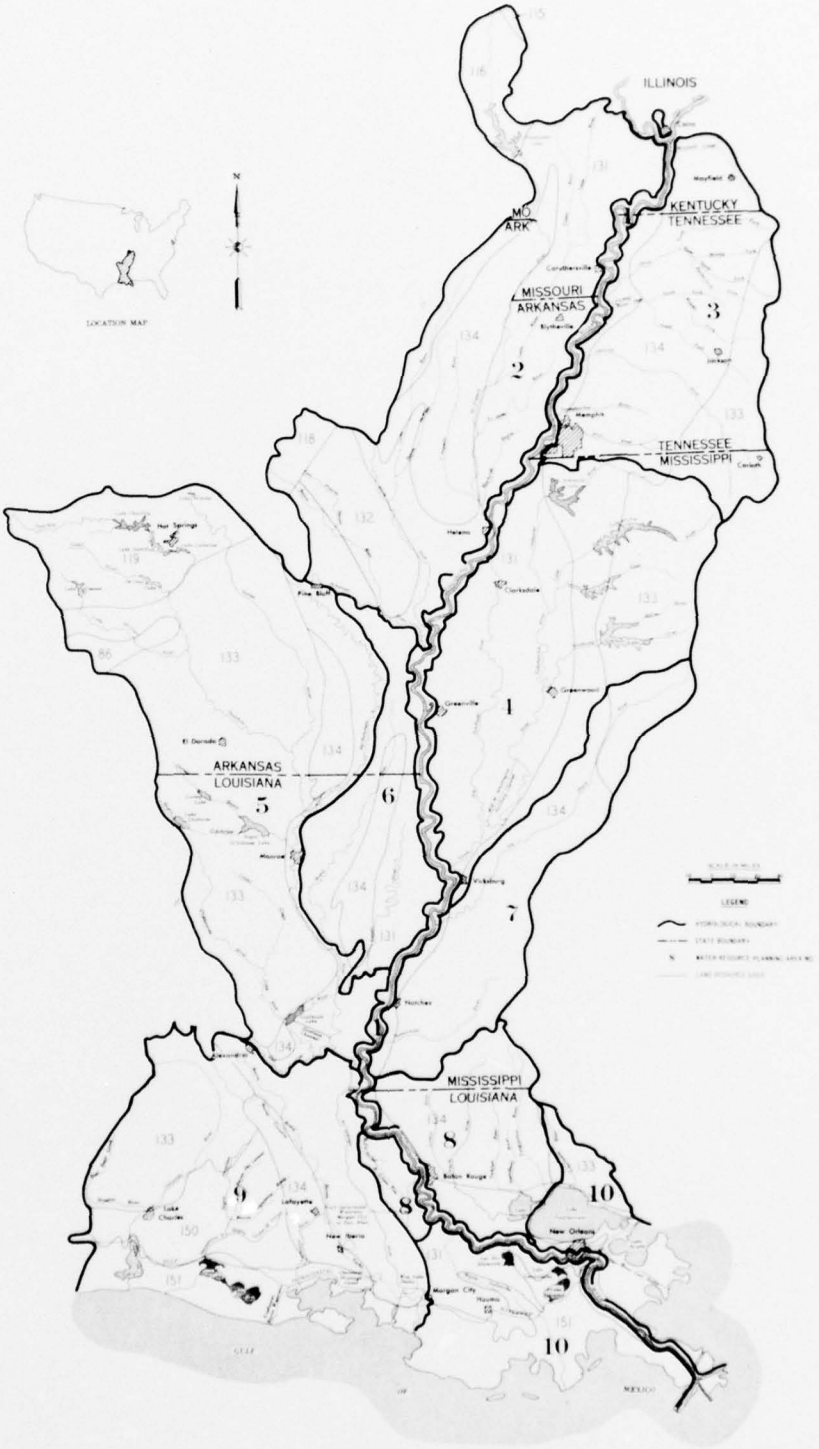
The arrangement of this appendix consists of an introduction section followed by a regional summary and summaries for each of the Water Resource Planning Areas (WRPA's). The regional summary consolidates and presents information on agricultural land drainage contained in the individual WRPA sections. The material in the regional summary and each of the WRPA sections include: (1) the present status of lands with a wetness problem, existing project effects, and drainage not needed; (2) drainage needs (present and projected); and (3) effects of drainage (economic and other effects). In addition, the regional summary begins with a section on the history of agricultural land drainage.

METHODOLOGY

The U. S. Department of Agriculture 1967 Conservation Needs Inventory, adjusted for land clearing, was used as the main source of information for determining acres of soils that have a wetness hazard under present conditions. It is not possible to project future drainage problems and needs without assuming a future land use pattern; therefore, a future land use pattern was developed, based on projections of economic needs, resource availability, land capability, and historical trends. The soils expected to have a wetness hazard and the projected needs for drainage were based on this land use pattern for the 1980, 2000, and 2020 time periods and is the same for both the National Income (Program A) and Regional Development (Program B) objectives. This future land use pattern is not necessarily compatible with that which will result from formulation of the regional land use plan as displayed in Appendix T, Plan Formulation. This assumed land use pattern appears conservative in regard to acreages of future crop and pasture lands when compared to the future crop and pasture land needs as shown in Appendix F, Land Resources. Food and fiber production requirements for the region for future time frames are shown in Appendix B, Economics.

The acreages of land shown throughout this appendix as having a wetness hazard in the future time frames were determined from a physical standpoint only; i.e., those lands which were subject to this physical wetness hazard. The acreages of land for these future time periods shown as needing drainage include only those lands expected to be in cropland and a portion of the pasture land. A basic assumption was made that in the future time frames no drainage would be shown as needed or recommended on lands expected to be in forest, other miscellaneous uses, and most of the pasture land, although this land still has a physical drainage problem. These soils are identified by land capability classes and subclasses as IIw, IIIw, IVw, Vw, VIw, VIIw, and VIIIw (soils with a wetness hazard).

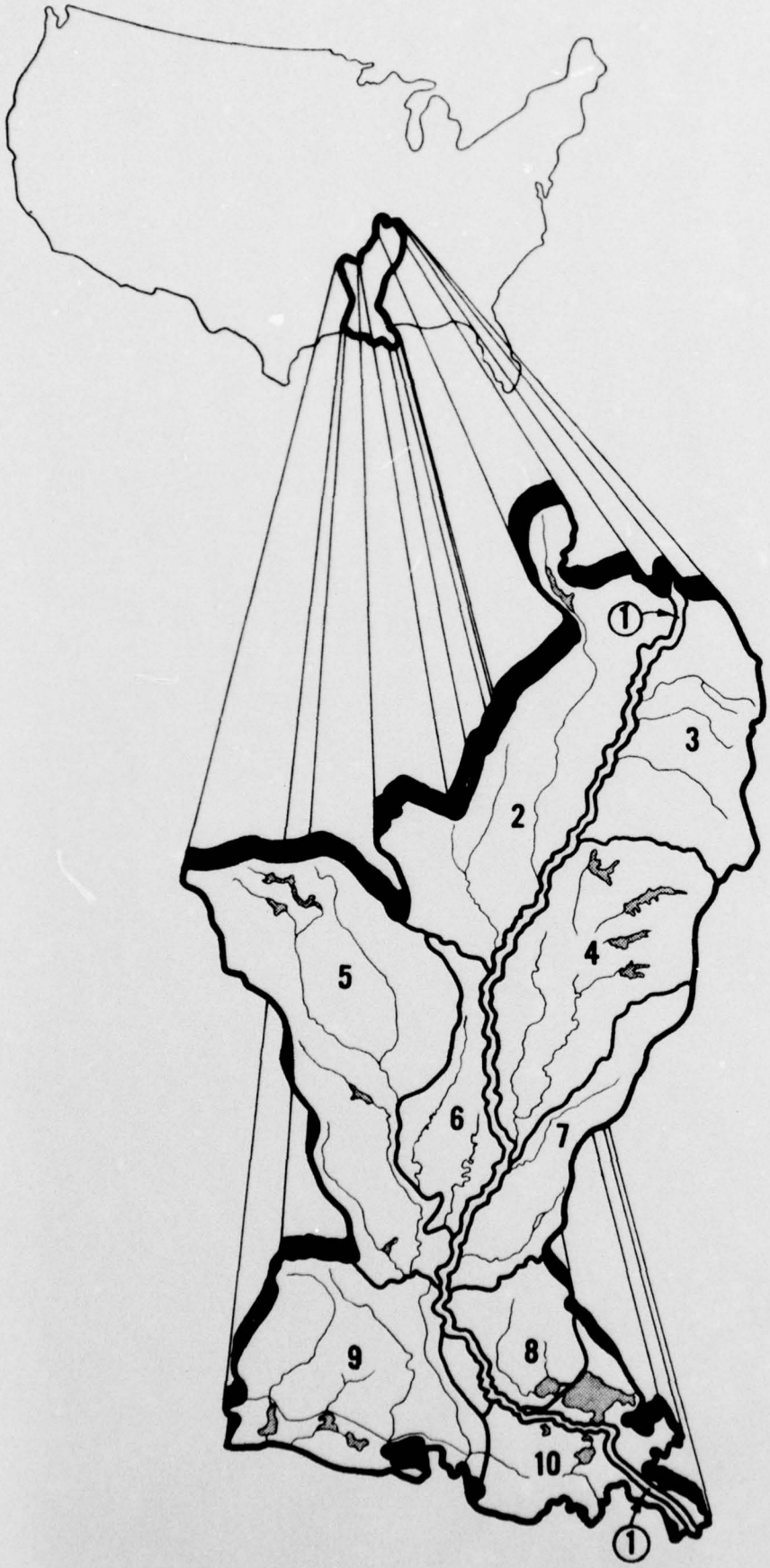
Cropland and pasture acreages recommended for drainage in future time frames were based upon land needed in the future to produce food and fiber, for efficiency in production, and for vector control and related health problems.



LOWER MISSISSIPPI REGION
COMPREHENSIVE STUDY

REGIONAL MAP SHOWING WRPA'S AND LAND RESOURCE AREAS

FIGURE 1



REGIONAL SUMMARY

REGIONAL SUMMARY

HISTORY

Settlement of the Mississippi Valley by Europeans started in the 18th Century. New Orleans was established in 1718. Much of the land, though very fertile, could not be cultivated until it was drained. Large areas in northeast Arkansas and the delta areas of Mississippi and Louisiana were originally swamp and overflow areas. Malaria, a mosquito-borne disease, was widespread among inhabitants of these wet and swampy areas.

As a prelude to achieving a comprehensive solution to the drainage problem in the alluvial valley, there must be widespread knowledge of the origin and development of drainage as an institution, of the varying role of local, State, and Federal interests in land drainage and of the related social and economic aspects.

The origin of land drainage in the United States goes back to the nation's earliest settlement days. There were millions of acres of wetland, and the most accessible and most potentially productive land was located in the valleys of rivers and streams and in coastal, estuarine, and lake tidal plains. The use of much of these lands, however, was constrained by an overabundance of water. During initial colonization and settlement, land drainage was mostly the undertaking of farmers, as drainage was vital to agricultural development.

The Federal Government was involved in only a small amount of direct land drainage before the emergency public works project in the 1930's. The Swamp Land Acts of 1849 and 1850, the first important federal drainage legislation, were almost the only stated federal policy for over 75 years. Under these Acts, millions of acres of swamp and overflow lands were conveyed to states to facilitate reclamation for agricultural uses. These acts were also intended to promote agricultural development and provided for active public participation in drainage activities. As a result, many of the lands drained during that period are among the most productive agricultural lands, are extensively urbanized, and provide space for much commercial and industrial development.

Subsequent to the Swamp Land Acts, Congress has enacted numerous flood control, reclamation, and watershed management bills providing for waterflow regulation and other drainage measures. The intent of these later acts, however, was primarily to support individual local projects.

From 1925 to 1940, considerable effort was made to rehabilitate drainage enterprises suffering economic distress. Both technical and direct assistance were provided in this effort.

In 1927, federal legislation provided for river basin studies which were implemented in the 1930's. This legislation directed that consideration be given to all water and related land resource needs.

In 1944, under Public Law 534, 78th Congress, the Federal Government broadened the flood control authorization to include channel and major drainage improvements. The Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress, has enlarged the cooperative job in land drainage.

Drainage laws in most states have been developed gradually from time of settlement as larger and more costly improvements have been planned. New and revised statutes in some states have contributed to more active state support for drainage improvements.

Drainage districts or corporations and county governments are the most common forms of organizations that carry out drainage work of public concern. Provided under state enabling acts, either type of organization is effective when properly administered.

In Missouri, Arkansas, and Mississippi the number of organized drainage districts reached a peak between 1910 and 1920. In Louisiana, the 1940 to 1950 period was one of great activity in drainage organization. However, the absence of regional planning has resulted in failure of some districts to reach solutions to overall drainage problems.



A typical channel in the region serving drainage purposes.

Land drainage has been a continuous undertaking by both the private and public sectors. It has been of great impetus to national growth and to the well being of the people. The approach to future land drainage activity, however, must be considered from a more enlightened point of view.

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are about 33.8 million acres of land in the region that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 1 shows land with a wetness hazard by land capability classes and subclasses for present and future time frames by land use categories. Table 2 gives this same information by land resource areas instead of land capability classes. Table 3 shows lands with a wetness hazard by land use and Water Resource Planning Areas for present and future time frames. Figure 2 depicts the total land, the cropland, and the pasture with this problem. The present regional land use distribution percentages of this land are as follows:

Cropland	42 percent
Pasture	8 percent
Forests	41 percent
Other Land	9 percent



Land smoothing and leveling is an integral part of a complete drainage program.

Table 1 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, REGIONAL SUMMARY

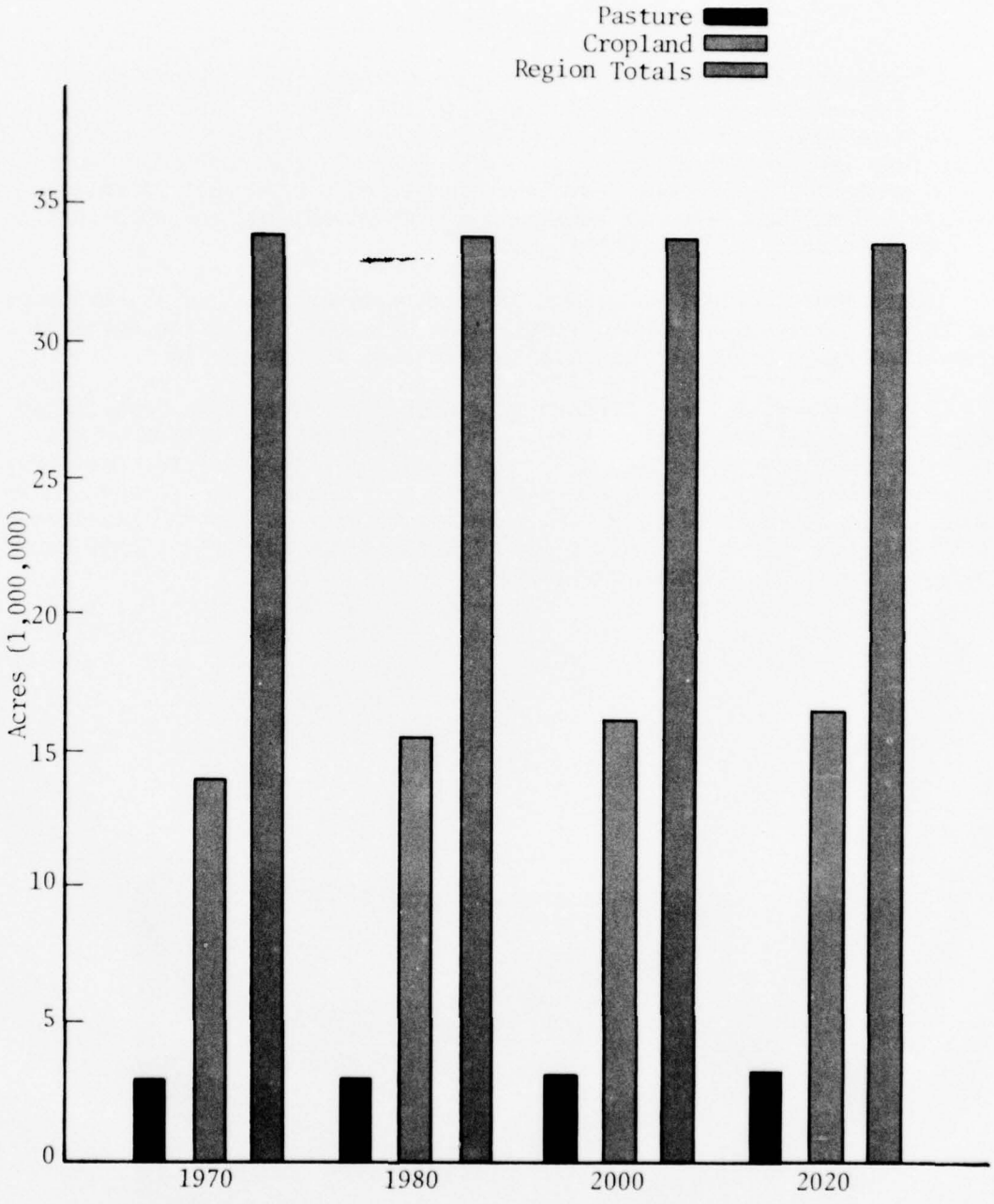
Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	4,213.1	8,719.6	885.5	104.0	24.3	0.5	-	13,947.0
(2) Drainage needed	1,729.1	5,583.7	623.1	30.8	11.6	0.2	-	7,978.5
Pasture:								
(1) With a wetness hazard	1,022.0	1,185.1	216.3	128.5	19.3	293.4	1.0	2,865.6
(2) Drainage needed	0.7	409.2	29.1	0.2	-	-	-	439.2
Forest:								
(1) With a wetness hazard	1,894.4	5,242.5	1,524.8	3,600.8	887.4	982.7	4.7	14,137.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	185.9	260.0	43.7	28.8	8.2	748.6	1,616.7	2,891.9
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	7,315.4	15,407.2	2,670.3	3,862.1	939.2	2,025.2	1,622.4	33,841.8
(2) Drainage needed	1,729.8	5,992.9	652.2	31.0	11.6	0.2	-	8,417.7
				1980				
Crops:								
(1) With a wetness hazard	4,962.5	9,386.0	974.3	119.8	17.7	14.4	-	15,474.7
(2) Drainage needed	2,488.0	6,313.0	724.0	58.5	9.7	14.1	-	9,607.3
Pasture:								
(1) With a wetness hazard	976.4	1,215.8	244.2	148.0	25.8	303.6	1.0	2,914.8
(2) Drainage needed	9.0	479.5	57.5	15.6	6.6	10.2	-	578.4
Forest:								
(1) With a wetness hazard	1,110.9	4,493.2	1,403.1	3,566.1	887.3	966.6	4.7	12,431.9
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	211.3	282.5	47.5	32.3	8.2	740.3	1,616.7	2,938.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	7,261.1	15,377.5	2,669.1	3,866.2	939.0	2,024.9	1,622.4	33,760.2
(2) Drainage needed	2,497.0	6,792.5	781.5	74.1	16.3	24.3	-	10,185.7
				2000				
Crops:								
(1) With a wetness hazard	5,096.7	9,859.0	946.5	119.2	16.5	14.5	-	16,052.4
(2) Drainage needed	2,622.9	6,808.2	741.6	63.7	8.4	14.1	-	10,258.9
Pasture:								
(1) With a wetness hazard	1,039.5	1,292.2	296.0	151.5	27.1	323.6	1.0	3,130.9
(2) Drainage needed	72.1	555.7	109.4	19.1	7.9	30.2	-	794.4
Forest:								
(1) With a wetness hazard	850.0	3,976.4	1,378.5	3,559.9	887.4	966.6	4.7	11,623.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	194.7	222.2	47.5	30.5	8.2	700.3	1,616.7	2,820.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	7,180.9	15,349.8	2,668.5	3,861.1	939.2	2,005.0	1,622.4	33,626.9
(2) Drainage needed	2,695.0	7,363.9	851.0	82.8	16.3	44.3	-	11,053.3
				2020				
Crops:								
(1) With a wetness hazard	5,218.5	10,100.6	946.2	105.3	14.2	24.8	-	16,409.6
(2) Drainage needed	2,748.0	7,090.4	766.5	64.0	7.0	24.4	-	10,700.3
Pasture:								
(1) With a wetness hazard	1,050.6	1,389.3	340.3	176.8	29.9	357.8	1.0	3,345.7
(2) Drainage needed	120.2	652.7	154.0	44.4	10.5	64.3	-	1,046.1
Forest:								
(1) With a wetness hazard	693.7	3,679.0	1,337.4	3,548.4	887.4	964.8	4.7	11,115.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	161.6	151.8	43.2	30.5	7.8	625.9	1,616.7	2,637.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	7,124.4	15,320.7	2,667.1	3,861.0	939.3	1,973.3	1,622.4	33,508.2
(2) Drainage needed	2,868.2	7,743.1	920.5	108.4	17.5	88.7	-	11,746.4

Table 2 - Acres of land that have a wetness hazard by water resource planning areas, land resource areas, and major land use, REGIONAL SUMMARY

WRPA	LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres			
				PRESENT		
5	86	7.5	11.9	10.7	-	30.1
2,3	115	0.4	0.8	0.6	-	1.8
2	116	10.9	5.6	3.0	-	19.5
2	118	22.7	27.2	22.9	0.5	73.3
5	119	2.9	19.1	81.6	0.4	104.0
All	131	8,475.7	917.9	6,230.6	417.4	16,041.6
2	132	430.9	19.3	195.0	10.2	655.4
2,3,4,5,7,8,9,10	133	630.3	368.4	4,603.2	58.9	5,660.8
2,3,4,5,6,7,8,9	134	3,083.8	1,088.1	2,717.2	128.9	7,018.0
9	150	1,253.0	123.4	166.0	37.2	1,579.6
1,9,10	151	28.9	283.9	106.5	2,238.4	2,657.7
Region Totals		13,947.0	2,865.6	14,137.3	2,891.9	33,841.8
				1980		
5	86	6.9	12.5	10.7	-	30.1
2,3	115	0.4	0.8	0.6	-	1.8
2	116	10.9	5.6	3.0	-	19.5
2	118	22.7	27.2	22.9	0.5	73.3
5	119	1.9	20.1	81.6	0.4	104.0
All	131	9,304.3	955.3	5,324.0	433.0	16,016.6
2	132	431.6	20.6	195.0	8.2	655.4
2,3,4,5,7,8,9,10	133	752.6	389.7	4,440.4	83.1	5,665.8
2,3,4,5,6,7,8,9	134	3,658.7	1,060.3	2,086.1	158.2	6,963.3
9	150	1,252.7	131.9	161.0	27.1	1,572.7
1,9,10	151	32.0	290.8	106.6	2,228.3	2,657.7
Region Totals		15,474.7	2,914.8	12,431.9	2,938.8	33,760.2
				2000		
5	86	5.2	14.2	10.7	-	30.1
2,3	115	0.4	0.8	0.6	-	1.8
2	116	10.9	5.6	3.0	-	19.5
2	118	22.7	27.2	22.9	0.5	73.3
5	119	1.9	21.1	80.6	0.4	104.0
All	131	9,842.4	995.6	4,816.1	348.3	16,002.4
2	132	447.6	20.6	182.0	5.2	655.4
2,3,4,5,7,8,9,10	133	776.3	440.1	4,332.1	90.7	5,639.2
2,3,4,5,6,7,8,9	134	3,693.5	1,143.0	1,907.9	149.5	6,893.9
9	150	1,219.5	151.9	161.0	27.2	1,559.6
1,9,10	151	32.0	310.8	106.6	2,198.3	2,647.7
Region Totals		16,052.4	3,130.9	11,623.5	2,820.1	33,626.9
				2020		
5	86	5.2	14.2	10.7	-	30.1
2,3	115	0.4	0.8	0.6	-	1.8
2	116	10.9	5.6	3.0	-	19.5
2	118	23.1	27.2	22.9	0.1	73.3
5	119	0.9	22.1	79.6	0.4	103.0
All	131	10,101.5	1,048.3	4,522.8	255.3	15,927.9
2	132	450.4	21.4	182.0	1.6	655.4
2,3,4,5,7,8,9,10	133	788.1	478.8	4,271.6	87.6	5,626.1
2,3,4,5,6,7,8,9	134	3,774.6	1,227.6	1,758.9	128.0	6,889.1
9	150	1,213.9	156.9	156.8	18.7	1,546.3
1,9,10	151	40.6	342.8	106.5	2,145.8	2,635.7
Region Totals		16,409.6	3,345.7	11,115.4	2,637.5	33,508.2

Table 3 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and Water Resource Planning Areas, REGIONAL SUMMARY

Land Use	WRPA	Lands With a Wetness Hazard				Drainage Already Applied Or Not Needed				Drainage Needed			
		1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
		1,000 Acres											
Cropland	1	133.1	133.1	133.1	133.1	133.1	133.1	133.1	133.1	-	-	-	-
Pasture		20.4	20.4	20.4	20.4	20.4	20.4	20.4	20.4	-	-	-	-
Forest		750.4	750.4	750.4	750.4	750.4	750.4	750.4	750.4	-	-	-	-
Other		51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	-	-	-	-
Subtotal		955.2	955.2	955.2	955.2	955.2	955.2	955.2	955.2	-	-	-	-
Cropland	2	5,112.6	5,234.7	5,483.3	5,550.2	1,863.1	1,865.4	1,863.4	1,860.4	3,249.5	3,371.3	3,619.9	3,689.8
Pasture		169.7	167.9	168.1	171.3	169.7	166.1	166.2	166.1	-	1.8	1.9	5.2
Forest		1,204.5	1,097.7	918.2	902.4	1,204.5	1,097.7	918.2	902.4	*	-	-	-
Other		175.2	158.8	79.6	22.0	175.2	158.8	79.6	22.0	-	-	-	-
Subtotal		6,662.0	6,659.1	6,649.2	6,645.9	3,412.5	3,286.0	3,027.4	2,950.9	3,249.5	3,373.1	3,621.8	3,695.0
Cropland	3	1,083.8	1,276.8	1,321.1	1,311.8	753.9	753.0	749.9	724.7	329.9	523.8	571.2	587.1
Pasture		177.1	173.8	176.6	204.6	176.9	173.4	173.4	173.4	0.2	0.4	3.2	31.2
Forest		769.0	567.3	516.7	498.0	769.0	567.3	516.7	498.0	-	-	-	-
Other		46.2	52.6	56.1	56.1	46.2	52.6	56.1	56.1	-	-	-	-
Subtotal		2,076.1	2,070.5	2,070.5	2,070.5	1,746.0	1,546.3	1,496.1	1,452.2	330.1	524.2	574.4	618.3
Cropland	4	2,650.9	3,136.0	3,260.1	3,386.7	1,225.3	1,224.6	1,224.7	1,217.8	1,425.6	1,911.4	2,035.4	2,168.9
Pasture		338.9	350.4	350.8	341.5	338.9	327.3	327.3	297.4	-	23.1	23.5	44.1
Forest		1,033.4	572.3	439.8	342.5	1,033.4	572.3	439.8	342.5	-	-	-	-
Other		123.3	97.3	87.2	55.7	123.3	97.3	87.2	55.7	-	-	-	-
Subtotal		4,146.5	4,156.0	4,137.9	4,126.4	2,720.9	2,221.5	2,079.0	1,913.4	1,425.6	1,934.5	2,058.9	2,213.0
Cropland	5	452.8	613.0	715.1	770.9	217.8	164.9	165.7	158.5	235.0	448.1	549.4	612.4
Pasture		274.7	309.8	321.1	359.2	236.2	252.1	252.1	252.3	38.5	57.7	69.0	106.9
Forest		4,073.6	3,784.8	3,644.3	3,541.3	4,073.6	3,784.8	3,644.3	3,541.3	-	-	-	-
Other		26.1	136.0	150.0	156.5	26.1	136.0	150.0	156.5	-	-	-	-
Subtotal		4,827.2	4,843.6	4,830.5	4,827.9	4,553.7	4,337.8	4,212.1	4,108.6	273.5	505.8	618.4	719.3
Cropland	6	1,625.3	1,724.9	1,782.6	1,840.5	713.2	713.1	711.1	709.0	912.1	1,011.8	1,071.5	1,131.5
Pasture		397.1	370.4	372.4	375.7	281.2	254.5	254.5	254.6	115.9	115.9	117.9	121.1
Forest		795.0	695.4	641.3	579.7	795.0	695.4	641.3	579.7	-	-	-	-
Other		24.5	24.4	18.8	10.1	24.5	24.4	18.8	10.1	-	-	-	-
Subtotal		2,841.9	2,815.1	2,815.1	2,806.0	1,813.9	1,687.4	1,625.7	1,553.4	1,028.0	1,127.7	1,189.4	1,252.6
Cropland	7	276.3	545.3	490.8	507.0	177.5	175.6	162.0	161.3	98.8	369.7	328.8	345.7
Pasture		317.4	294.2	361.2	383.3	317.4	286.2	286.2	286.1	-	8.0	75.0	97.2
Forest		657.9	378.5	356.5	320.0	657.9	378.5	356.5	320.0	-	-	-	-
Other		10.9	13.0	15.6	13.8	10.9	13.0	15.6	13.8	-	-	-	-
Subtotal		1,262.5	1,231.0	1,224.1	1,224.1	1,163.7	853.3	820.3	781.2	98.8	377.7	403.8	442.9
Cropland	8	153.9	194.2	176.8	181.9	89.6	81.7	80.3	71.5	64.3	112.5	96.5	110.4
Pasture		305.6	300.8	329.7	354.5	257.3	231.1	231.1	231.1	48.3	69.7	98.6	123.4
Forest		1,510.8	1,443.1	1,401.2	1,339.4	1,510.8	1,443.1	1,401.2	1,339.4	-	-	-	-
Other		30.0	35.6	38.6	37.2	30.0	35.6	38.6	37.2	-	-	-	-
Subtotal		2,000.3	1,973.7	1,946.3	1,913.0	1,887.7	1,791.5	1,751.2	1,679.2	112.6	182.2	195.1	233.8
Cropland	9	2,231.5	2,397.0	2,466.1	2,509.0	679.2	658.0	600.7	583.0	1,552.3	1,739.0	1,865.4	1,926.0
Pasture		717.5	761.3	837.4	912.7	502.7	502.5	502.5	498.4	214.8	258.8	334.9	414.3
Forest		2,131.3	1,936.1	1,783.3	1,679.1	2,131.3	1,936.1	1,783.3	1,679.1	-	-	-	-
Other		771.0	745.7	734.3	698.4	771.0	745.7	734.3	698.4	-	-	-	-
Subtotal		5,851.3	5,840.1	5,821.1	5,799.2	4,084.2	3,842.3	3,620.8	3,458.9	1,767.1	1,997.8	2,200.3	2,340.3
Cropland	10	226.8	219.7	223.4	218.5	115.8	100.0	102.6	90.0	111.0	119.7	120.8	128.5
Pasture		147.2	165.8	193.2	222.5	125.7	122.8	122.8	119.8	21.5	43.0	70.4	102.7
Forest		1,211.4	1,206.3	1,171.8	1,162.6	1,211.4	1,206.3	1,171.8	1,162.6	-	-	-	-
Other		1,633.4	1,624.1	1,588.6	1,536.4	1,633.4	1,624.1	1,588.6	1,536.4	-	-	-	-
Subtotal		3,218.8	3,215.9	3,177.0	3,140.0	3,086.3	3,053.2	2,985.8	2,908.8	132.5	162.7	191.2	231.2
Cropland	All	13,947.0	15,474.7	16,052.4	16,409.6	5,968.5	5,867.4	5,793.5	5,709.3	7,978.5	9,607.3	10,258.9	10,700.3
Pasture		2,865.6	2,914.8	3,130.9	3,345.7	2,426.4	2,336.4	2,336.5	2,299.6	439.2	578.4	794.4	1,046.1
Forest		14,137.3	12,431.9	11,623.5	11,115.4	14,137.3	12,431.9	11,623.5	11,115.4	-	-	-	-
Other		2,891.9	2,938.8	2,820.1	2,637.5	2,891.9	2,938.8	2,820.1	2,637.5	-	-	-	-
Region Totals		33,841.8	33,760.2	33,626.9	33,508.2	25,424.1	23,574.5	22,573.6	21,761.8	8,417.7	10,185.7	11,053.3	11,746.4



Acres of Land With a Wetness Hazard
REGIONAL SUMMARY
Figure 2

Existing Projects Effects

Inventory data in table 3 shows that drainage has already been applied or is not needed on about 25.4 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmers groups, and individual owners and operators. Agricultural drainage has already been applied on approximately 5.9 million acres of land used for cropland, and on approximately 2.4 million acres of the pasture land.

Data from the 1959 U. S. Census of Agriculture, Volume IV, Drainage of Agricultural Lands, shows a total area of about 17 million acres in more than 2,000 organized drainage enterprises in the region.

In more recent times, federally assisted projects have resulted in establishment of drainage outlets. Public Law 566, the Watershed Protection and Flood Prevention Act, and 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.



Some existing projects in the region have led to drainage and land clearing of marginal lands for production of crops.



Drainage is not needed or recommended in natural wetland areas.

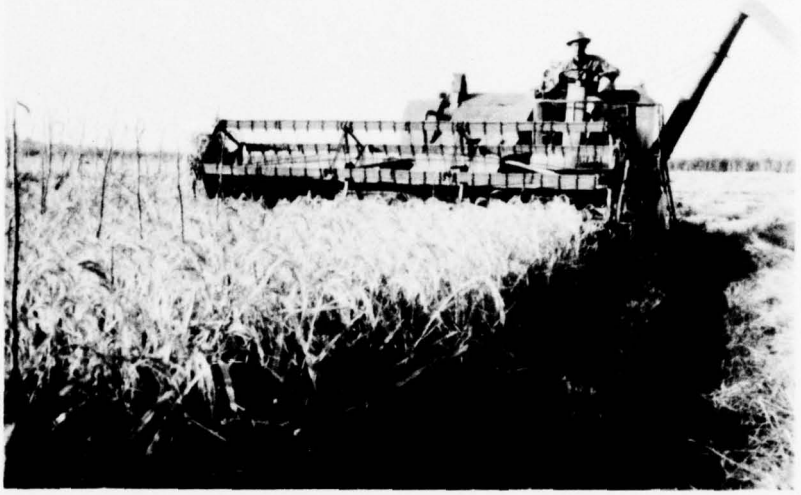
Drainage Not Needed or Not Recommended

This is land on which drainage measures have already been installed or land which is not considered to need drainage. At this time drainage is not considered to be needed or recommended on all land in forests and other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently approximately 14.1 million acres of forest and 2.9 million acres of other miscellaneous uses in this category within the region.

DRAINAGE NEEDS

Present Needs

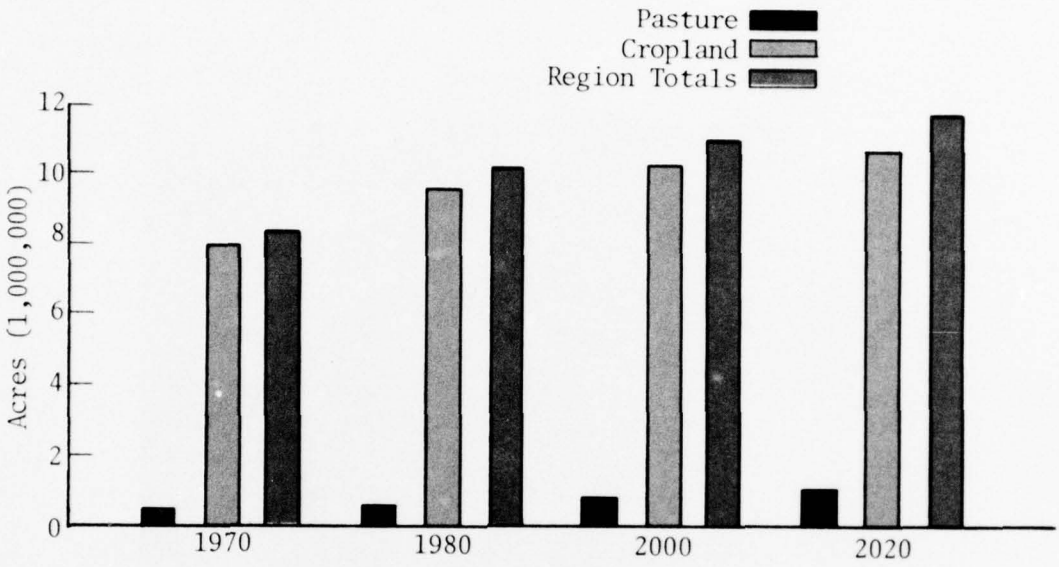
Tables 3 and 4 and figure 3 show that approximately 8.4 million acres of land need to be drained. Of this, approximately 8 million acres are currently used for crop production and 439,200 acres are used for pasture and forage production. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.



Drainage is needed on some lands to meet the demand for food and fiber.

Table 4 - Drainage needed by WRPA's, REGIONAL SUMMARY

WRPA	1970	1980	2000	2020	Projected Increase (1970-2020)
			1,000 Acres		
1	-	-	-	-	-
2	3,249.5	3,373.1	3,621.8	3,695.0	+ 445.5
3	330.1	524.2	574.4	618.3	+ 288.2
4	1,425.6	1,934.5	2,058.9	2,213.0	+ 787.4
5	273.5	505.8	618.4	719.3	+ 445.8
6	1,028.0	1,127.7	1,189.4	1,252.6	+ 224.6
7	98.8	377.7	403.8	442.9	+ 344.1
8	112.6	182.2	195.1	233.8	+ 121.2
9	1,767.1	1,997.8	2,200.3	2,340.3	+ 573.2
10	132.5	162.7	191.2	231.2	+ 98.7
Region Totals	8,417.7	10,185.7	11,053.3	11,746.4	3,328.7



Acres of Land Needing Drainage
REGIONAL SUMMARY
Figure 3

Future Needs

Future drainage needs in the region for 1980, 2000, and 2020 are approximately 10.2 million acres, 11.1 million acres, and 11.7 million acres respectively, based on an assumed future land use as previously explained. Tables 3 and 4 and figure 3 show expected future needs for drainage.

On land irrigated, drainage is very important and especially needed for efficient production. It is necessary that surplus water be allowed to run off in a reasonable time. In the event of heavy rainfall just after the land had been irrigated, poor drainage will cause a reduction in production or even crop failure. Adequate drainage is necessary for rice production in order to control disease and in carrying out needed cultural practices.



Future drainage needs include open lands for more efficiency in production and for vector control.

EFFECTS OF DRAINAGE

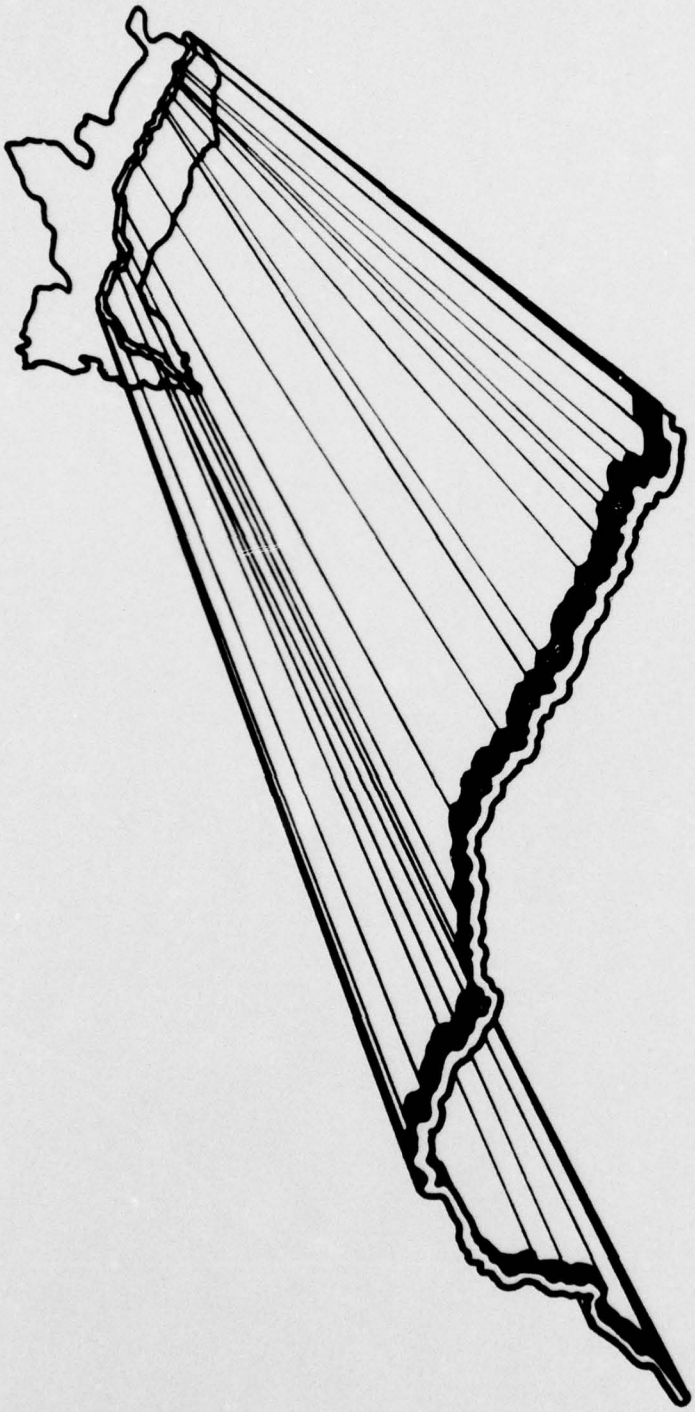
Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also, drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following

construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 1

W R P A 1

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 955.2 thousand acres of land in WRPA 1 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 5 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 6 gives this same information by land resource areas instead of land capability classes. Table 7 shows lands with a wetness hazard by land use categories for present and future time frames. Figure 4 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

There are no existing works of improvement in this WRPA that would provide any drainage. Works of improvement completed in the past were for flood control in adjoining WRPA's, for channel stabilization, and for navigation. Information on these works of improvement is shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

This is land on which drainage measures have already been installed or land which is not considered to need drainage. Drainage is not considered to be needed in this WRPA due to its location within the region, its being subject to severe and frequent flooding from the main stem Mississippi River, and since no land use change was anticipated from present to future time periods.

DRAINAGE NEEDS

Present And Future Needs

As explained above, drainage is not considered to be needed on any land in this WRPA, although this land has a present and future wetness hazard.

Table 5 - Acres of land by major land use, capability class, and subclass, that have a wetness hazard, WRPA 1

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
			PRESENT AND FUTURE 1/					
Crops:								
(1) With a wetness hazard	52.6	68.5	5.8	6.1	-	0.1	-	133.1
Pasture:								
(1) With a wetness hazard	2.6	10.7	2.6	0.8	-	3.6	0.1	20.4
Forest:								
(1) With a wetness hazard	50.5	181.9	41.9	414.2	-	61.7	0.2	750.4
Other:								
(1) With a wetness hazard	7.1	4.2	1.2	10.2	-	16.4	12.2	51.3
Total:								
(1) With a wetness hazard	112.8	265.3	51.5	431.3	-	81.8	12.5	955.2

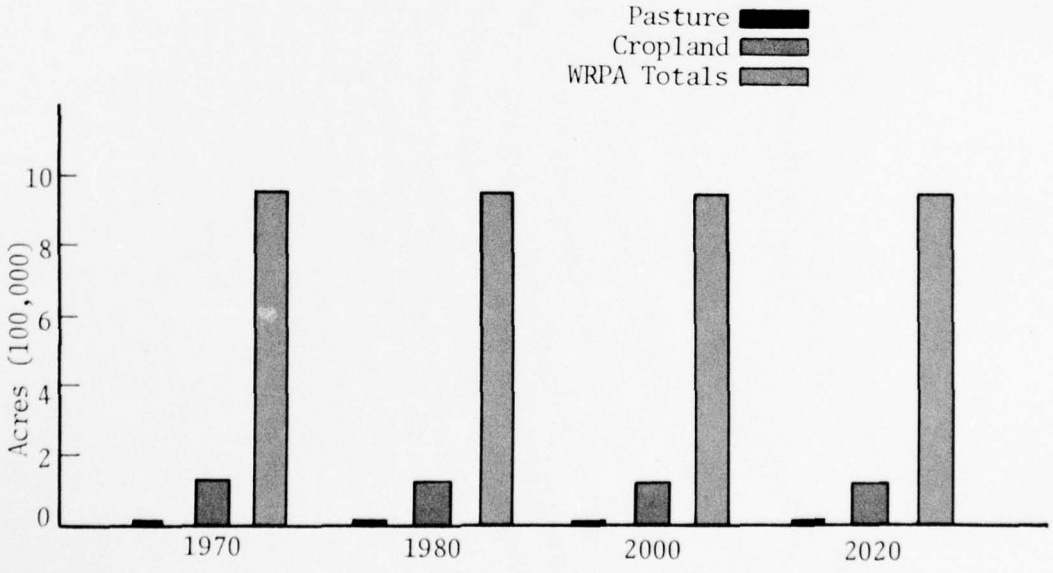
1/ No present or future drainage is considered needed in this WRPA.

Table 6 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 1

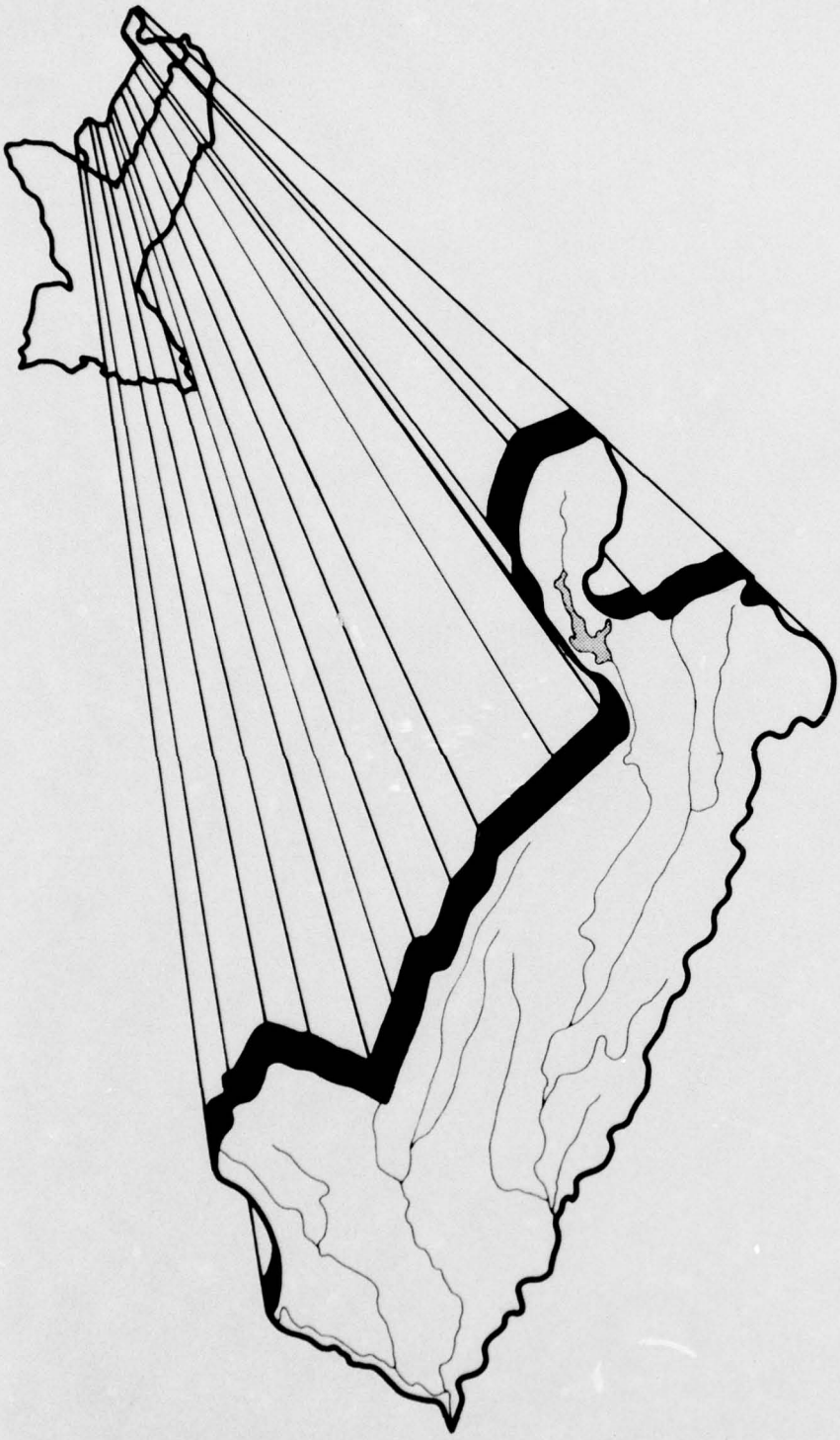
LRA	Cropland	Pasture	Forest	Other	Total
	1,000 Acres				
			PRESENT AND FUTURE		
131	133.1	20.1	750.1	42.0	945.3
151	-	.3	.3	9.3	9.9
Total	133.1	20.4	750.4	51.3	955.2

Table 7 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use, WRPA 1

Land Use	Lands With A Wetness Hazard	Drainage Already Applied or Not Needed	Drainage Needed
	1,000 Acres		
		PRESENT AND FUTURE	
Mississippi River (0)			
Cropland	133.1	133.1	-
Pasture	20.4	20.4	-
Forest	750.4	750.4	-
Other	51.3	51.3	-
Total	955.2	955.2	-



Acres of Land With a Wetness Hazard
WRPA 1
Figure 4



WRPA 2

W R P A 2

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 6.7 million acres of land in WRPA 2 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 8 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 9 gives this same information by land resource areas instead of land capability classes. Table 10 shows lands with a wetness hazard by subbasins, by land use categories for present and future times frames. Figure 5 shows the CNI hydrologic subbasins. Figure 6 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 10 indicates that drainage is not needed or has already been established on about 3.4 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 1.2 million acres of forest and .2 million acres of other miscellaneous uses in this category within this WRPA.

Table 8 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 2

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	1,614.9	3,433.9	48.1	0.7	15.0	-	-	5,112.6
(2) Drainage needed	809.6	2,399.0	33.5	0.4	7.0	-	-	3,249.5
Pasture:								
(1) With a wetness hazard	66.6	95.8	3.2	2.8	1.3	-	-	169.7
(2) Drainage needed	-	-	-	-	-	-	-	-
Forest:								
(1) With a wetness hazard	242.1	843.6	18.2	14.6	86.0	-	-	1,204.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	54.5	117.9	-	1.2	1.6	-	-	175.2
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,978.1	4,491.2	69.5	19.3	103.9	-	-	6,662.0
(2) Drainage needed	809.6	2,399.0	33.5	0.4	7.0	-	-	3,249.5
				1980				
Crops:								
(1) With a wetness hazard	1,699.4	3,472.7	46.9	0.7	15.0	-	-	5,234.7
(2) Drainage needed	894.1	2,437.5	32.3	0.4	7.0	-	-	3,371.3
Pasture:								
(1) With a wetness hazard	65.1	94.2	4.5	2.8	1.3	-	-	167.9
(2) Drainage needed	-	0.5	1.3	-	-	-	-	1.8
Forest:								
(1) With a wetness hazard	170.1	808.8	18.2	14.6	86.0	-	-	1,097.7
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	42.0	114.0	-	1.2	1.6	-	-	158.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,976.6	4,489.7	69.6	19.3	103.9	-	-	6,659.1
(2) Drainage needed	894.1	2,438.0	33.6	0.4	7.0	-	-	3,373.1
				2000				
Crops:								
(1) With a wetness hazard	1,778.1	3,642.6	46.9	0.7	15.0	-	-	5,483.3
(2) Drainage needed	972.8	2,607.5	32.3	0.4	6.9	-	-	3,619.9
Pasture:								
(1) With a wetness hazard	65.1	94.4	4.5	2.8	1.3	-	-	168.1
(2) Drainage needed	-	0.6	1.3	-	-	-	-	1.9
Forest:								
(1) With a wetness hazard	102.6	696.8	18.2	14.6	86.0	-	-	918.2
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	20.8	55.9	-	1.3	1.6	-	-	79.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,966.6	4,489.7	69.6	19.4	103.9	-	-	6,649.2
(2) Drainage needed	972.8	2,608.1	33.6	0.4	6.9	-	-	3,621.8
				2020				
Crops:								
(1) With a wetness hazard	1,797.8	3,692.7	44.8	0.7	14.2	-	-	5,550.2
(2) Drainage needed	992.5	2,657.6	32.3	0.4	7.0	-	-	3,689.8
Pasture:								
(1) With a wetness hazard	65.1	94.4	6.5	2.8	2.5	-	-	171.3
(2) Drainage needed	-	0.6	3.4	-	1.2	-	-	5.2
Forest:								
(1) With a wetness hazard	93.6	690.0	18.2	14.6	86.0	-	-	902.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	7.0	12.6	-	1.2	1.2	-	-	22.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,963.5	4,489.7	69.5	19.3	103.9	-	-	6,645.9
(2) Drainage needed	992.5	2,658.2	35.7	0.4	8.2	-	-	3,695.0

Table 9 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 2

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
115	.3	.8	-	-	1.1
116	10.9	5.6	3.0	-	19.5
118	22.7	27.2	22.9	.5	73.3
131	3,687.4	82.0	731.1	128.9	4,629.4
132	430.9	19.3	195.0	10.2	655.4
133	2.9	-	7.0	-	9.9
134	957.5	34.8	245.5	35.6	1,273.4
Total	5,112.6	169.7	1,204.5	175.2	6,662.0
			1980		
115	.3	.8	-	-	1.1
116	10.9	5.6	3.0	-	19.5
118	22.7	27.2	22.9	.5	73.3
131	3,786.7	78.9	642.4	118.5	4,626.5
132	431.6	20.6	195.0	8.2	655.4
133	2.9	-	7.0	-	9.9
134	979.6	34.8	227.4	31.6	1,273.4
Total	5,234.7	167.9	1,097.7	158.8	6,659.1
			2000		
115	.3	.8	-	-	1.1
116	10.9	5.6	3.0	-	19.5
118	22.7	27.2	22.9	.5	73.3
131	3,951.1	79.1	529.9	56.5	4,616.6
132	447.6	20.6	182.0	5.2	655.4
133	2.9	-	7.0	-	9.9
134	1,047.8	34.8	173.4	17.4	1,273.4
Total	5,483.3	168.1	918.2	79.6	6,649.2
			2020		
115	.3	.8	-	-	1.1
116	10.9	5.6	3.0	-	19.5
118	23.1	27.2	22.9	.1	73.3
131	4,000.1	79.3	520.1	13.9	4,613.4
132	450.4	21.4	182.0	1.6	655.4
133	2.8	-	7.0	-	9.8
134	1,062.6	37.0	167.4	6.4	1,273.4
Total	5,550.2	171.3	902.4	22.0	6,645.9

Table 10 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 2

Land Use	Lands With A Wetness Hazard				Drainage Already Applied Or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Mississippi River (0)												
Cropland	278.2	287.2	304.4	306.2	27.0	27.0	27.0	27.0	251.2	260.2	277.4	279.2
Pasture	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	-	-	-	-
Forest	54.0	44.9	26.0	26.1	54.0	44.9	26.0	26.1	-	-	-	-
Other	16.1	16.1	7.8	2.8	16.1	16.1	7.8	2.8	-	-	-	-
Total	361.5	361.4	351.4	348.3	110.3	101.2	74.0	69.1	251.2	260.2	277.4	279.2
Arkansas River (1)												
Cropland	44.9	50.1	56.8	60.1	4.3	4.3	4.4	4.3	40.6	45.8	52.4	55.8
Pasture	11.4	11.8	12.0	12.3	11.4	11.3	11.4	11.3	-	0.5	0.6	1.0
Forest	28.8	23.8	19.2	17.2	28.8	23.8	19.2	17.2	-	-	-	-
Other	5.8	5.2	2.9	1.3	5.8	5.2	2.9	1.3	-	-	-	-
Total	90.9	90.9	90.9	90.9	50.3	44.6	37.9	34.1	40.6	46.3	53.0	56.8
Bayou Meto (1aa)												
Cropland	426.4	428.2	443.2	448.5	146.1	146.2	146.1	145.4	280.3	282.0	297.1	303.1
Pasture	18.2	18.2	18.2	19.0	18.2	16.9	16.9	16.9	-	1.3	1.3	2.1
Forest	157.5	154.7	146.7	146.7	157.5	154.7	146.7	146.7	-	-	-	-
Other	15.8	15.8	8.8	2.7	15.8	15.8	8.8	2.7	-	-	-	-
Total	617.9	616.9	616.9	616.9	337.6	333.6	318.5	311.7	280.3	283.3	298.4	305.2
White River (2)												
Cropland	501.0	503.0	523.7	528.8	130.3	130.3	130.3	130.3	370.7	372.7	393.4	398.5
Pasture	49.6	48.3	48.3	48.3	49.6	48.3	48.3	48.3	-	-	-	-
Forest	312.6	312.6	295.6	295.6	312.6	312.6	295.6	295.6	-	-	-	-
Other	12.0	10.0	6.3	1.1	12.0	10.0	6.3	1.1	-	-	-	-
Total	875.2	873.9	873.9	873.8	504.5	501.2	480.5	475.3	370.7	372.7	393.4	398.5
Cache River (2f)												
Cropland	743.9	795.7	845.0	860.2	339.8	339.8	339.8	339.9	404.1	455.9	505.2	520.3
Pasture	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	-	-	-	-
Forest	192.4	142.4	102.4	94.4	192.4	142.4	102.4	94.4	-	-	-	-
Other	20.5	18.6	9.3	2.2	20.5	18.6	9.3	2.2	-	-	-	-
Total	966.7	966.6	966.6	966.7	562.6	510.7	461.4	446.4	404.1	455.9	505.2	520.3
Big Creek (2g)												
Cropland	342.1	353.4	367.5	368.4	95.7	95.7	95.7	95.6	246.4	257.7	271.8	272.8
Pasture	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	-	-	-	-
Forest	129.1	119.1	109.1	109.1	129.1	119.1	109.1	109.1	-	-	-	-
Other	7.6	6.3	2.2	1.3	7.6	6.3	2.2	1.3	-	-	-	-
Total	487.4	487.4	487.4	487.4	241.0	229.7	215.6	214.6	246.4	257.7	271.8	272.8
St. Francis River (5)												
Cropland	1,523.1	1,536.4	1,598.6	1,622.7	657.0	657.2	657.2	655.0	866.1	879.2	941.4	967.7
Pasture	36.9	35.9	35.9	38.1	36.9	35.9	35.9	36.0	-	-	-	2.1
Forest	194.7	184.8	148.8	142.9	194.7	184.8	148.8	142.9	-	-	-	-
Other	54.4	51.6	25.5	5.0	54.4	51.6	25.5	5.0	-	-	-	-
Total	1,809.1	1,808.7	1,808.8	1,808.7	943.0	929.5	867.4	838.9	866.1	879.2	941.4	969.8
Little River Ditches (5a)												
Cropland	881.5	887.7	906.9	914.3	231.1	231.1	231.1	231.1	650.4	656.6	675.8	683.2
Pasture	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	-	-	-	-
Forest	29.9	29.9	24.9	24.9	29.9	29.9	24.9	24.9	-	-	-	-
Other	31.6	25.4	11.2	3.8	31.6	25.4	11.2	3.8	-	-	-	-
Total	955.6	955.6	955.6	955.6	305.2	299.0	279.8	272.4	650.4	656.6	675.8	683.2
L'Anguille River (5b)												
Cropland	371.5	393.0	437.2	441.0	231.8	231.8	231.8	231.8	139.7	161.2	205.4	209.2
Pasture	9.3	9.4	9.4	9.3	9.3	9.4	9.4	9.3	-	-	-	-
Forest	105.5	85.5	45.5	45.5	105.5	85.5	45.5	45.5	-	-	-	-
Other	11.4	9.8	5.6	1.8	11.4	9.8	5.6	1.8	-	-	-	-
Total	497.7	497.7	497.7	497.6	358.0	336.5	292.3	288.4	139.7	161.2	205.4	209.2
Totals for WRPA 2												
Cropland	5,112.6	5,234.7	5,483.3	5,550.2	1,863.1	1,863.4	1,863.4	1,860.4	3,249.5	3,371.3	3,619.9	3,689.8
Pasture	169.7	167.9	168.1	171.3	169.7	166.1	166.2	166.1	-	1.8	1.9	5.2
Forest	1,204.5	1,097.7	918.2	902.4	1,204.5	1,097.7	918.2	902.4	-	-	-	-
Other	175.2	158.8	79.6	22.0	175.2	158.8	79.6	22.0	-	-	-	-
WRPA Total	6,662.0	6,659.1	6,649.2	6,645.9	3,412.5	3,286.0	3,027.4	2,950.9	3,249.5	3,373.1	3,621.8	3,695.0

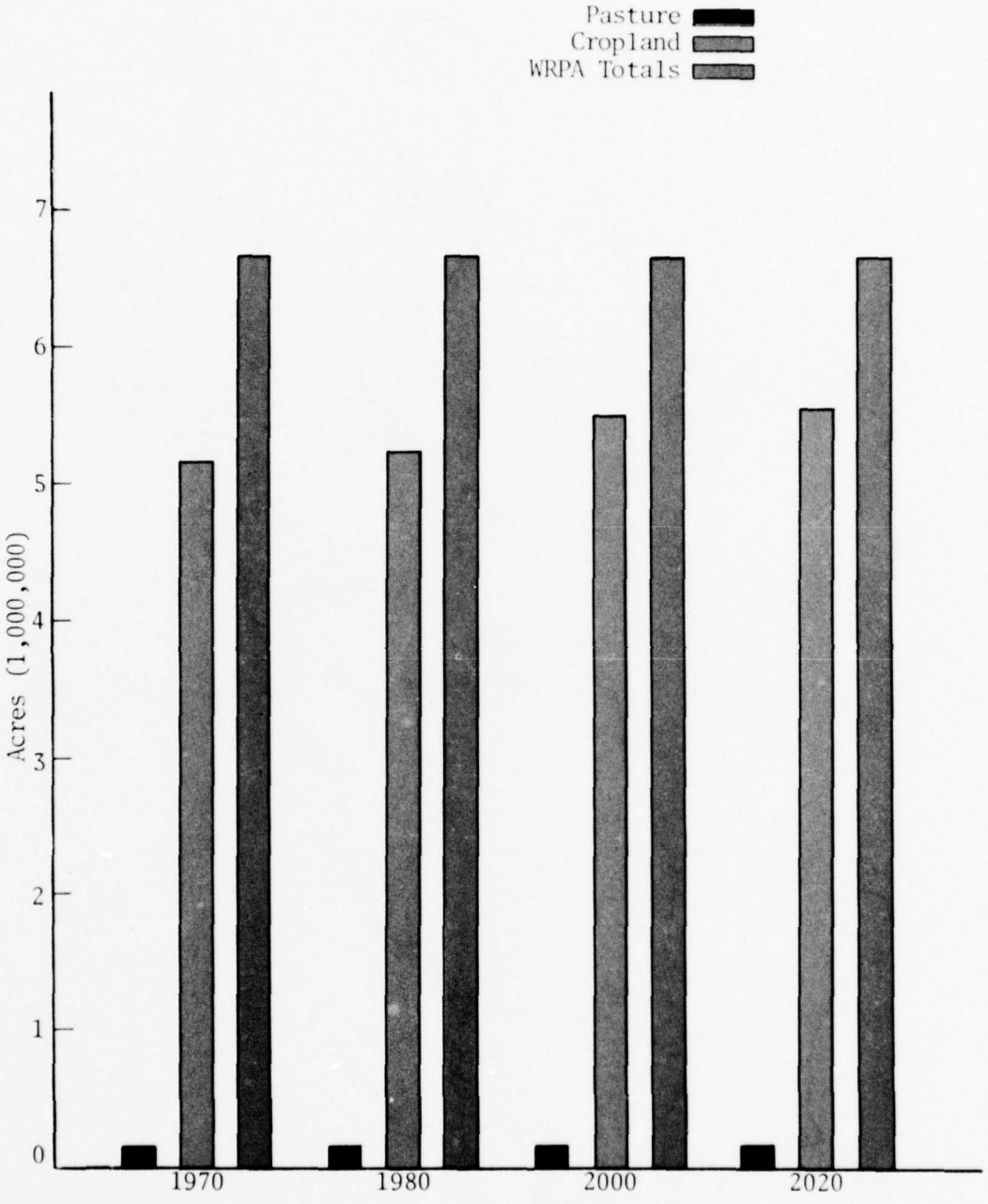


LOWER MISSISSIPPI REGION
COMPREHENSIVE STUDY

CNI HYDROLOGIC SUBBASINS

WRPA 2

FIGURE 5



Acres of Land With a Wetness Hazard
WRPA 2
Figure 6

DRAINAGE NEEDS

Present Needs

Tables 8 and 10 and figure 7 show that approximately 3.2 million acres of land need to be drained, all of which is now in cropland. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Future Needs

Future drainage needs in WRPA 2 for 1980, 2000, and 2020 are approximately 3.4 million acres, 3.6 million acres, and 3.7 million acres respectively, based on an assumed future land use as previously explained. Tables 8 and 10 and figure 7 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.

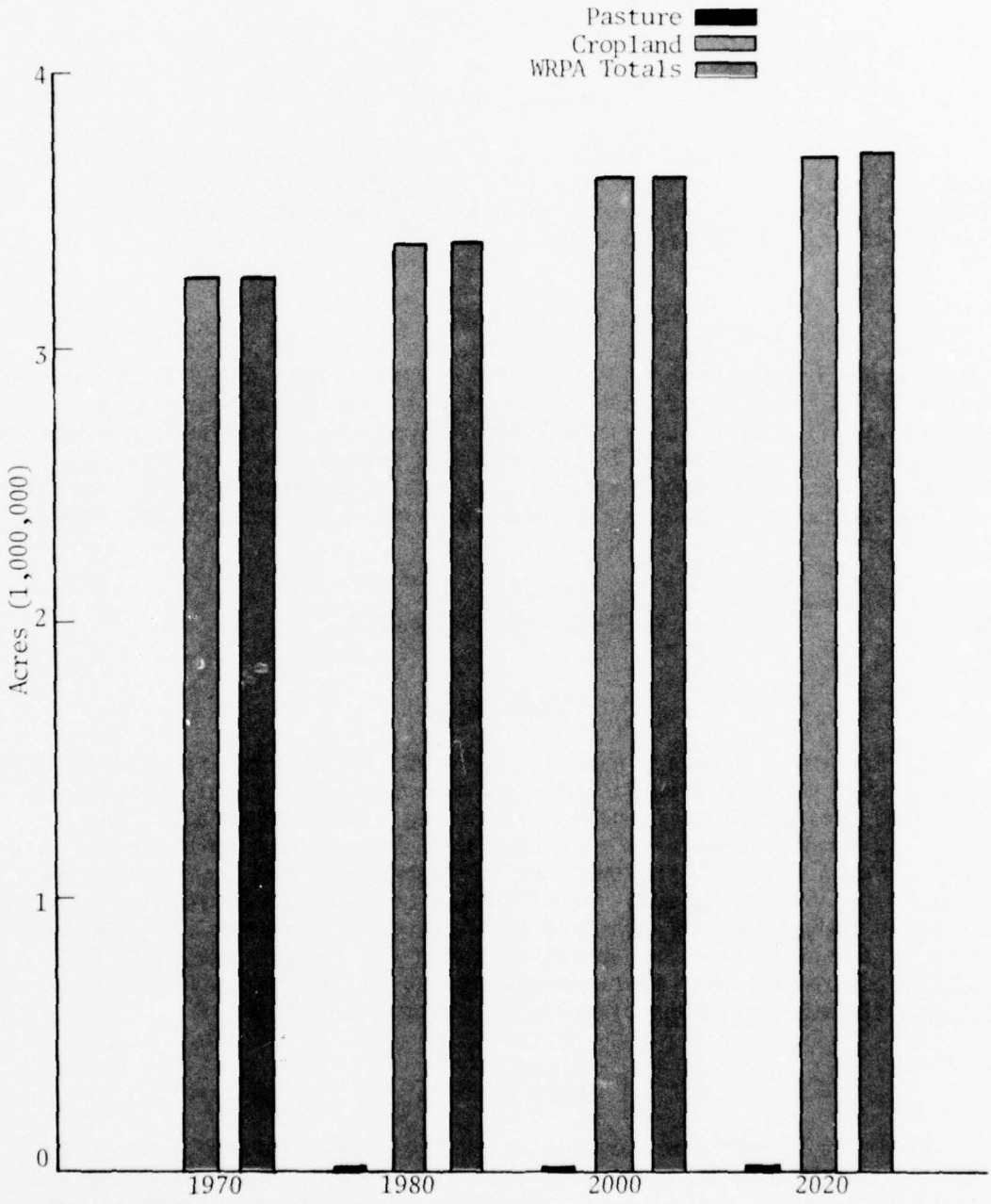
EFFECTS OF DRAINAGE

Economic

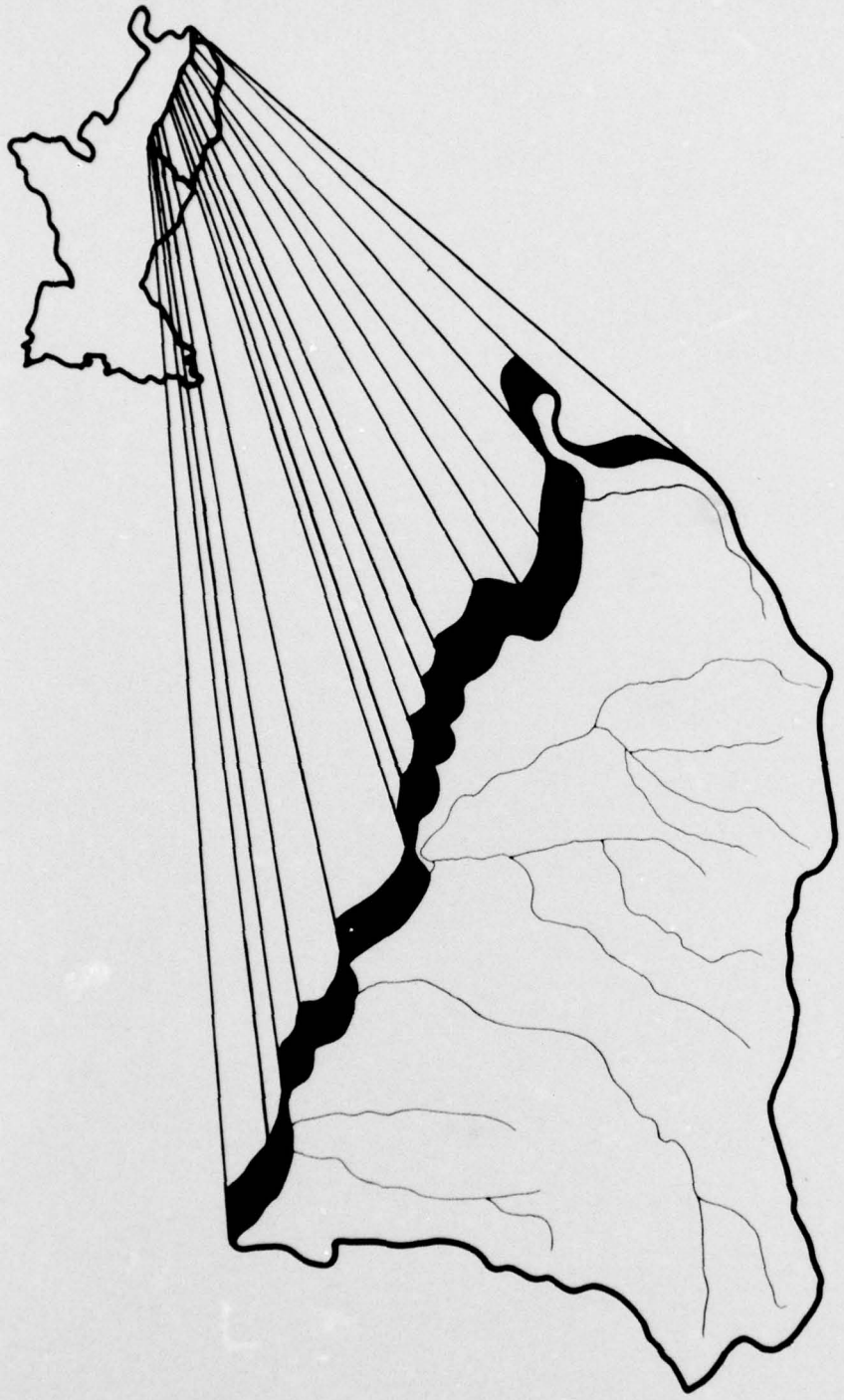
Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



Acres of Land Needing Drainage
WRPA 2
Figure 7



WRPA 3

W R P A 3

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 2.1 million acres of land in WRPA 3 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 11 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 12 gives this same information by land resource areas instead of land capability classes. Table 13 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 8 shows the CNI hydrologic subbasins. Figure 9 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 13 indicates that drainage is not needed or has already been established on about 1.7 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 769,000 acres of forest and 46,200 acres of other miscellaneous uses in this category within this WRPA.

Table 11 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 3

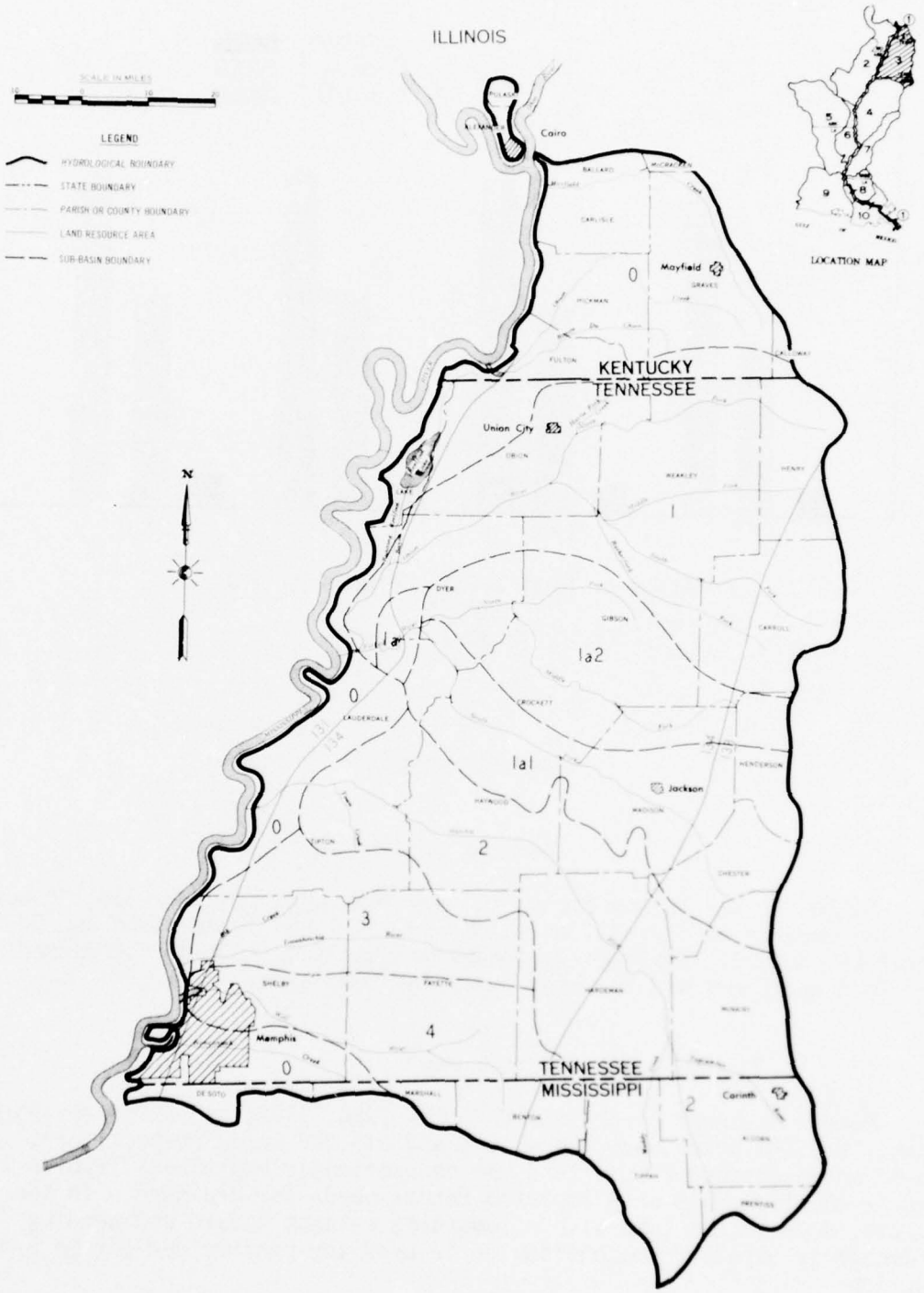
Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	606.7	361.1	115.6	-	-	0.4	-	1,083.8
(2) Drainage needed	119.1	150.3	60.3	-	-	0.2	-	329.9
Pasture:								
(1) With a wetness hazard	100.8	53.8	22.2	0.1	-	0.2	-	177.1
(2) Drainage needed	-	0.2	-	-	-	-	-	0.2
Forest:								
(1) With a wetness hazard	204.9	492.1	31.0	1.1	-	39.9	-	769.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	30.9	12.0	3.2	0.1	-	-	-	46.2
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	943.3	919.0	172.0	1.3	-	40.5	-	2,076.1
(2) Drainage needed	119.1	150.5	60.3	-	-	0.2	-	330.1
				1980				
Crops:								
(1) With a wetness hazard	700.6	460.3	115.6	0.1	-	0.2	-	1,276.8
(2) Drainage needed	214.2	249.3	60.3	-	-	-	-	523.8
Pasture:								
(1) With a wetness hazard	98.8	52.8	21.7	0.1	-	0.4	-	173.8
(2) Drainage needed	-	0.2	-	-	-	0.2	-	0.4
Forest:								
(1) With a wetness hazard	102.4	393.0	30.9	1.1	-	39.9	-	567.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	37.3	12.0	3.2	0.1	-	-	-	52.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	939.1	918.1	171.4	1.4	-	40.5	-	2,070.5
(2) Drainage needed	214.2	249.5	60.3	-	-	0.2	-	524.2
				2000				
Crops:								
(1) With a wetness hazard	709.2	498.9	112.7	-	-	0.3	-	1,321.1
(2) Drainage needed	222.9	288.0	60.3	-	-	-	-	571.2
Pasture:								
(1) With a wetness hazard	98.8	52.8	24.5	0.1	-	0.4	-	176.6
(2) Drainage needed	-	0.2	2.8	-	-	0.2	-	3.2
Forest:								
(1) With a wetness hazard	90.3	354.4	31.0	1.1	-	39.9	-	516.7
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	40.8	12.0	3.2	0.1	-	-	-	56.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	939.1	918.1	171.4	1.3	-	40.6	-	2,070.5
(2) Drainage needed	222.9	288.2	63.1	-	-	0.2	-	574.4
				2020				
Crops:								
(1) With a wetness hazard	714.2	506.6	90.7	-	-	0.3	-	1,311.8
(2) Drainage needed	227.9	300.8	58.4	-	-	-	-	587.1
Pasture:								
(1) With a wetness hazard	98.8	58.8	46.5	0.1	-	0.4	-	204.6
(2) Drainage needed	-	6.2	24.8	-	-	0.2	-	31.2
Forest:								
(1) With a wetness hazard	85.3	340.7	31.0	1.1	-	39.9	-	498.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	40.8	12.0	3.2	0.1	-	-	-	56.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	939.1	918.1	171.4	1.3	-	40.6	-	2,070.5
(2) Drainage needed	227.9	307.0	83.2	-	-	0.2	-	618.3

Table 12 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 3

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
115	.1	-	.6	-	.7
131	165.5	2.1	131.4	3.8	302.8
133	162.6	37.2	154.7	6.4	360.9
134	755.6	137.8	482.3	36.0	1,411.7
Total	1,083.8	177.1	769.0	46.2	2,076.1
			1980		
115	.1	-	.6	-	.7
131	200.8	2.1	96.0	3.8	302.7
133	197.3	37.3	115.9	8.5	359.0
134	878.6	134.4	354.8	40.3	1,408.1
Total	1,276.8	173.8	567.3	52.6	2,070.5
			2000		
115	.1	-	.6	-	.7
131	220.5	2.1	76.4	3.8	302.8
133	202.2	37.2	111.0	8.5	358.9
134	898.3	137.3	328.7	43.8	1,408.1
Total	1,321.1	176.6	516.7	56.1	2,070.5
			2020		
115	.1	-	.6	-	.7
131	224.1	3.1	71.8	3.8	302.8
133	201.2	39.2	110.0	8.5	358.9
134	886.4	162.3	315.6	43.8	1,408.1
Total	1,311.8	204.6	498.0	56.1	2,070.5

Table 13 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 3

Land Use	Lands With A Wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Mississippi River (0)												
Cropland	196.1	226.6	240.8	240.5	121.2	121.2	121.2	117.9	74.9	105.4	119.6	122.6
Pasture	27.7	26.7	26.7	32.7	27.7	26.7	26.7	26.7	-	-	-	6.0
Forest	166.5	136.0	118.3	112.6	166.5	136.0	118.3	112.6	-	-	-	-
Other	4.4	4.4	7.9	7.9	4.4	4.4	7.9	7.9	-	-	-	-
Total	394.7	393.7	393.7	393.7	319.8	288.3	274.1	265.1	74.9	105.4	119.6	128.6
Obion River (1)												
Cropland	278.1	321.2	328.4	324.8	184.5	184.3	184.3	176.3	93.6	136.9	144.1	148.5
Pasture	39.2	38.2	38.2	46.2	39.2	38.2	38.2	38.2	-	-	-	8.0
Forest	120.8	77.5	70.3	65.9	120.8	77.5	70.3	65.9	-	-	-	-
Other	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	-	-	-	-
Total	451.6	450.4	450.4	450.4	358.0	313.5	306.3	293.9	93.6	136.9	144.1	156.5
Forked Deer River (1a)												
Cropland	18.8	28.4	30.3	31.3	6.8	6.9	6.8	6.8	12.0	21.5	23.5	24.5
Pasture	-	-	-	-	-	-	-	-	-	-	-	-
Forest	17.1	7.5	5.6	4.6	17.1	7.5	5.6	4.6	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total	35.9	35.9	35.9	35.9	23.9	14.4	12.4	11.4	12.0	21.5	23.5	24.5
South Forked Deer River (1a1)												
Cropland	132.6	183.6	195.8	200.2	102.8	102.8	102.8	102.7	29.8	80.8	93.0	97.5
Pasture	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	-	-	-	-
Forest	83.3	26.0	13.8	9.4	83.3	26.0	13.8	9.4	-	-	-	-
Other	5.6	11.9	11.9	11.9	5.6	11.9	11.9	11.9	-	-	-	-
Total	233.0	233.0	233.0	233.0	203.2	152.2	140.0	135.5	29.8	80.8	93.0	97.5
North Forked Deer River (1a2)												
Cropland	102.6	127.1	130.7	125.7	83.6	83.7	83.7	78.7	19.0	43.4	47.0	47.0
Pasture	21.8	22.0	22.0	27.0	21.8	21.8	21.8	21.8	-	0.2	0.2	5.2
Forest	49.3	24.6	21.0	21.0	49.3	24.6	21.0	21.0	-	-	-	-
Other	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	-	-	-	-
Total	178.8	178.8	178.8	178.8	159.8	135.2	131.6	126.6	19.0	43.6	47.2	52.2
Hatchie River (2)												
Cropland	202.2	208.0	209.3	205.3	142.3	142.3	142.3	138.5	59.9	65.7	67.0	66.8
Pasture	40.9	39.9	39.9	43.9	40.9	39.9	39.9	39.9	-	-	-	4.0
Forest	222.0	216.3	215.0	215.0	222.0	216.3	215.0	215.0	-	-	-	-
Other	9.3	9.3	9.3	9.3	9.3	9.3	9.3	9.3	-	-	-	-
Total	474.4	473.5	473.5	473.5	414.5	407.8	406.5	402.7	59.9	65.7	67.0	70.8
Wolf River (4)												
Cropland	54.2	62.0	60.4	55.4	32.5	31.5	28.6	23.6	21.7	30.5	31.8	31.8
Pasture	19.9	19.4	22.2	27.2	19.7	19.2	19.2	19.2	0.2	0.2	3.0	8.0
Forest	54.2	44.3	43.1	43.1	54.2	44.3	43.1	43.1	-	-	-	-
Other	4.4	4.5	4.5	4.5	4.4	4.5	4.5	4.5	-	-	-	-
Total	132.7	130.2	130.2	130.2	110.8	99.5	95.4	90.4	21.9	30.7	34.8	39.8
Loosahatchie River (3)												
Cropland	99.2	119.9	125.4	128.6	80.2	80.3	80.2	80.2	19.0	39.6	45.2	48.4
Pasture	16.1	16.1	16.1	16.1	16.1	16.1	16.1	16.1	-	-	-	-
Forest	55.8	35.1	29.6	26.4	55.8	35.1	29.6	26.4	-	-	-	-
Other	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	-	-	-	-
Total	175.0	175.0	175.0	175.0	156.0	135.4	129.8	126.6	19.0	39.6	45.2	48.4
Totals for WRPA 3												
Cropland	1,083.8	1,276.8	1,321.1	1,311.8	753.9	753.0	749.9	724.7	329.9	523.8	571.2	587.1
Pasture	177.1	173.8	176.6	204.6	176.9	173.4	173.4	173.4	0.2	0.4	3.2	31.2
Forest	769.0	567.3	516.7	498.0	769.0	567.3	516.7	498.0	-	-	-	-
Other	46.2	52.6	56.1	56.1	46.2	52.6	56.1	56.1	-	-	-	-
WRPA Total	2,076.1	2,070.5	2,070.5	2,070.5	1,746.0	1,546.3	1,496.1	1,452.2	330.1	524.2	574.4	618.3

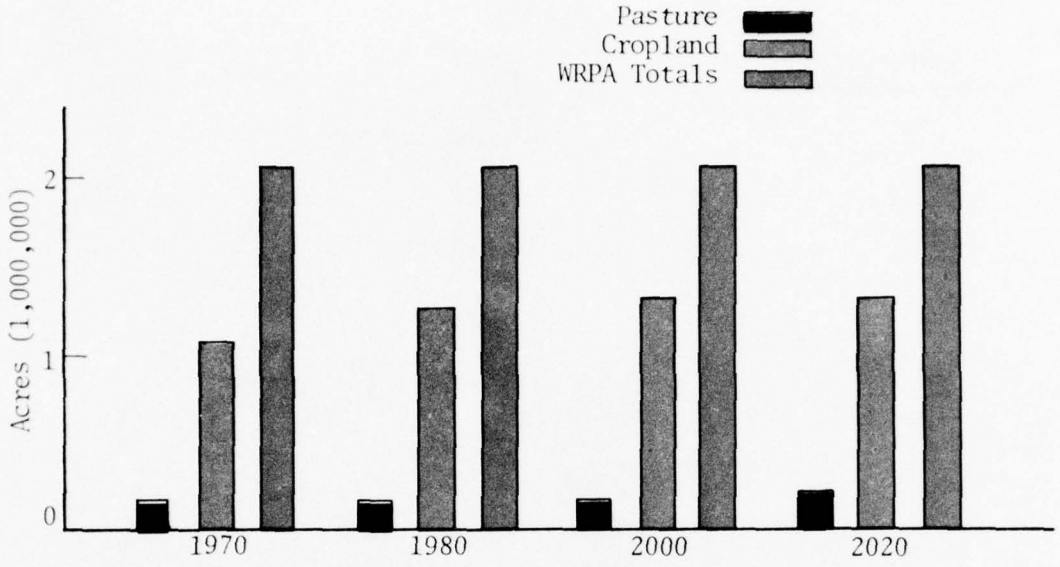


LOWER MISSISSIPPI REGION
COMPREHENSIVE STUDY

CNI HYDROLOGIC SUBBASINS

WRPA 3

FIGURE 8



Acres of Land With a Wetness Hazard
WRPA 3
Figure 9

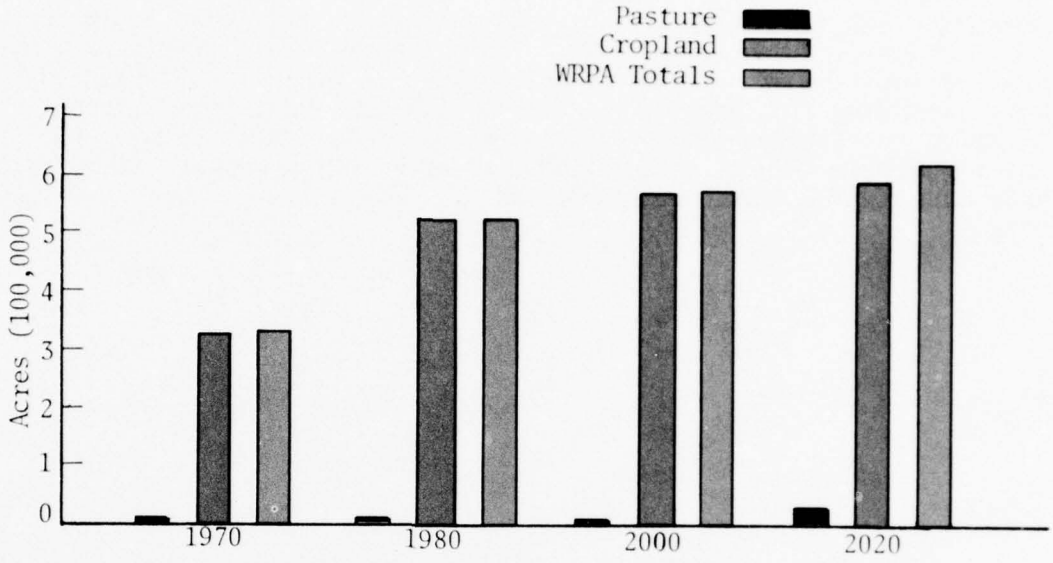
DRAINAGE NEEDS

Present Needs

Tables 11 and 13 and figure 10 show that approximately 330,100 acres of land need to be drained, of which 329,900 acres is cropland and 200 acres is pasture. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Future Needs

Future drainage needs in WRPA 3 for 1980, 2000, and 2020 are approximately 524,200 acres, 574,400 acres, and 618,300 acres respectively, based on an assumed future land use as previously explained. Tables 11 and 13 and figure 10 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.



Acres of Land Needing Drainage
WRPA 3
Figure 10

EFFECTS OF DRAINAGE

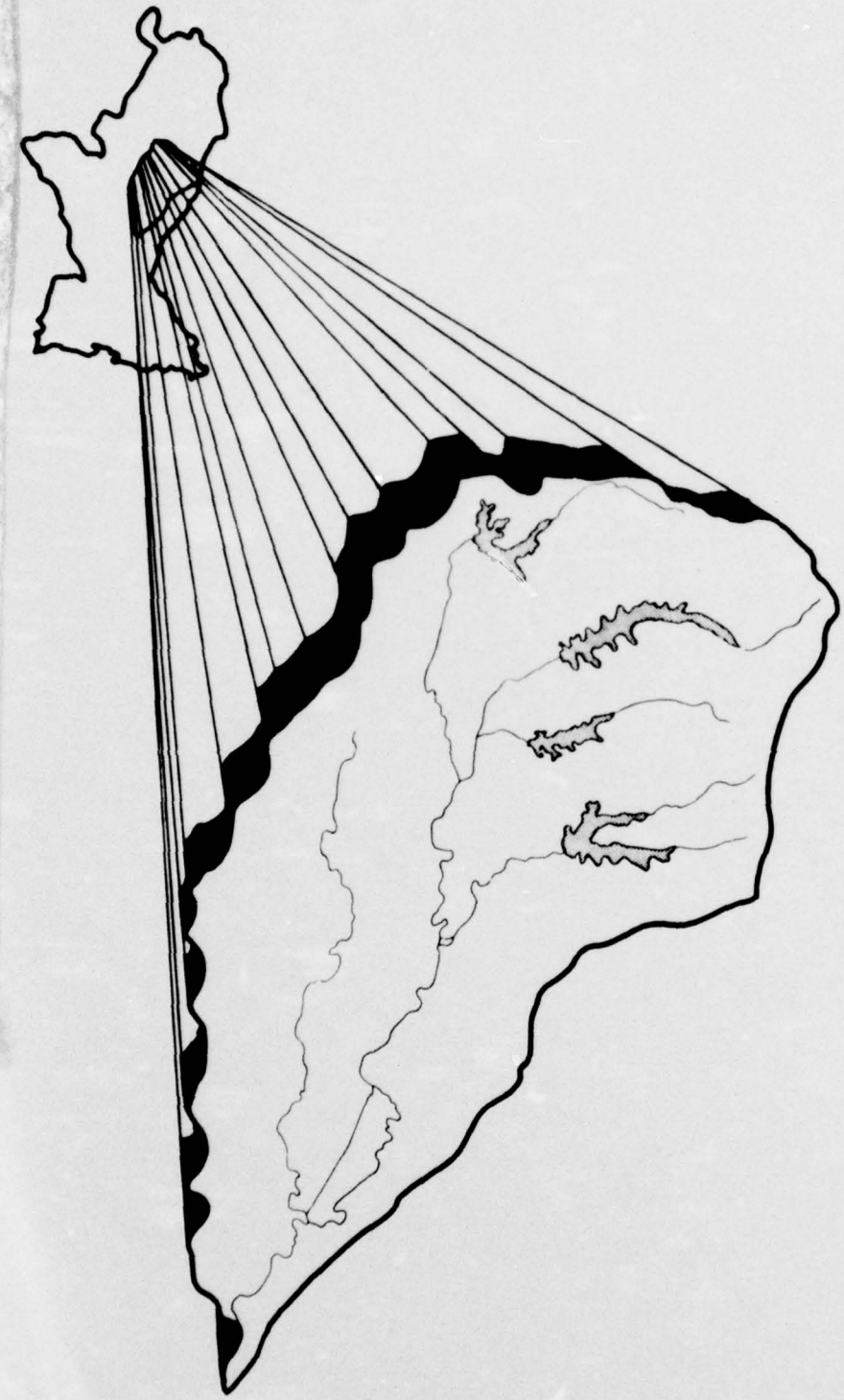
Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery

resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 4

W R P A 4

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 4.2 million acres of land in WRPA 4 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 14 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 15 gives this same information by land resource areas instead of land capability classes. Table 16 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 11 shows the CNI hydrologic subbasins. Figure 12 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 16 indicates that drainage is not needed or has already been established on about 2.7 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriuclture, under Public Law 566, the Watershed Protection and Flood Prevention Act, and Public Law 534, the Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this plannin area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 1.0 million acres of forest and 123,300 acres of other miscellaneous uses in this category within this WRPA.

Table 14 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 4

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	800.0	1,336.3	477.8	35.1	1.7	-	-	2,650.9
(2) Drainage needed	282.7	747.4	366.4	27.4	1.7	-	-	1,425.6
Pasture:								
(1) With a wetness hazard	172.3	101.1	62.7	2.4	0.4	-	-	338.9
(2) Drainage needed	-	-	-	-	-	-	-	-
Forest:								
(1) With a wetness hazard	197.3	341.3	397.4	84.6	12.8	-	-	1,033.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	48.1	43.5	30.6	1.1	-	-	-	123.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,217.7	1,822.2	968.5	123.2	14.9	-	-	4,146.5
(2) Drainage needed	282.7	747.4	366.4	27.4	1.7	-	-	1,425.6
				1980				
Crops:								
(1) With a wetness hazard	939.1	1,580.9	582.2	32.3	1.5	-	-	3,136.0
(2) Drainage needed	421.8	991.9	470.8	25.4	1.5	-	-	1,911.4
Pasture:								
(1) With a wetness hazard	167.4	93.0	87.1	2.4	0.5	-	-	350.4
(2) Drainage needed	0.2	-	22.7	-	0.2	-	-	23.1
Forest:								
(1) With a wetness hazard	84.6	117.0	270.7	87.3	12.7	-	-	572.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	31.6	35.1	29.4	1.2	-	-	-	97.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,222.7	1,826.0	969.4	123.2	14.7	-	-	4,156.0
(2) Drainage needed	422.0	991.9	493.5	25.4	1.7	-	-	1,934.5
				2000				
Crops:								
(1) With a wetness hazard	976.6	1,643.3	606.8	31.9	1.5	-	-	3,260.1
(2) Drainage needed	459.3	1,054.3	495.4	24.9	1.5	-	-	2,035.4
Pasture:								
(1) With a wetness hazard	167.4	93.0	87.1	2.8	0.5	-	-	350.8
(2) Drainage needed	0.2	-	22.7	0.4	0.2	-	-	23.5
Forest:								
(1) With a wetness hazard	37.4	56.2	246.1	87.3	12.8	-	-	439.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	23.1	33.5	29.4	1.2	-	-	-	87.2
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,184.5	1,826.0	969.4	123.2	14.8	-	-	4,137.9
(2) Drainage needed	459.5	1,054.3	518.1	25.3	1.7	-	-	2,058.9
				2020				
Crops:								
(1) With a wetness hazard	1,022.2	1,693.5	650.5	20.5	-	-	-	3,386.7
(2) Drainage needed	504.9	1,104.6	539.5	19.9	-	-	-	2,168.9
Pasture:								
(1) With a wetness hazard	137.5	93.0	88.7	20.2	2.1	-	-	341.5
(2) Drainage needed	0.2	-	24.4	17.8	1.7	-	-	44.1
Forest:								
(1) With a wetness hazard	23.4	20.0	205.0	81.3	12.8	-	-	342.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	10.0	19.4	25.1	1.2	-	-	-	55.7
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	1,193.1	1,825.9	969.3	123.2	14.9	-	-	4,126.4
(2) Drainage needed	505.1	1,104.6	563.9	37.7	1.7	-	-	2,213.0

Table 15 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 4

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
131	2,177.6	112.4	760.5	86.3	3,136.8
133	212.9	86.9	109.4	23.1	432.3
134	260.4	139.6	163.5	13.9	577.4
Total	2,650.9	338.9	1,033.4	123.3	4,146.5
			1980		
131	2,535.9	119.9	410.3	72.5	3,138.6
133	265.5	89.0	63.4	16.4	434.3
134	334.6	141.5	98.7	8.4	583.2
Total	3,136.0	350.4	572.3	97.3	4,156.0
			2000		
131	2,644.7	120.3	327.1	66.4	3,158.5
133	282.8	89.0	40.4	14.0	426.2
134	332.6	141.5	72.3	6.8	553.2
Total	3,260.1	350.8	439.8	87.2	4,137.9
			2020		
131	2,701.0	128.0	261.0	43.6	3,133.6
133	303.4	76.6	33.4	7.7	421.1
134	382.3	136.9	48.1	4.4	571.7
Total	3,386.7	341.5	342.5	55.7	4,126.4

Table 16 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 4

Land Use	Lands With A Wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Yazoo River (6)												
Cropland	375.5	464.1	484.0	500.2	179.1	179.0	179.2	172.3	196.4	285.1	304.8	327.9
Pasture	53.5	55.5	55.5	56.8	53.5	55.5	55.5	42.3	-	-	-	14.5
Forest	216.1	128.6	110.5	96.0	216.1	128.6	110.5	96.0	-	-	-	-
Other	13.4	12.3	10.6	7.5	13.4	12.3	10.6	7.5	-	-	-	-
Total	658.5	660.5	660.6	660.5	462.1	375.4	355.8	318.1	196.4	285.1	304.8	342.4
Tallahatchie River (6a)												
Cropland	364.7	432.6	455.7	497.7	198.0	197.9	198.0	197.9	166.7	234.7	257.7	299.8
Pasture	87.9	90.9	90.9	74.2	87.9	90.9	90.9	74.2	-	-	-	-
Forest	162.3	97.7	68.5	47.1	162.3	97.7	68.5	47.1	-	-	-	-
Other	14.3	10.9	8.9	5.0	14.3	10.9	8.9	5.0	-	-	-	-
Total	629.2	632.1	624.0	624.0	462.5	397.4	366.3	324.2	166.7	234.7	257.7	299.8
Coldwater River (6a1)												
Cropland	360.7	412.4	430.1	448.5	221.8	221.6	221.6	221.7	138.9	190.8	208.5	226.8
Pasture	34.1	29.8	29.8	29.8	34.1	29.8	29.8	29.8	-	-	-	-
Forest	106.2	65.5	48.8	37.7	106.2	65.5	48.8	37.7	-	-	-	-
Other	25.3	18.4	17.3	10.1	25.3	18.4	17.3	10.1	-	-	-	-
Total	526.3	526.1	526.0	526.1	387.4	335.3	317.5	299.3	138.9	190.8	208.5	226.8
Yalobusha River (6a2)												
Cropland	220.0	270.1	281.6	292.6	150.0	150.1	150.0	149.6	70.0	120.0	131.6	143.0
Pasture	91.9	95.1	95.1	99.1	91.9	94.9	94.9	94.9	-	0.2	0.2	4.2
Forest	147.5	102.8	83.7	68.5	147.5	102.8	83.7	68.5	-	-	-	-
Other	20.7	15.1	12.7	6.4	20.7	15.1	12.7	6.4	-	-	-	-
Total	480.1	483.1	473.1	466.6	410.1	362.9	341.3	319.4	70.0	120.2	131.8	147.2
Sunflower River (6b)												
Cropland	1,105.2	1,259.1	1,302.2	1,337.3	401.6	401.2	401.1	401.6	703.6	857.9	901.1	935.7
Pasture	57.5	65.1	65.5	67.3	57.5	48.2	48.2	48.2	-	16.9	17.3	19.1
Forest	253.9	100.9	60.4	31.3	253.9	100.9	60.4	31.3	-	-	-	-
Other	36.8	30.1	27.1	19.3	36.8	30.1	27.1	19.3	-	-	-	-
Total	1,453.4	1,455.2	1,455.2	1,455.2	749.8	580.4	536.8	500.4	703.6	874.8	918.4	954.8
Steele Bayou (6c)												
Cropland	224.8	297.7	306.5	310.4	74.8	74.8	74.8	74.7	150.0	222.9	231.7	235.7
Pasture	14.0	14.0	14.0	14.3	14.0	8.0	8.0	8.0	-	6.0	6.0	6.3
Forest	147.4	76.8	67.9	61.9	147.4	76.8	67.9	61.9	-	-	-	-
Other	12.8	10.5	10.6	7.4	12.8	10.5	10.6	7.4	-	-	-	-
Total	399.0	399.0	399.0	394.0	249.0	170.1	161.3	152.0	150.0	228.9	237.7	242.0
Totals for WRPA 4												
Cropland	2,650.9	3,136.0	3,260.1	3,386.7	1,225.3	1,224.6	1,224.7	1,217.8	1,425.6	1,911.4	2,035.4	2,168.9
Pasture	338.9	350.4	350.8	341.5	338.9	327.3	327.3	297.4	-	23.1	23.5	44.1
Forest	1,033.4	572.3	439.8	342.5	1,033.4	572.3	439.8	342.5	-	-	-	-
Other	123.3	97.3	87.2	55.7	123.3	97.3	87.2	55.7	-	-	-	-
WRPA Total	4,146.5	4,156.0	4,137.9	4,126.4	2,720.9	2,221.5	2,079.0	1,913.4	1,425.6	1,934.5	2,058.9	2,213.0

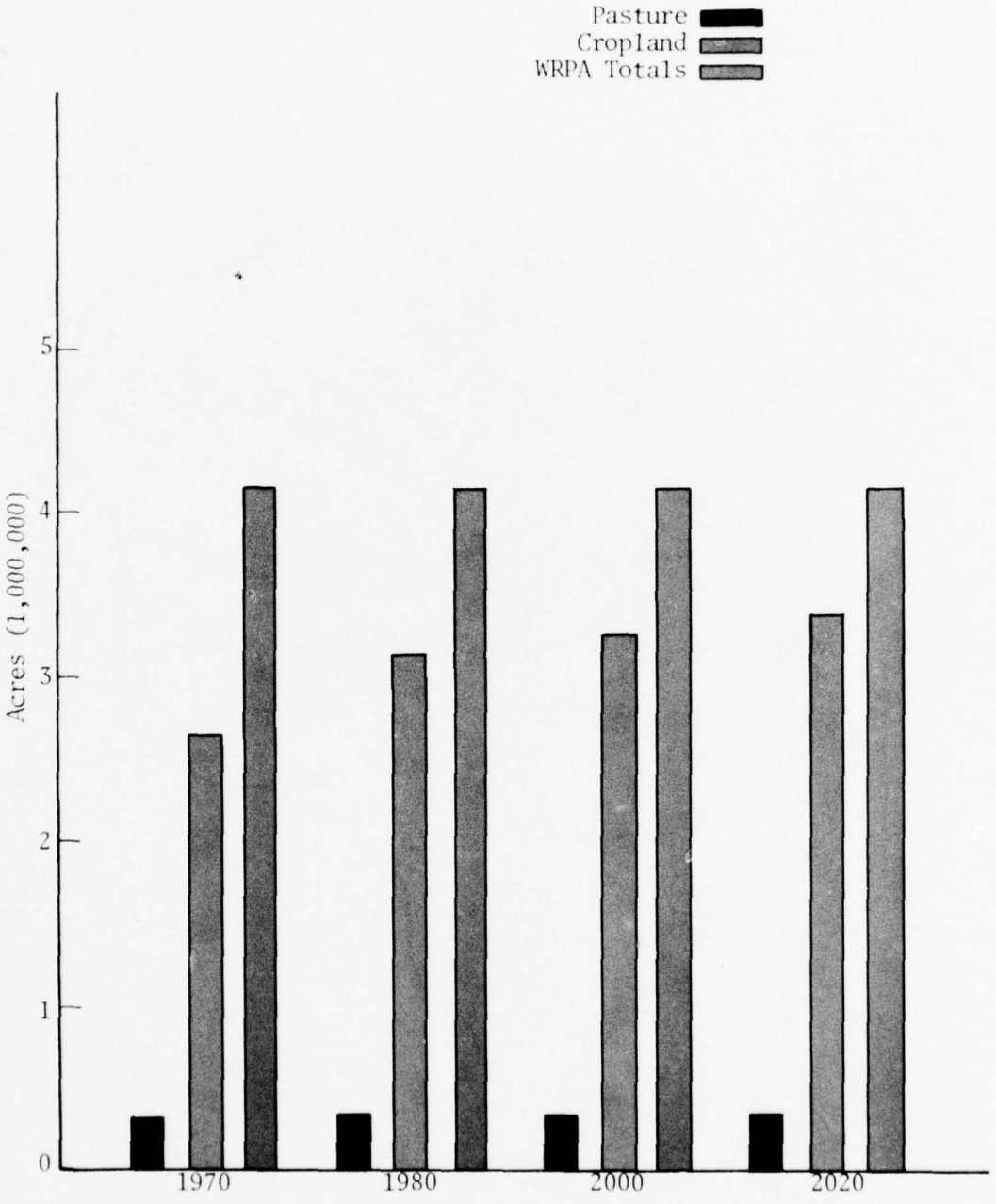


LOWER MISSISSIPPI REGION
COMPREHENSIVE STUDY

CNI HYDROLOGIC SUBBASINS

WRPA 4

FIGURE 11



Acres of Land With a Wetness Hazard
WRPA 4
Figure 12

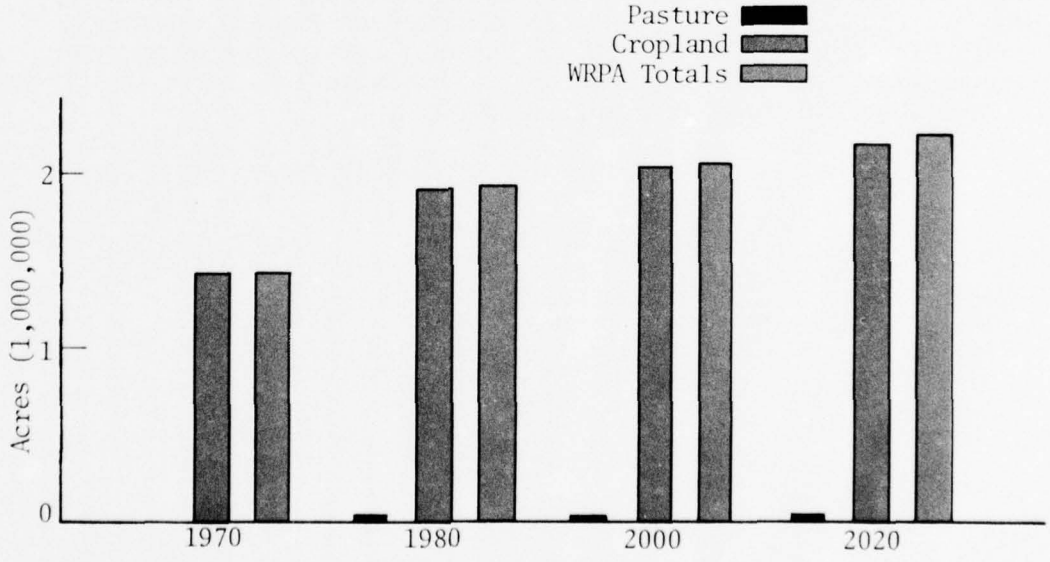
DRAINAGE NEEDS

Present Needs

Tables 14 and 16 and figure 13 show that approximately 1.4 million acres of land need to be drained, all of which is now in cropland. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Future Needs

Future drainage needs in WRPA 4 for 1980, 2000, and 2020 are approximately 1.9 million acres, 2.1 million acres, and 2.2 million acres respectively, based on an assumed future land use as previously explained. Tables 14 and 16 and figure 13 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.



Acres of Land Needing Drainage
WRPA 4
Figure 13

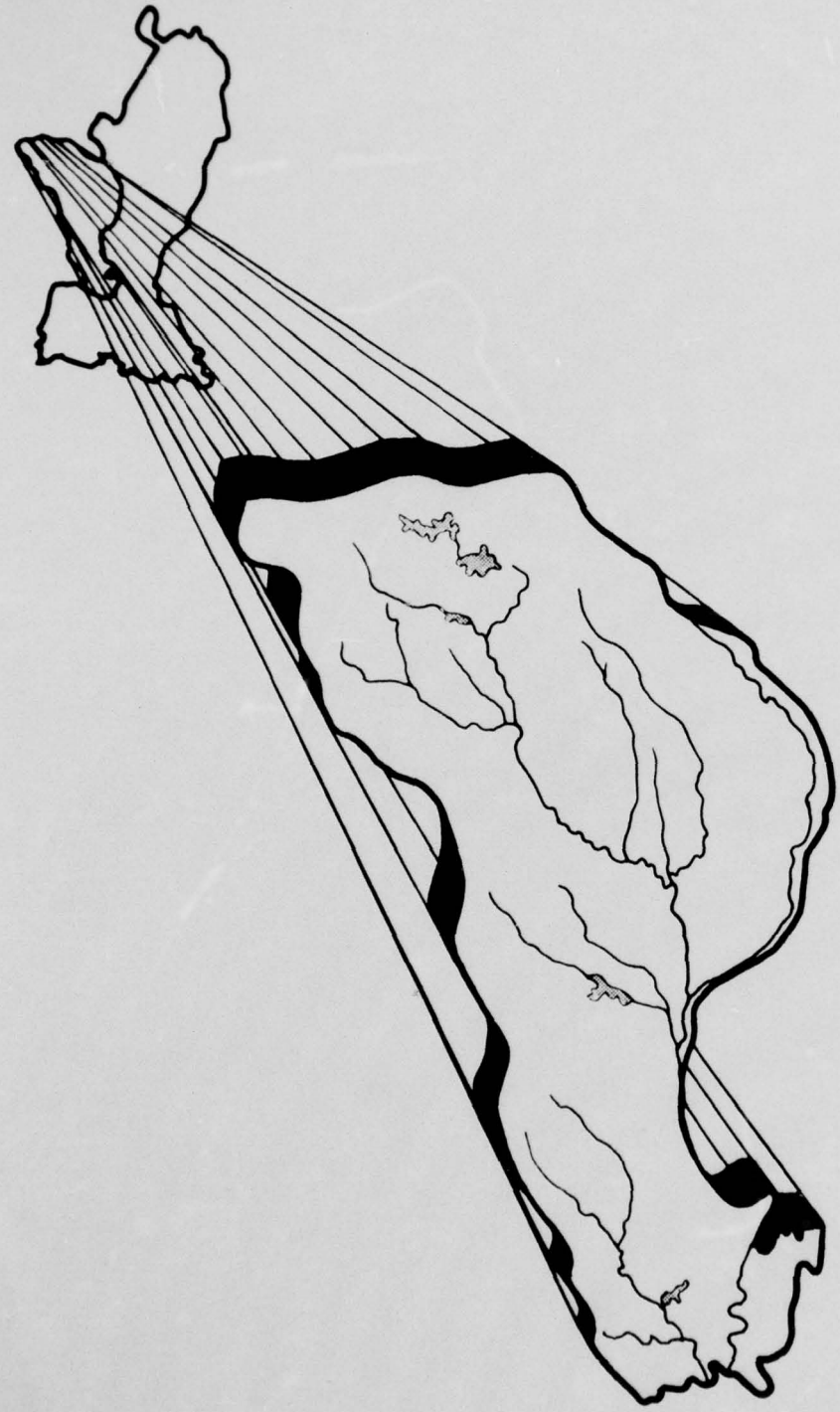
EFFECTS OF DRAINAGE

Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 5

W R P A 5

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 4.8 million acres of land in WRPA 5 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 17 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 18 gives this same information by land resource areas instead of land capability classes. Table 19 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 14 shows the CNI hydrologic subbasins. Figure 15 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 19 indicates that drainage is not needed or has already been established on about 4.6 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 4.1 million acres of forest and 26,100 acres of other miscellaneous uses in this category within this WRPA.

Table 17 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 5

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	80.7	310.6	19.2	34.7	7.6	-	-	452.8
(2) Drainage needed	34.3	191.2	5.7	0.9	2.9	-	-	235.0
Pasture:								
(1) With a wetness hazard	38.3	118.6	30.6	69.0	17.6	0.6	-	274.7
(2) Drainage needed	0.2	38.3	-	-	-	-	-	38.5
Forest:								
(1) With a wetness hazard	333.1	1,220.1	528.6	1,200.9	785.6	5.3	-	4,073.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	5.1	8.9	1.8	2.1	6.6	1.1	0.5	26.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	457.2	1,658.2	580.2	1,306.7	817.4	7.0	0.5	4,827.2
(2) Drainage needed	34.5	229.5	5.7	0.9	2.9	-	-	273.5
				1980				
Crops:								
(1) With a wetness hazard	196.8	377.9	12.9	24.2	1.2	-	-	613.0
(2) Drainage needed	150.8	291.9	3.3	0.9	1.2	-	-	448.1
Pasture:								
(1) With a wetness hazard	40.3	127.5	33.9	83.5	24.0	0.6	-	309.8
(2) Drainage needed	0.2	39.3	1.3	10.5	6.4	-	-	57.7
Forest:								
(1) With a wetness hazard	172.8	1,100.3	528.7	1,193.9	785.6	3.5	-	3,784.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	49.3	60.9	6.8	9.1	6.6	2.8	0.5	136.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	459.2	1,666.6	582.3	1,310.7	817.4	6.9	0.5	4,843.6
(2) Drainage needed	151.0	331.2	4.6	11.4	7.6	-	-	505.8
				2000				
Crops:								
(1) With a wetness hazard	231.1	453.1	9.9	21.0	-	-	-	715.1
(2) Drainage needed	186.4	359.7	2.4	0.9	-	-	-	549.4
Pasture:								
(1) With a wetness hazard	41.3	130.3	36.9	86.7	25.3	0.6	-	321.1
(2) Drainage needed	1.3	42.1	4.3	13.6	7.7	-	-	69.0
Forest:								
(1) With a wetness hazard	119.4	1,013.2	528.7	1,193.9	785.6	3.5	-	3,644.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	60.4	63.8	6.8	9.1	6.6	2.8	0.5	150.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	452.2	1,660.4	582.3	1,310.7	817.5	6.9	0.5	4,830.5
(2) Drainage needed	187.7	401.8	6.7	14.5	7.7	-	-	618.4
				2020				
Crops:								
(1) With a wetness hazard	257.3	490.0	6.5	17.1	-	-	-	770.9
(2) Drainage needed	212.8	398.8	-	0.8	-	-	-	612.4
Pasture:								
(1) With a wetness hazard	50.3	152.1	40.2	90.6	25.3	0.7	-	359.2
(2) Drainage needed	10.3	63.8	7.7	17.5	7.6	-	-	106.9
Forest:								
(1) With a wetness hazard	79.3	950.2	528.7	1,193.9	785.6	3.6	-	3,541.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	63.8	66.9	6.8	9.1	6.6	2.8	0.5	156.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	450.7	1,659.2	582.2	1,310.7	817.5	7.1	0.5	4,827.9
(2) Drainage needed	223.1	462.6	7.7	18.3	7.6	-	-	719.3

Table 18 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 5

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
86	7.5	11.9	10.7	-	30.1
119	2.9	19.1	81.6	.4	104.0
131	343.0	67.3	476.6	6.1	893.0
133	55.7	148.8	3,124.0	16.0	3,344.5
134	43.7	27.6	380.7	3.6	455.6
Total	452.8	274.7	4,073.6	26.1	4,827.2
			1980		
86	6.9	12.5	10.7	-	30.1
119	1.9	20.1	81.6	.4	104.0
131	390.0	80.2	370.7	58.6	899.5
133	79.6	167.3	3,063.1	44.4	3,354.4
134	134.6	29.7	258.7	32.6	455.6
Total	613.0	309.8	3,784.8	136.0	4,843.6
			2000		
86	5.2	14.2	10.7	-	30.1
119	1.9	21.1	80.6	.4	104.0
131	448.2	81.5	302.7	60.5	892.9
133	117.8	173.0	3,001.6	55.5	3,347.9
134	142.0	31.3	248.7	33.6	455.6
Total	715.1	321.1	3,644.3	150.0	4,830.5
			2020		
86	5.2	14.2	10.7	-	30.1
119	.9	22.1	79.6	.4	103.0
131	482.5	91.2	255.7	62.3	891.7
133	138.0	190.2	2,959.1	60.2	3,347.5
134	144.3	41.5	236.2	33.6	455.6
Total	770.9	359.2	3,541.3	156.5	4,827.9

Table 19 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 5

Land Use	Lands With A Wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Mississippi River (0)												
Cropland	3.9	4.2	2.8	2.2	3.9	3.4	2.0	1.8	-	0.8	0.8	0.4
Pasture	1.3	1.4	1.4	1.5	1.3	1.3	1.3	1.3	-	0.1	0.1	0.2
Forest	14.0	4.1	4.2	4.3	14.0	4.1	4.2	4.3	-	-	-	-
Other	1.9	11.4	12.4	12.6	1.9	11.4	12.4	12.6	-	-	-	-
Total	21.1	21.1	20.8	20.6	21.1	20.2	19.9	20.0	-	0.9	0.9	0.6
Red River (3)												
Cropland	177.7	248.2	262.6	278.0	78.6	77.1	76.4	74.6	99.1	171.1	186.2	203.4
Pasture	53.5	59.3	60.1	64.0	16.6	20.5	20.5	20.5	36.9	38.8	39.6	43.5
Forest	285.3	203.4	188.2	168.2	285.3	203.4	188.2	168.2	-	-	-	-
Other	1.4	11.4	11.4	12.2	1.4	11.4	11.4	12.2	-	-	-	-
Total	517.9	522.3	522.3	522.4	381.9	312.4	296.5	275.5	136.0	209.9	225.8	246.9
Black River (3p)												
Cropland	-	-	-	-	-	-	-	-	-	-	-	-
Pasture	-	-	-	-	-	-	-	-	-	-	-	-
Forest	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	-	-	-	-
Ouachita River (3p1)												
Cropland	72.4	49.6	65.2	71.9	39.6	14.3	21.6	21.2	32.8	35.3	43.6	50.7
Pasture	82.5	94.9	97.5	113.1	81.5	85.5	85.5	85.5	1.0	9.4	12.0	27.6
Forest	1,509.7	1,481.7	1,451.7	1,426.7	1,509.7	1,481.7	1,451.7	1,426.7	-	-	-	-
Other	7.4	49.8	54.9	57.6	7.4	49.8	54.9	57.6	-	-	-	-
Total	1,672.0	1,676.0	1,669.3	1,669.3	1,638.2	1,631.3	1,613.7	1,591.0	33.8	44.7	55.6	78.3
Little Missouri River (3p1a)												
Cropland	14.2	14.7	32.8	38.2	9.4	7.9	6.0	4.0	4.8	6.8	26.8	34.2
Pasture	34.6	40.1	42.0	45.7	34.6	38.6	38.5	38.6	-	1.5	3.5	7.1
Forest	292.8	285.8	265.8	256.8	292.8	285.8	265.8	256.8	-	-	-	-
Other	0.4	5.4	5.4	5.4	0.4	5.4	5.4	5.4	-	-	-	-
Total	342.0	346.0	346.0	346.1	337.2	337.7	315.7	304.8	4.8	8.3	30.3	41.3
Saline River (3p1b)												
Cropland	19.8	6.8	23.9	24.3	14.1	3.5	7.5	7.4	5.7	3.3	16.4	16.9
Pasture	34.8	37.8	39.8	43.9	34.8	34.8	34.8	34.8	-	3.0	5.0	9.1
Forest	750.3	750.3	725.3	718.3	750.3	750.3	725.3	718.3	-	-	-	-
Other	5.2	15.2	21.1	22.5	5.2	15.2	21.1	22.5	-	-	-	-
Total	810.1	810.1	810.1	809.0	804.4	803.8	788.7	783.0	5.7	6.3	21.4	26.0
Bayou Bartholomew (3p1c)												
Cropland	121.9	249.3	293.2	321.7	43.3	42.7	42.6	39.6	78.6	206.8	250.6	282.1
Pasture	34.9	41.3	42.7	45.7	34.9	38.9	39.0	39.0	-	2.4	3.7	6.7
Forest	526.6	376.6	331.6	300.1	526.6	376.6	331.6	300.1	-	-	-	-
Other	6.4	26.4	26.4	26.4	6.4	26.4	26.4	26.4	-	-	-	-
Total	689.8	693.8	693.9	693.9	611.2	484.6	439.6	405.1	78.6	209.2	254.3	288.8
Bayou D'Arbonne (3p1d)												
Cropland	1.5	0.7	-	3.8	1.5	0.7	-	-	-	-	-	3.8
Pasture	7.9	8.7	9.4	10.6	7.9	7.8	7.9	7.9	-	0.9	1.5	2.7
Forest	142.8	142.8	142.8	137.8	142.8	142.8	142.8	137.8	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total	152.2	152.2	152.2	152.2	152.2	151.3	150.7	145.7	-	0.9	1.5	6.5
Big Corine Bayou (3p1d(1))												
Cropland	1.5	1.4	2.8	2.3	0.5	0.4	0.4	0.4	1.0	1.0	2.4	1.9
Pasture	9.8	9.9	10.9	13.4	9.8	9.8	9.8	9.8	-	0.1	1.1	3.6
Forest	138.1	137.1	134.7	132.1	138.1	137.1	134.7	132.1	-	-	-	-
Other	0.9	1.9	1.9	2.4	0.9	1.9	1.9	2.4	-	-	-	-
Total	150.3	150.3	150.3	150.2	149.3	149.2	146.8	144.7	1.0	1.1	3.5	5.5
Little River (3p3)												
Cropland	39.5	27.5	21.8	21.8	26.5	14.5	8.8	9.0	13.0	13.0	13.0	12.8
Pasture	2.8	3.8	4.3	5.5	2.2	2.3	2.2	2.3	0.6	1.5	2.1	3.2
Forest	116.3	116.3	113.3	110.3	116.3	116.3	113.3	110.3	-	-	-	-
Other	0.7	11.7	13.7	14.4	0.7	11.7	13.7	14.4	-	-	-	-
Total	159.3	159.3	153.1	152.0	145.7	144.8	138.0	136.0	13.6	14.5	15.1	16.0
Castor Bayou (3p3a)												
Cropland	0.4	6.4	6.0	5.2	0.4	0.4	0.4	0.5	-	6.0	5.6	4.7
Pasture	5.4	5.4	5.8	6.7	5.4	5.4	5.4	5.4	-	-	0.4	1.3
Forest	169.3	162.3	162.3	162.3	169.3	162.3	162.3	162.3	-	-	-	-
Other	0.4	1.4	1.4	1.4	0.4	1.4	1.4	1.4	-	-	-	-
Total	175.5	175.5	175.5	175.6	175.5	169.5	169.5	169.6	-	6.0	6.0	6.0
Dugdemona Bayou (3p3b)												
Cropland	-	4.0	4.0	1.5	-	-	-	-	-	4.0	4.0	1.5
Pasture	7.2	7.2	7.2	9.1	7.2	7.2	7.2	7.2	-	-	-	1.9
Forest	122.1	118.1	118.1	118.1	122.1	118.1	118.1	118.1	-	-	-	-
Other	1.4	1.4	1.4	1.6	1.4	1.4	1.4	1.6	-	-	-	-
Total	130.7	130.7	130.7	130.3	130.7	126.7	126.7	126.9	-	4.0	4.0	3.4
Totals for WRPA 5												
Cropland	452.8	613.0	715.1	770.9	217.8	164.9	165.7	158.5	235.0	448.1	549.4	612.4
Pasture	274.7	309.8	321.1	359.2	236.2	252.1	252.1	252.3	38.5	57.7	69.0	106.9
Forest	4,073.6	3,784.8	3,644.3	3,541.3	4,073.6	3,784.8	3,644.3	3,541.3	-	-	-	-
Other	26.1	136.0	150.0	156.5	26.1	136.0	150.0	156.5	-	-	-	-
WRPA Total	4,827.2	4,843.6	4,830.5	4,827.9	4,553.7	4,337.8	4,212.1	4,108.6	273.5	505.8	618.4	719.3

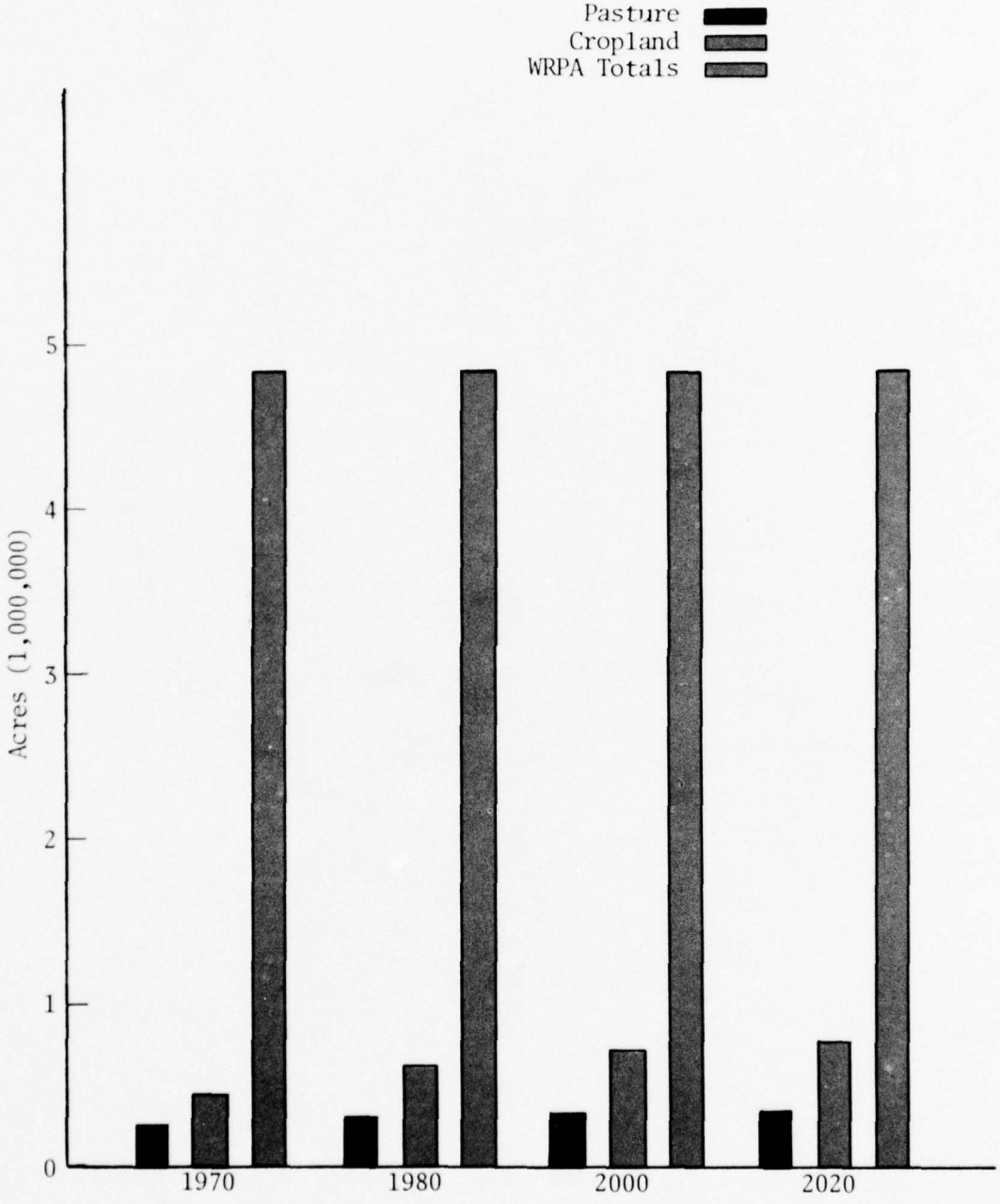


LOWER MISSISSIPPI REGION
COMPREHENSIVE STUDY

CNI HYDROLOGIC SUBBASINS

WRPA 5

FIGURE 14



Acres of Land With a Wetness Hazard
WRPA 5
Figure 15

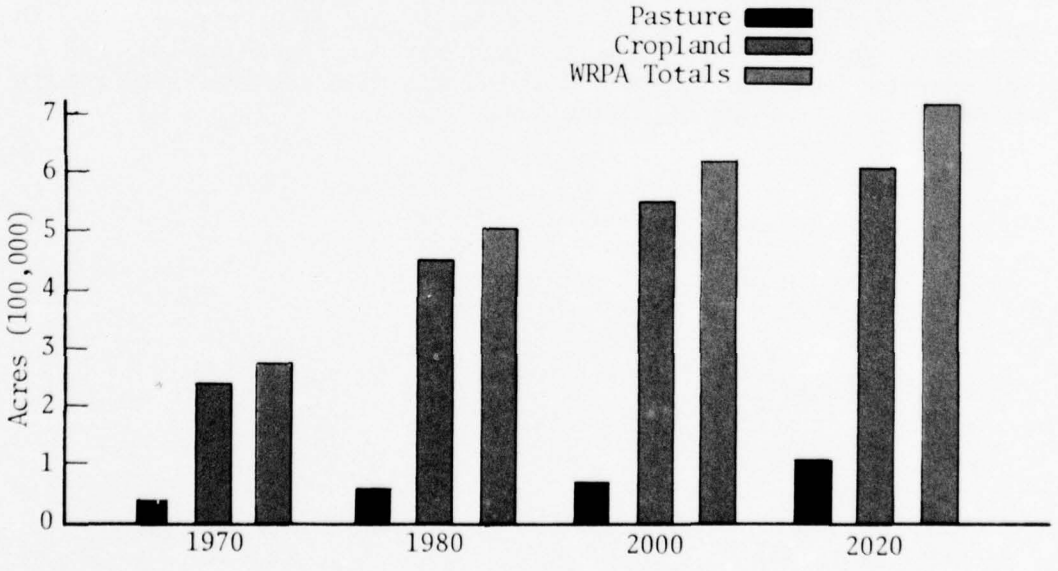
DRAINAGE NEEDS

Present Needs

Tables 17 and 19 and figure 16 show that approximately 273,500 acres of land need to be drained, of which 235,000 acres is cropland and 38,500 acres is pasture. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Future Needs

Future drainage needs in WRPA 5 for 1980, 2000, and 2020 are approximately 505,800 acres, 618,400 acres, and 719,300 acres respectively, based on an assumed future land use as previously explained. Tables 17 and 19 and figure 16 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.



Acres of Land Needing Drainage
WRPA 5
Figure 16

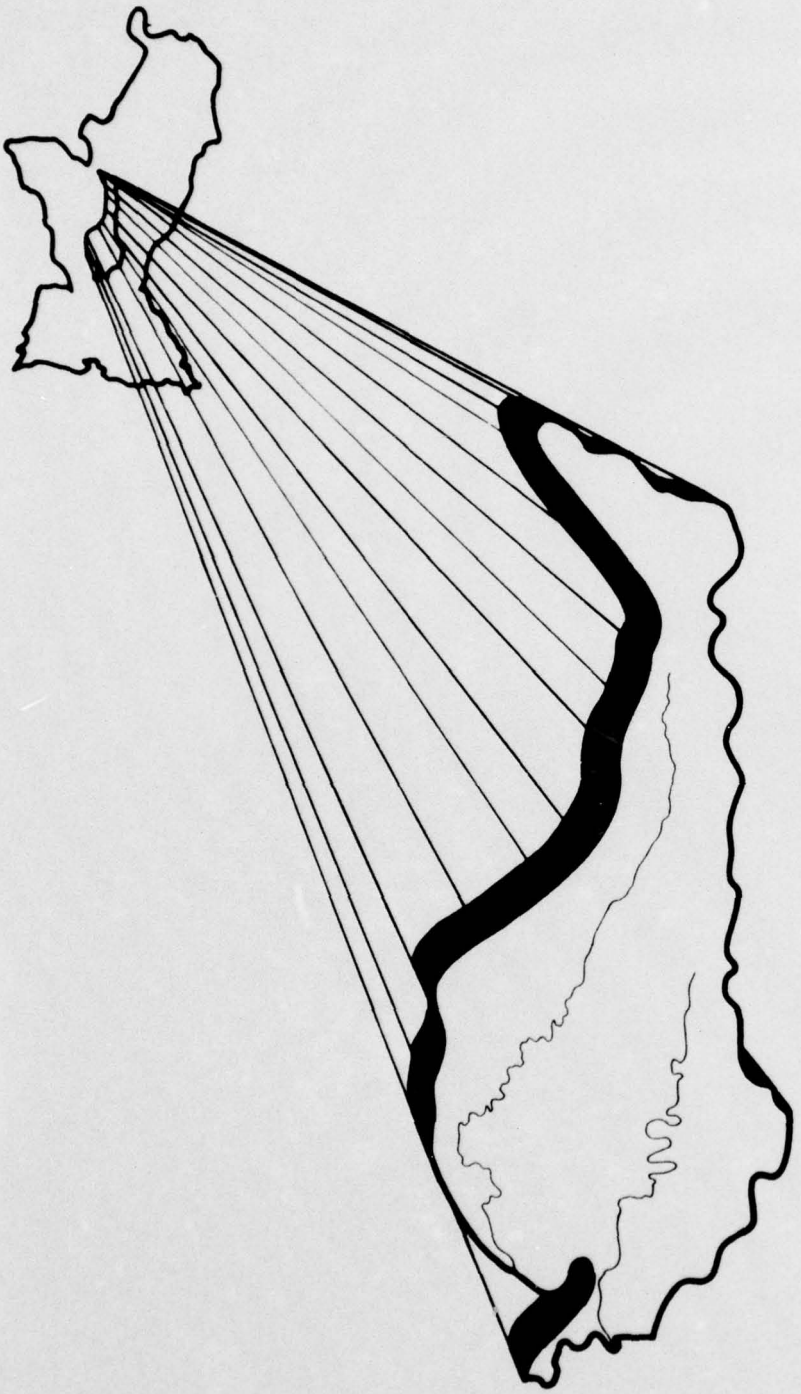
EFFECTS OF DRAINAGE

Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 6

W R P A 6

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 2.8 million acres of land in WRPA 6 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 20 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 21 gives this same information by land resource areas instead of land capability classes. Table 22 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 17 shows the CNI hydrologic subbasins. Figure 18 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 22 indicates that drainage is not needed or has already been established on about 1.8 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 795,000 acres of forest and 24,500 acres of other miscellaneous uses in this category within this WRPA.

Table 20 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 6

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	314.9	1,306.1	1.3	3.0	-	-	-	1,625.3
(2) Drainage needed	162.9	749.2	-	-	-	-	-	912.1
Pasture:								
(1) With a wetness hazard	84.4	309.1	-	3.6	-	-	-	397.1
(2) Drainage needed	0.2	115.5	-	0.2	-	-	-	115.9
Forest:								
(1) With a wetness hazard	81.1	629.0	-	81.9	3.0	-	-	795.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	7.9	15.6	-	1.0	-	-	-	24.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	488.3	2,259.8	1.3	89.5	3.0	-	-	2,841.9
(2) Drainage needed	163.1	864.7	-	0.2	-	-	-	1,028.0
				1980				
Crops:								
(1) With a wetness hazard	327.9	1,392.7	1.3	3.0	-	-	-	1,724.9
(2) Drainage needed	175.9	835.9	-	-	-	-	-	1,011.8
Pasture:								
(1) With a wetness hazard	77.8	289.0	-	3.6	-	-	-	370.4
(2) Drainage needed	0.2	115.5	-	0.2	-	-	-	115.9
Forest:								
(1) With a wetness hazard	68.1	542.4	-	81.9	3.0	-	-	695.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	7.9	15.5	-	1.0	-	-	-	24.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	481.7	2,239.6	1.3	89.5	3.0	-	-	2,815.1
(2) Drainage needed	176.1	951.4	-	0.2	-	-	-	1,127.7
				2000				
Crops:								
(1) With a wetness hazard	340.0	1,438.3	1.3	3.0	-	-	-	1,782.6
(2) Drainage needed	188.0	883.5	-	-	-	-	-	1,071.5
Pasture:								
(1) With a wetness hazard	77.8	291.0	-	3.6	-	-	-	372.4
(2) Drainage needed	0.2	117.5	-	0.2	-	-	-	117.9
Forest:								
(1) With a wetness hazard	60.1	496.3	-	81.9	3.0	-	-	641.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	3.8	14.0	-	1.0	-	-	-	18.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	481.7	2,239.6	1.3	89.5	3.0	-	-	2,815.1
(2) Drainage needed	188.2	1,001.0	-	0.2	-	-	-	1,189.4
				2020				
Crops:								
(1) With a wetness hazard	353.3	1,482.9	1.3	3.0	-	-	-	1,840.5
(2) Drainage needed	201.4	930.1	-	-	-	-	-	1,131.5
Pasture:								
(1) With a wetness hazard	77.8	294.3	-	3.6	-	-	-	375.7
(2) Drainage needed	0.2	120.7	-	0.2	-	-	-	121.1
Forest:								
(1) With a wetness hazard	47.1	447.7	-	81.9	3.0	-	-	579.7
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	1.5	7.6	-	1.0	-	-	-	10.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	479.7	2,232.5	1.3	89.5	3.0	-	-	2,806.0
(2) Drainage needed	201.6	1,050.8	-	0.2	-	-	-	1,252.6

Table 21 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 6

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
131	1,266.5	287.6	629.2	19.4	2,202.7
134	358.8	109.5	165.8	5.1	639.2
Total	1,625.3	397.1	795.0	24.5	2,841.9
			1980		
131	1,366.1	269.9	529.5	19.3	2,184.8
134	358.8	100.5	165.9	5.1	630.3
Total	1,724.9	370.4	695.4	24.4	2,815.1
			2000		
131	1,424.7	269.9	475.4	14.9	2,184.9
134	357.9	102.5	165.9	3.9	630.2
Total	1,782.6	372.4	641.3	18.8	2,815.1
			2020		
131	1,471.2	269.9	426.8	7.9	2,175.8
134	369.3	105.8	152.9	2.2	630.2
Total	1,840.5	375.7	579.7	10.1	2,806.0

DRAINAGE NEEDS

Present Needs

Tables 20 and 22 and figure 19 show that approximately 1.0 million acres of land need to be drained, of which 912,100 acres is cropland and 115,900 acres is pasture. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Future Needs

Future drainage needs in WRPA 6 for 1980, 2000, and 2020 are approximately 1.1 million acres, 1.2 million acres, and 1.3 million acres respectively, based on an assumed future land use as previously explained.

Table 22 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 6

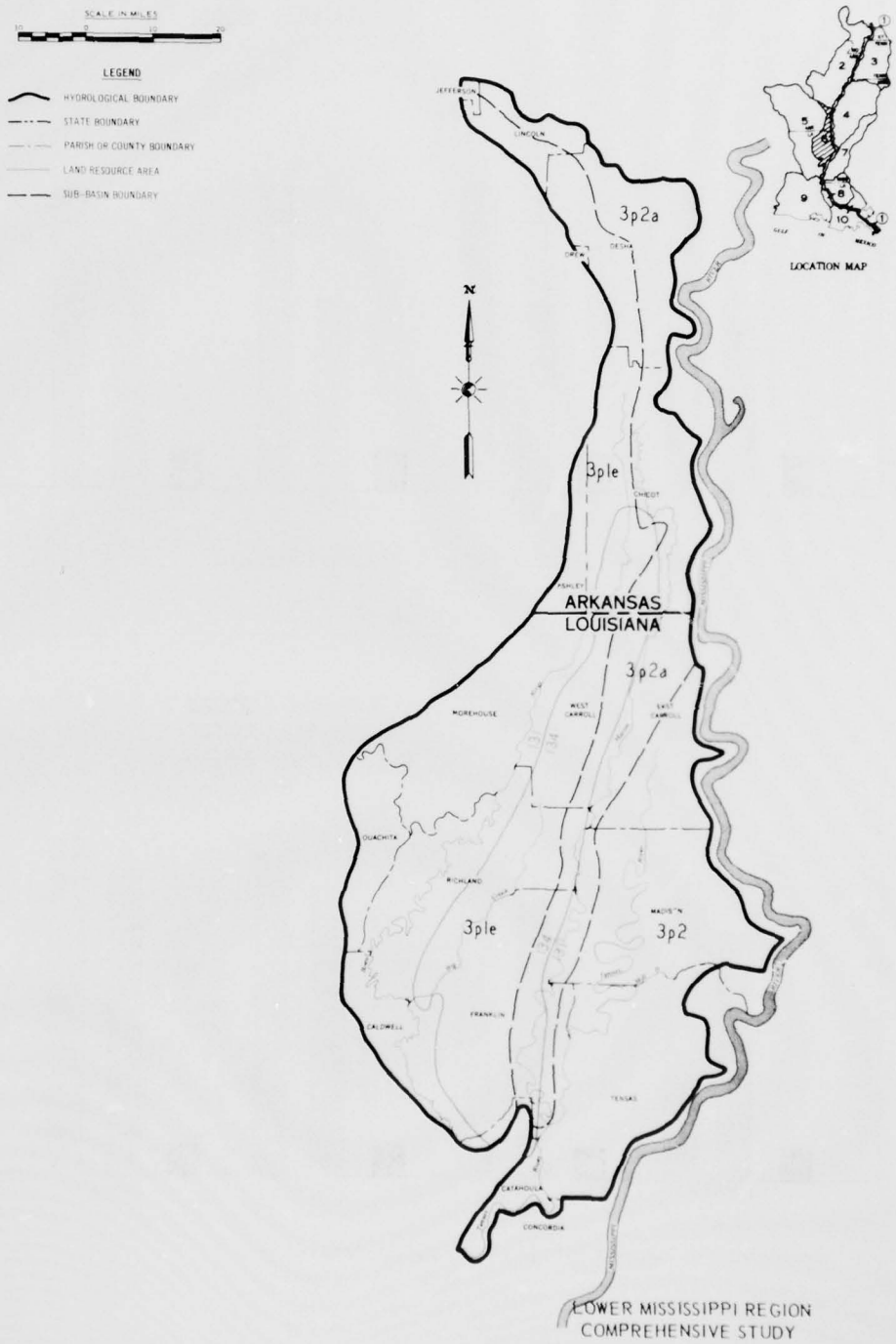
Land Use	Lands With A Wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Boeuf River (3p1e)												
Cropland	823.3	865.1	886.1	910.2	528.0	527.9	525.9	524.0	295.3	337.2	360.2	386.2
Pasture	189.6	176.6	178.6	181.3	150.6	137.6	137.6	137.5	39.0	39.0	41.0	43.8
Forest	402.7	361.0	339.5	316.0	402.7	361.0	339.5	316.0	-	-	-	-
Other	8.7	8.6	7.0	3.6	8.7	8.6	7.0	3.6	-	-	-	-
Total	1,424.3	1,411.3	1,411.2	1,411.1	1,090.0	1,035.1	1,010.0	981.1	334.3	376.2	401.2	430.0
Tensas River (3p2)												
Cropland	351.5	385.4	407.9	424.3	46.1	46.1	46.0	46.0	305.4	339.3	361.9	378.3
Pasture	128.9	120.9	120.9	120.9	69.1	61.1	61.1	61.1	59.8	59.8	59.8	59.8
Forest	295.4	261.5	241.8	219.5	295.4	261.5	241.8	219.5	-	-	-	-
Other	9.7	9.7	6.9	3.9	9.7	9.7	6.9	3.9	-	-	-	-
Total	785.5	777.5	777.5	768.6	420.3	378.4	355.8	330.5	365.2	399.1	421.7	438.1
Bayou Macon (3p2a)												
Cropland	450.5	474.4	488.6	506.0	139.1	139.1	139.2	139.0	311.4	335.3	349.4	367.0
Pasture	78.6	72.9	72.9	73.5	61.5	55.8	55.8	56.0	17.1	17.1	17.1	17.5
Forest	96.9	72.9	60.0	44.2	96.9	72.9	60.0	44.2	-	-	-	-
Other	6.1	6.1	4.9	2.6	6.1	6.1	4.9	2.6	-	-	-	-
Total	632.1	626.3	626.4	626.3	303.6	273.9	259.9	241.8	328.5	352.4	366.5	384.5
Totals for WRPA 6												
Cropland	1,625.3	1,724.9	1,782.6	1,840.5	713.2	713.1	711.1	709.0	912.1	1,011.8	1,071.5	1,131.5
Pasture	397.1	370.4	372.4	375.7	281.2	254.5	254.5	254.6	115.9	115.9	117.9	121.1
Forest	795.0	695.4	641.3	579.7	795.0	695.4	641.3	579.7	-	-	-	-
Other	24.5	24.4	18.8	10.1	24.5	24.4	18.8	10.1	-	-	-	-
WRPA Total	2,841.9	2,815.1	2,815.1	2,806.0	1,813.9	1,687.4	1,625.7	1,553.4	1,028.0	1,127.7	1,189.4	1,252.6

Tables 20 and 22 and figure 19 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.

EFFECTS OF DRAINAGE

Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

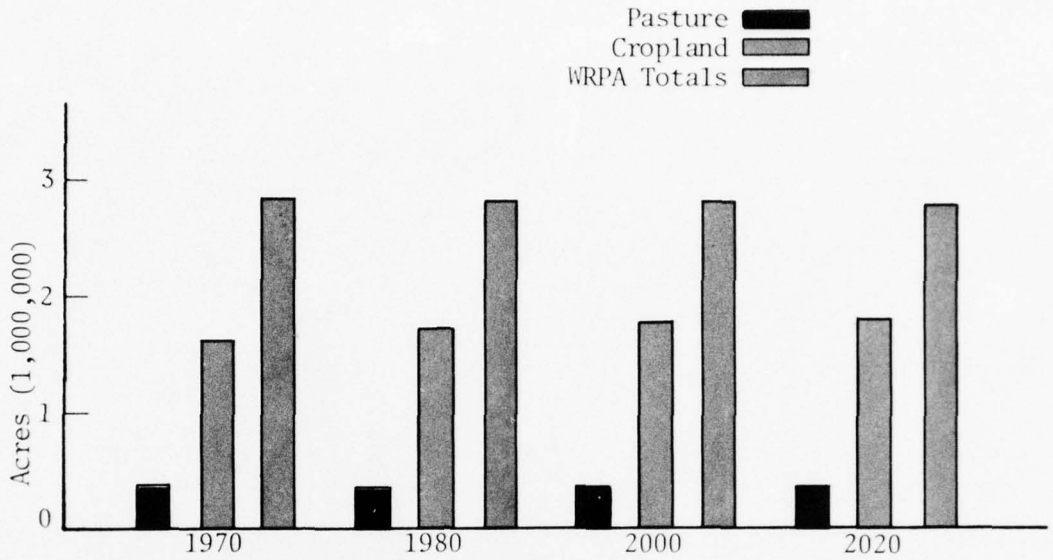


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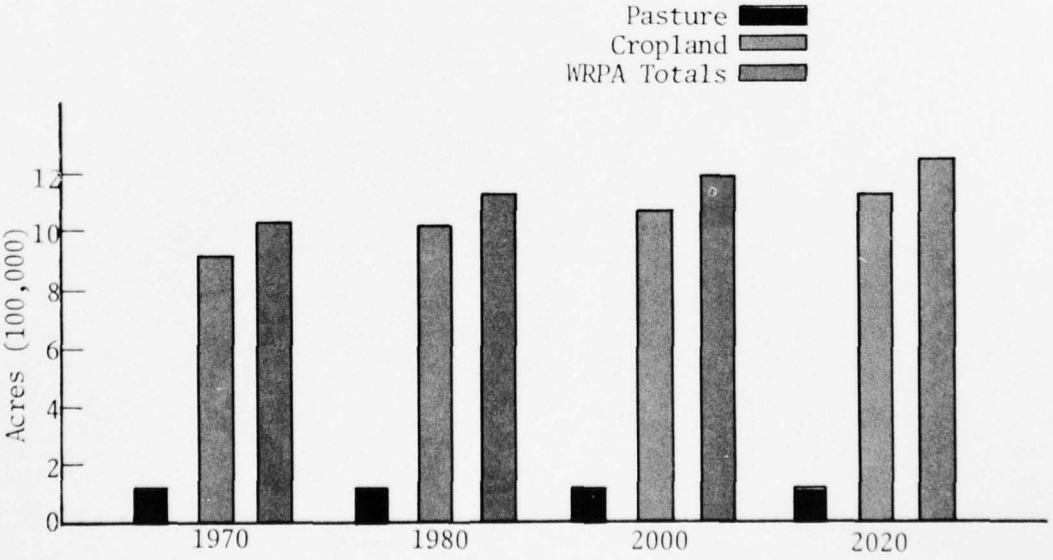
CNI HYDROLOGIC SUBBASINS

WRPA 6

FIGURE 17



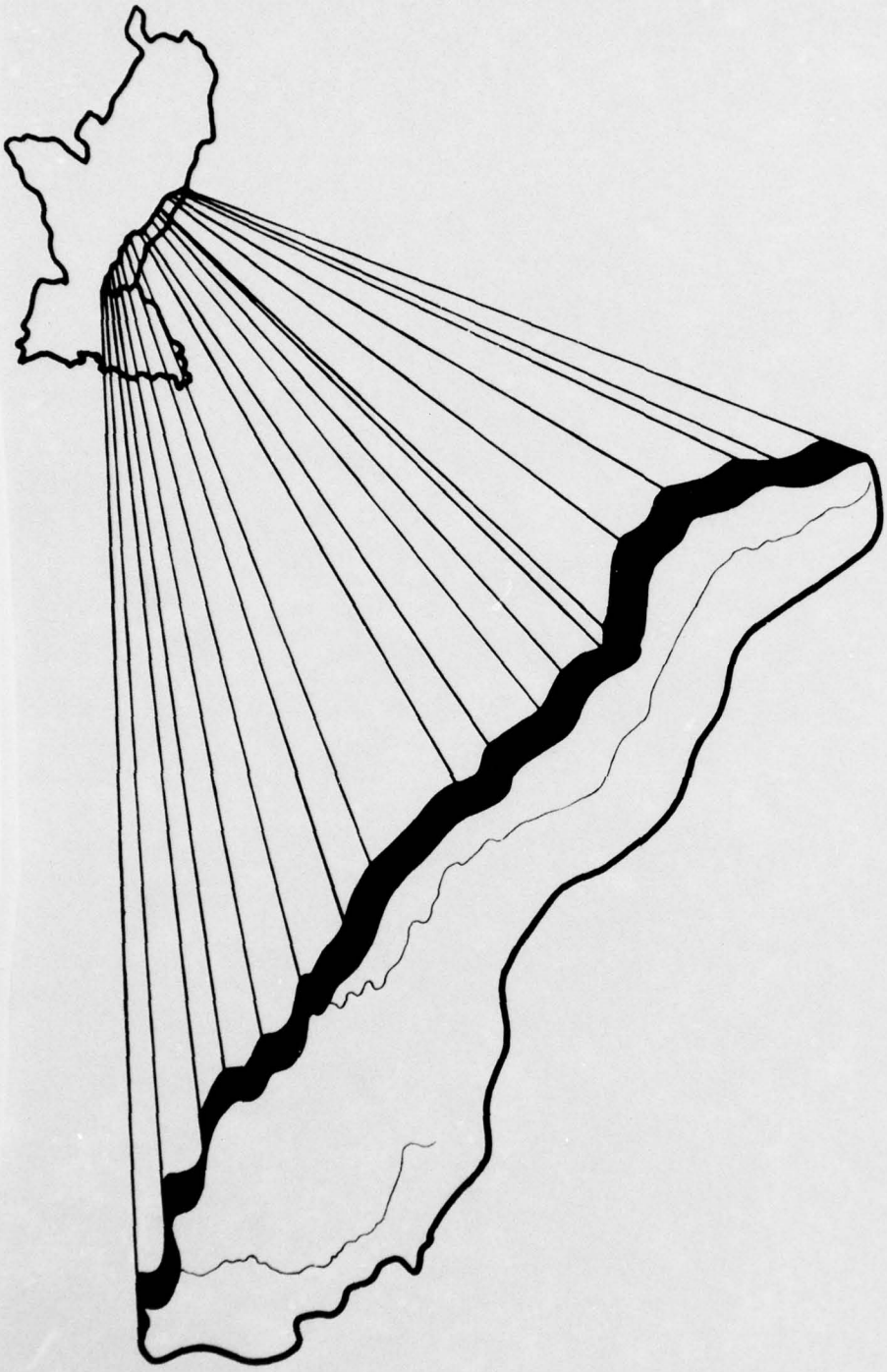
Acres of Land With a Wetness Hazard
WRPA 6
Figure 18



Acres of Land Needing Drainage
WRPA 6
Figure 19

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 7

W R P A 7

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 1.3 million acres of land in WRPA 7 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 23 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 24 gives this same information by land resource areas instead of land capability classes. Table 25 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 20 shows the CNI hydrologic subbasins. Figure 21 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 25 indicates that drainage is not needed or has already been established on about 1.1 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 657,000 acres of forest and 10,900 acres of other miscellaneous uses in this category within this WRPA.

Table 23 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 7

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	227.8	17.7	27.3	3.5	-	-	-	276.3
(2) Drainage needed	78.0	6.1	13.3	1.4	-	-	-	98.8
Pasture:								
(1) With a wetness hazard	253.4	29.1	33.5	1.4	-	-	-	317.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Forest:								
(1) With a wetness hazard	428.2	57.2	123.5	49.0	-	-	-	657.9
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	5.5	1.1	2.3	2.0	-	-	-	10.9
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	914.9	105.1	186.6	55.9	-	-	-	1,262.5
(2) Drainage needed	78.0	6.1	13.3	1.4	-	-	-	98.8
				1980				
Crops:								
(1) With a wetness hazard	490.8	25.7	26.2	2.6	-	-	-	545.3
(2) Drainage needed	341.1	14.1	13.3	1.2	-	-	-	369.7
Pasture:								
(1) With a wetness hazard	228.2	32.1	31.6	2.3	-	-	-	294.2
(2) Drainage needed	-	6.0	1.1	0.9	-	-	-	8.0
Forest:								
(1) With a wetness hazard	162.8	43.2	123.5	49.0	-	-	-	378.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	7.6	1.1	2.3	2.0	-	-	-	13.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	889.4	102.1	183.6	55.9	-	-	-	1,231.0
(2) Drainage needed	341.1	20.1	14.4	2.1	-	-	-	377.7
				2000				
Crops:								
(1) With a wetness hazard	459.3	15.7	13.2	2.6	-	-	-	490.8
(2) Drainage needed	309.6	6.1	11.9	1.2	-	-	-	328.8
Pasture:								
(1) With a wetness hazard	272.2	42.1	44.6	2.3	-	-	-	361.2
(2) Drainage needed	44.0	16.0	14.1	0.9	-	-	-	75.0
Forest:								
(1) With a wetness hazard	140.8	43.2	123.5	49.0	-	-	-	356.5
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	10.2	1.1	2.3	2.0	-	-	-	15.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	882.5	102.1	183.6	55.9	-	-	-	1,224.1
(2) Drainage needed	353.6	22.1	26.0	2.1	-	-	-	403.8
				2020				
Crops:								
(1) With a wetness hazard	470.5	25.7	8.2	2.6	-	-	-	507.0
(2) Drainage needed	321.5	15.0	8.0	1.2	-	-	-	345.7
Pasture:								
(1) With a wetness hazard	289.3	42.1	49.6	2.3	-	-	-	383.3
(2) Drainage needed	61.2	16.0	19.1	0.9	-	-	-	97.2
Forest:								
(1) With a wetness hazard	114.3	33.2	123.5	49.0	-	-	-	320.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	8.4	1.1	2.3	2.0	-	-	-	13.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	882.5	102.1	183.6	55.9	-	-	-	1,224.1
(2) Drainage needed	382.7	31.0	27.1	2.1	-	-	-	442.9

Table 24 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 7

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
131	9.2	2.2	71.6	2.0	85.0
133	46.3	44.7	108.1	3.5	202.6
134	220.8	270.5	478.2	5.4	974.9
Total	276.3	317.4	657.9	10.9	1,262.5
			1980		
131	13.2	4.2	65.6	2.0	85.0
133	66.8	40.8	86.1	3.9	197.6
134	465.3	249.2	226.8	7.1	948.4
Total	545.3	294.2	378.5	13.0	1,231.0
			2000		
131	10.3	7.1	65.6	2.0	85.0
133	54.0	53.8	85.6	4.2	197.6
134	426.5	300.3	205.3	9.4	941.5
Total	490.8	361.2	356.5	15.6	1,224.1
			2020		
131	10.2	8.1	64.6	2.1	85.0
133	50.0	58.8	85.6	3.2	197.6
134	446.8	316.4	169.8	8.5	941.5
Total	507.0	383.3	320.0	13.8	1,224.1

DRAINAGE NEEDS

Present Needs

Tables 23 and 25 and figure 22 show that approximately 98,800 acres of land need to be drained, all of which is now in cropland. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Table 25 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 7

Land Use	Lands With A Wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Mississippi River (0)												
Cropland	74.0	122.6	109.6	130.0	44.6	44.6	43.0	44.1	29.4	78.0	66.6	85.9
Pasture	85.2	78.2	103.1	113.1	85.2	78.2	78.1	78.1	-	-	25.0	35.0
Forest	194.5	144.4	124.4	94.9	194.5	144.4	124.4	94.9	-	-	-	-
Other	3.8	5.2	6.3	5.4	3.8	5.2	6.3	5.4	-	-	-	-
Total	357.5	350.4	343.4	343.4	328.1	272.4	251.8	222.5	29.4	78.0	91.6	120.9
Big Black River (7)												
Cropland	185.1	392.8	360.6	360.5	119.6	117.7	105.7	104.6	65.5	275.1	254.9	255.9
Pasture	207.2	195.2	227.2	233.2	207.2	187.2	187.2	187.2	-	8.0	40.0	46.0
Forest	351.4	134.8	133.8	128.8	351.4	134.8	133.8	128.8	-	-	-	-
Other	6.9	7.6	8.8	7.9	6.9	7.6	8.8	7.9	-	-	-	-
Total	750.6	730.4	730.4	730.4	685.1	447.3	435.5	428.5	65.5	283.1	294.9	301.9
Homochitto River (8)												
Cropland	17.2	29.9	20.6	16.5	13.3	13.3	13.3	12.6	3.9	16.6	7.3	3.9
Pasture	25.0	20.8	30.9	37.0	25.0	20.8	20.9	20.8	-	-	10.0	16.2
Forest	112.0	99.3	98.3	96.3	112.0	99.3	98.3	96.3	-	-	-	-
Other	0.2	0.2	0.5	0.5	0.2	0.2	0.5	0.5	-	-	-	-
Total	154.4	150.2	150.3	150.3	150.5	133.6	133.0	130.2	3.9	16.6	17.3	20.1
Totals for WRPA 7												
Cropland	276.3	545.3	490.8	507.0	177.5	175.6	162.0	161.3	98.8	369.7	328.8	345.7
Pasture	317.4	294.2	361.2	383.3	317.4	286.2	286.2	286.1	-	8.0	75.0	97.2
Forest	657.9	378.5	356.5	320.0	657.9	378.5	356.5	320.0	-	-	-	-
Other	10.9	13.0	15.6	13.8	10.9	13.0	15.6	13.8	-	-	-	-
WRPA Total	1,262.5	1,231.0	1,224.1	1,224.1	1,163.7	853.3	820.3	781.2	98.8	377.7	403.8	442.9

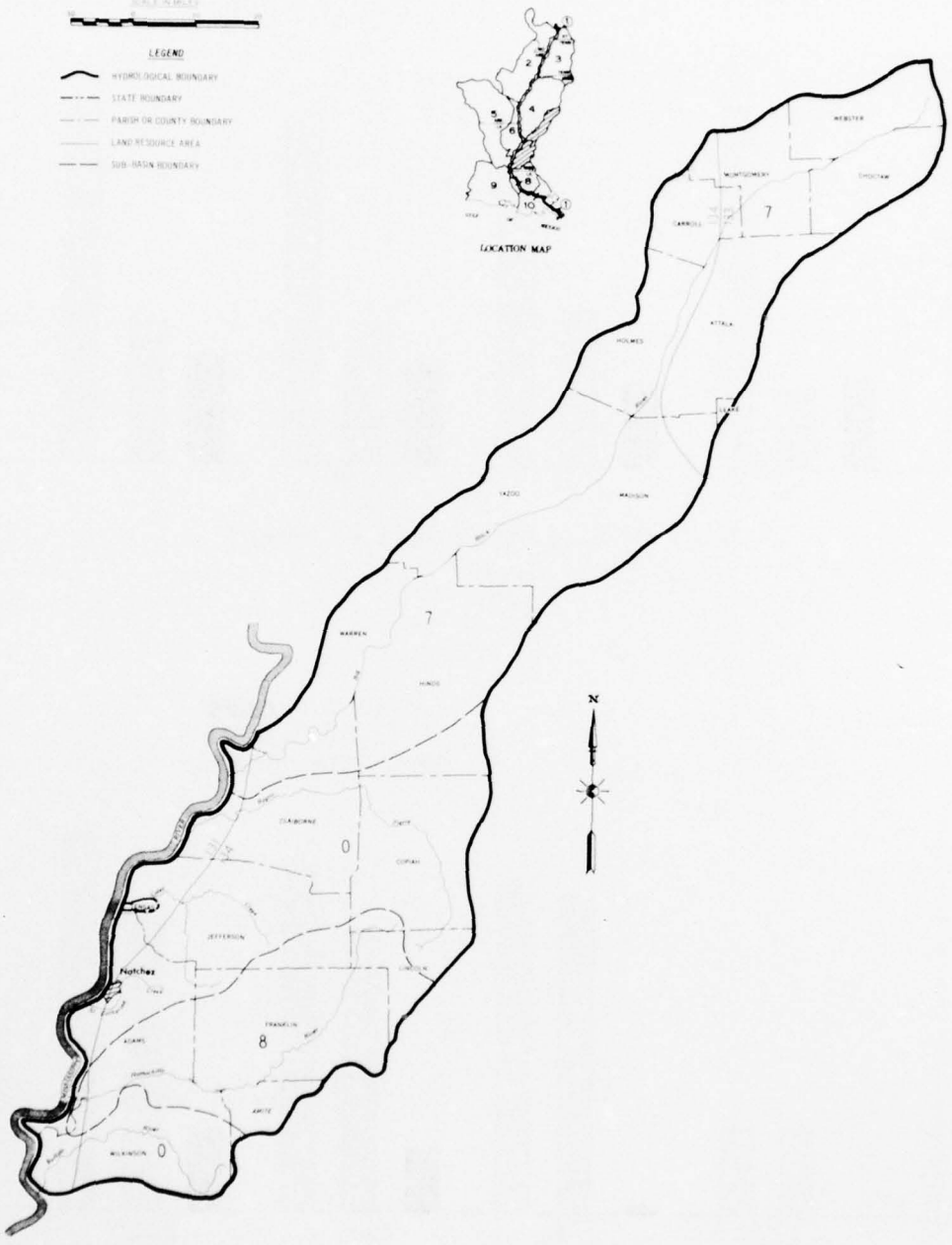
Future Needs

Future drainage needs in WRPA 7 for 1980, 2000, and 2020 are approximately 377,700 acres, 403,800 acres, and 442,900 acres respectively, based on an assumed future land use as previously explained. Tables 23 and 25 and figure 22 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.

EFFECTS OF DRAINAGE

Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural

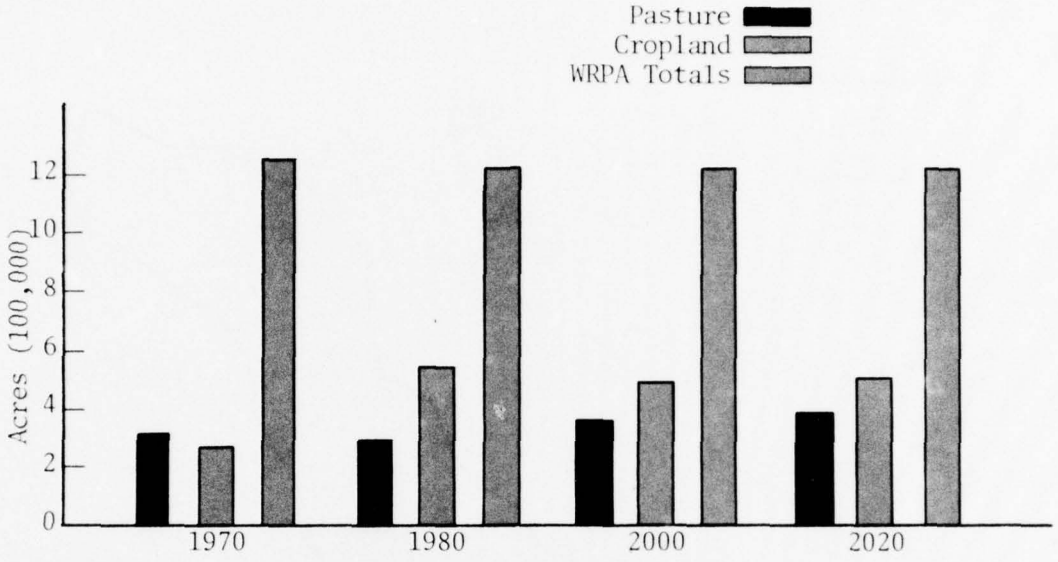


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COMPREHENSIVE STUDY

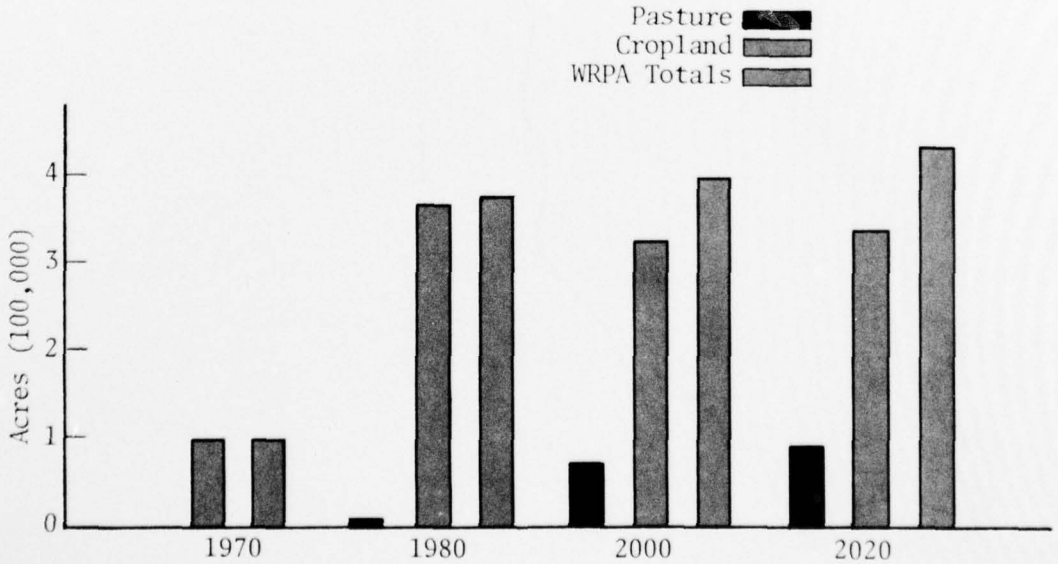
CNI HYDROLOGIC SUBBASINS

WRPA 7

FIGURE 20



Acres of Land With a Wetness Hazard
WRPA 7
Figure 21

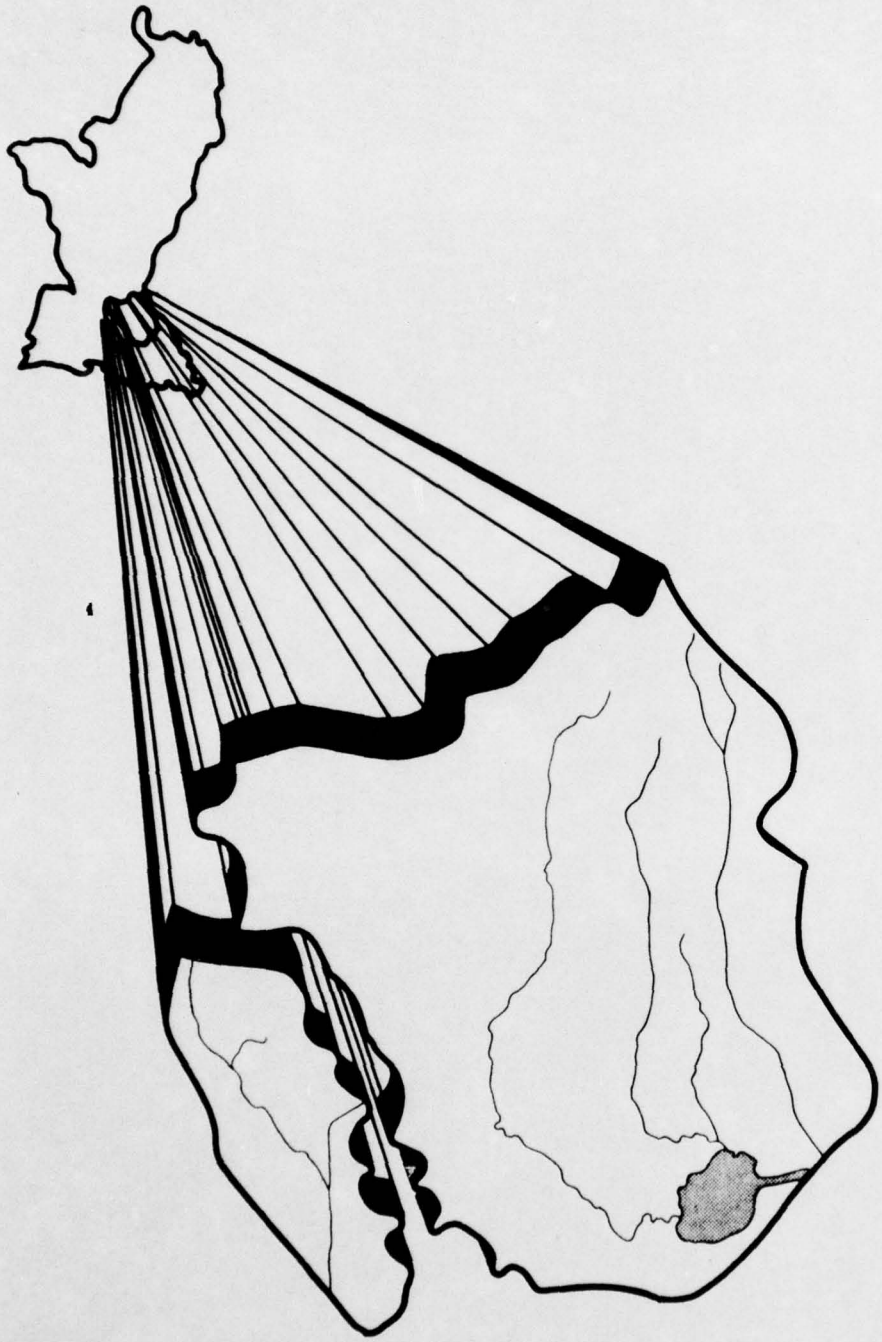


Acres of Land Needing Drainage
WRPA 7
Figure 22

production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 8

W R P A 8

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 2.0 million acres of land in WRPA 8 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 26 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 27 gives this same information by land resource areas instead of land capability classes. Table 28 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 23 shows the CNI hydrologic subbasins. Figure 24 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 28 indicates that drainage is not needed or has already been established on about 1.9 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 1.5 million acres of forest and 30,000 acres of other miscellaneous uses in this category within this WRPA.

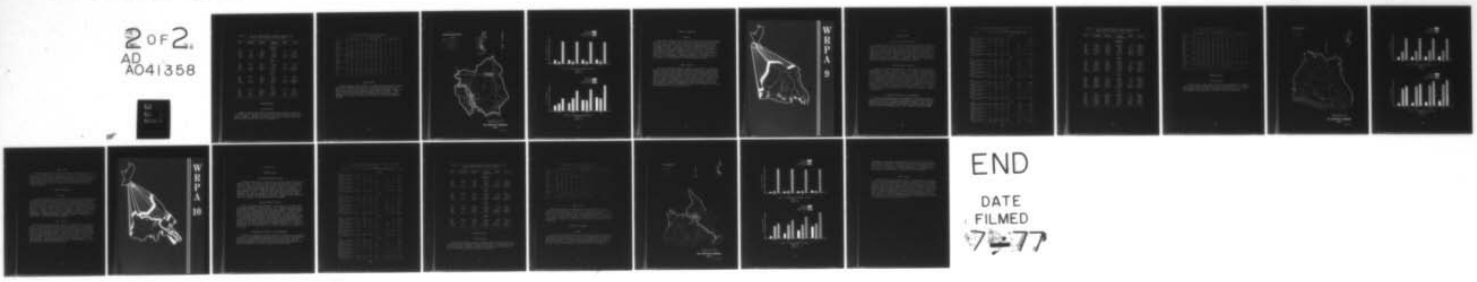
Table 26 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 8

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	75.2	71.0	3.5	4.2	-	-	-	153.9
(2) Drainage needed	27.4	35.8	0.9	0.2	-	-	-	64.3
Pasture:								
(1) With a wetness hazard	147.7	115.9	14.5	26.2	-	1.3	-	305.6
(2) Drainage needed	0.3	44.8	3.2	-	-	-	-	48.3
Forest:								
(1) With a wetness hazard	254.6	411.2	110.6	410.2	-	324.2	-	1,510.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	8.9	5.2	0.7	1.3	-	5.3	8.6	30.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	486.4	603.3	129.3	441.9	-	330.8	8.6	2,000.3
(2) Drainage needed	27.7	80.6	4.1	0.2	-	-	-	112.6
				1980				
Crops:								
(1) With a wetness hazard	114.5	72.0	3.5	4.2	-	-	-	194.2
(2) Drainage needed	66.8	44.6	0.9	0.2	-	-	-	112.5
Pasture:								
(1) With a wetness hazard	139.8	118.9	14.5	26.3	-	1.3	-	300.8
(2) Drainage needed	7.4	59.1	3.2	-	-	-	-	69.7
Forest:								
(1) With a wetness hazard	202.1	396.0	110.6	410.2	-	324.2	-	1,443.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	14.6	5.2	0.7	1.2	-	5.3	8.6	35.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	471.0	592.1	129.3	441.9	-	330.8	8.6	1,973.7
(2) Drainage needed	74.2	103.7	4.1	0.2	-	-	-	182.2
				2000				
Crops:								
(1) With a wetness hazard	100.2	70.9	1.5	4.2	-	-	-	176.8
(2) Drainage needed	52.5	43.5	0.3	0.2	-	-	-	96.5
Pasture:								
(1) With a wetness hazard	157.9	127.8	16.5	26.2	-	1.3	-	329.7
(2) Drainage needed	25.4	67.9	5.3	-	-	-	-	98.6
Forest:								
(1) With a wetness hazard	168.0	388.3	110.5	410.2	-	324.2	-	1,401.2
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	17.6	5.2	0.7	1.2	-	5.3	8.6	38.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	443.7	592.2	129.2	441.8	-	330.8	8.6	1,946.3
(2) Drainage needed	77.9	111.4	5.6	0.2	-	-	-	195.1
				2020				
Crops:								
(1) With a wetness hazard	89.0	87.2	1.5	4.2	-	-	-	181.9
(2) Drainage needed	50.2	59.7	0.3	0.2	-	-	-	110.4
Pasture:								
(1) With a wetness hazard	179.4	131.1	16.5	26.2	-	1.3	-	354.5
(2) Drainage needed	46.9	71.2	5.3	-	-	-	-	123.4
Forest:								
(1) With a wetness hazard	125.8	368.7	110.5	410.2	-	324.2	-	1,339.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	16.1	5.2	0.7	1.3	-	5.3	8.6	37.2
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	410.3	592.2	129.2	441.9	-	330.8	8.6	1,913.0
(2) Drainage needed	97.1	130.9	5.6	0.2	-	-	-	233.8

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LOWER MISSISSIPPI REGION COMPREHENSIVE STUDY. APPENDIX I. AGRIC--ETC(U)
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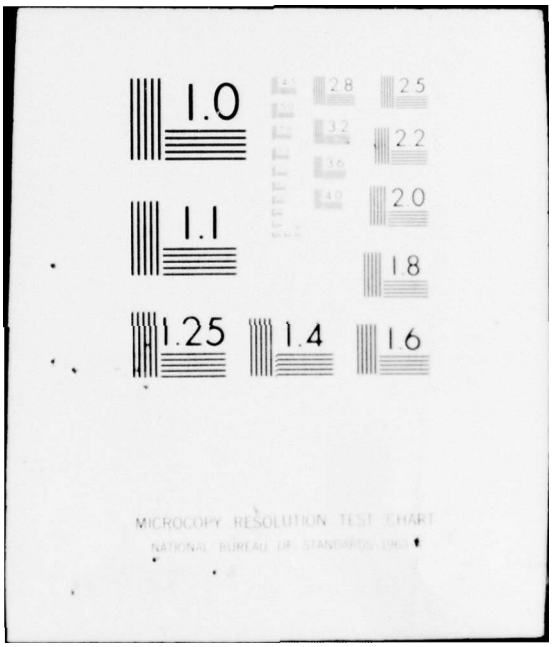

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963

Table 27 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 8

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
131	94.3	84.8	682.3	17.2	878.6
133	-	13.8	53.7	-	67.5
134	59.6	207.0	774.8	12.8	1,054.2
Total	153.9	305.6	1,510.8	30.0	2,000.3
			1980		
131	105.2	84.3	662.0	19.0	870.5
133	-	13.8	53.7	-	67.5
134	89.0	202.7	727.4	16.6	1,035.7
Total	194.2	300.8	1,443.1	35.6	1,973.7
			2000		
131	104.1	93.1	654.3	19.0	870.5
133	-	13.8	53.7	-	67.5
134	72.7	222.8	693.2	19.6	1,008.3
Total	176.8	329.7	1,401.2	38.6	1,946.3
			2020		
131	110.3	95.5	635.7	19.0	860.5
133	-	13.8	53.7	-	67.5
134	71.6	245.2	650.0	18.2	985.0
Total	181.9	354.5	1,339.4	37.2	1,913.0

DRAINAGE NEEDS

Present Needs

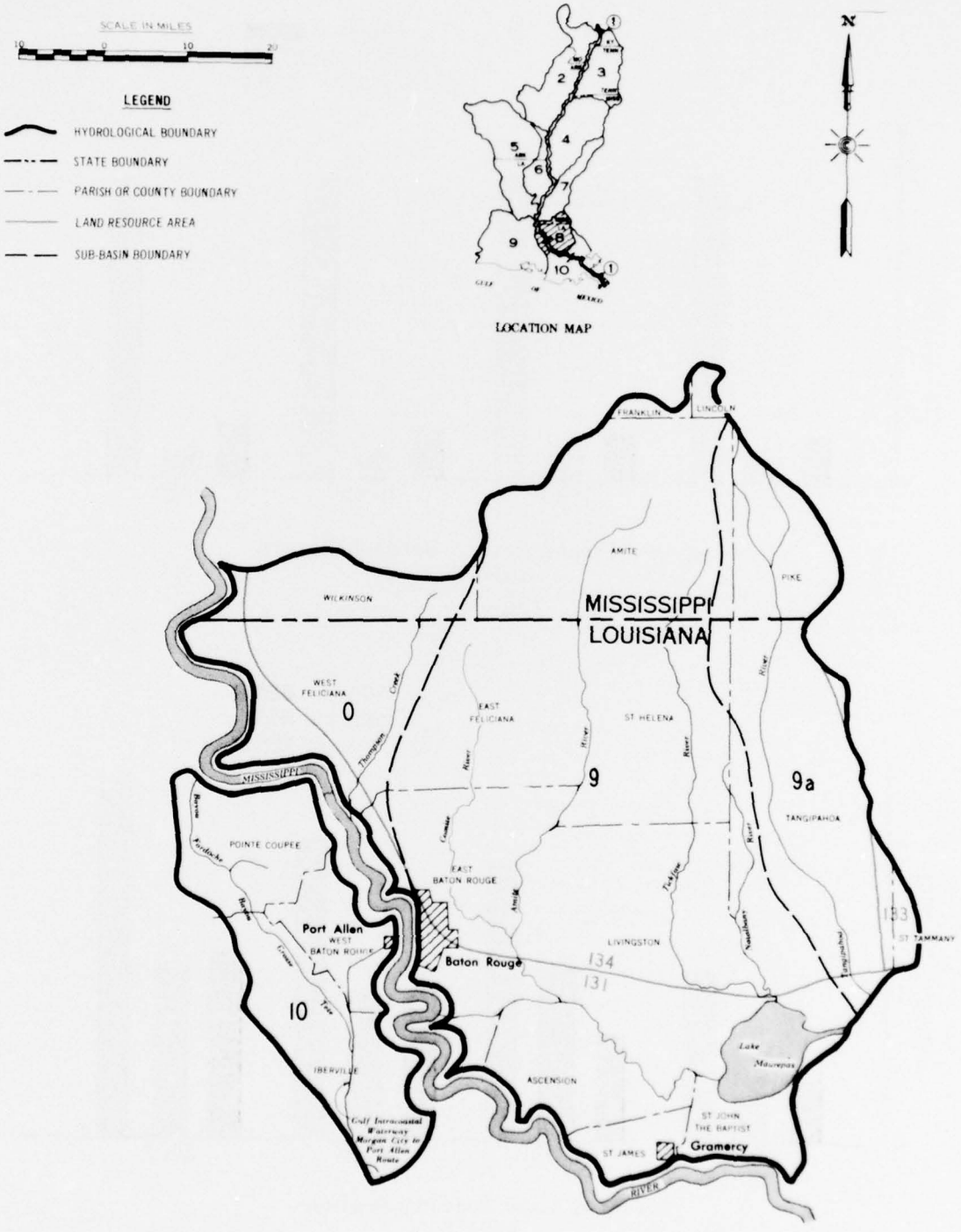
Tables 26 and 28 and figure 25 show that approximately 112,600 acres of land need to be drained, of which 64,300 acres is cropland and 48,300 acres is pasture. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Table 28 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 8

Land Use	Lands With A Wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Mississippi River (0)												
Cropland	16.5	14.7	12.7	11.9	6.4	5.7	5.7	5.1	10.1	9.0	7.0	6.8
Pasture	43.9	48.0	50.0	54.5	42.4	38.4	38.4	38.4	1.5	9.6	11.6	16.1
Forest	92.5	80.2	80.2	72.6	92.5	80.2	80.2	72.6	-	-	-	-
Other	4.0	10.0	10.0	8.6	4.0	10.0	10.0	8.6	-	-	-	-
Total	156.9	152.9	152.9	147.6	145.3	134.3	134.3	124.7	11.6	18.6	18.6	22.9
Amite River (9)(Portion)												
Cropland	78.5	102.2	81.0	74.1	60.0	53.8	53.8	45.6	18.5	48.4	27.2	28.5
Pasture	189.7	180.5	198.6	213.2	169.6	154.4	154.4	154.4	20.1	26.1	44.2	58.8
Forest	897.6	867.8	840.5	804.8	897.6	867.8	840.5	804.8	-	-	-	-
Other	22.3	21.9	24.9	24.9	22.3	21.9	24.9	24.9	-	-	-	-
Total	1,188.1	1,172.4	1,145.0	1,117.0	1,149.5	1,097.9	1,073.6	1,029.7	38.6	74.5	71.4	87.3
Atchafalaya River (10)(Portion)												
Cropland	49.6	59.7	60.6	66.8	16.9	16.9	16.9	16.8	32.7	42.8	43.7	50.0
Pasture	41.8	44.1	50.9	53.3	24.3	20.4	20.3	20.4	17.5	23.7	30.6	32.9
Forest	308.3	292.0	284.3	275.7	308.3	292.0	284.3	275.7	-	-	-	-
Other	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	-	-	-	-
Total	402.9	399.0	399.0	399.0	352.7	332.5	324.7	316.1	50.2	66.5	74.3	82.9
Tangipahoa River (9a)												
Cropland	9.3	17.6	22.5	29.1	6.3	5.3	3.9	4.0	3.0	12.3	18.6	25.1
Pasture	30.2	28.2	30.2	33.5	21.0	17.9	18.0	17.9	9.2	10.3	12.2	15.6
Forest	212.4	203.1	196.2	186.3	212.4	203.1	196.2	186.3	-	-	-	-
Other	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	-	-	-	-
Total	252.4	249.4	249.4	249.4	240.2	226.8	218.6	208.7	12.2	22.6	30.8	40.7
Totals for WRPA 8												
Cropland	153.9	194.2	176.8	181.9	89.6	81.7	80.3	71.5	64.3	112.5	96.5	110.4
Pasture	305.6	300.8	329.7	354.5	257.3	231.1	231.1	231.1	48.3	69.7	98.6	123.4
Forest	1,510.8	1,443.1	1,401.2	1,339.4	1,510.8	1,443.1	1,401.2	1,339.4	-	-	-	-
Other	30.0	35.6	38.6	37.2	30.0	35.6	38.6	37.2	-	-	-	-
WRPA Total	2,000.3	1,973.7	1,946.3	1,913.0	1,887.7	1,791.5	1,751.2	1,679.2	112.6	182.2	195.1	233.8

Future Needs

Future drainage needs in WRPA 8 for 1980, 2000, and 2020 are approximately 182,200 acres, 195,100 acres, and 233,800 acres respectively, based on an assumed future land use as previously explained. Tables 26 and 28 and figure 25 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.

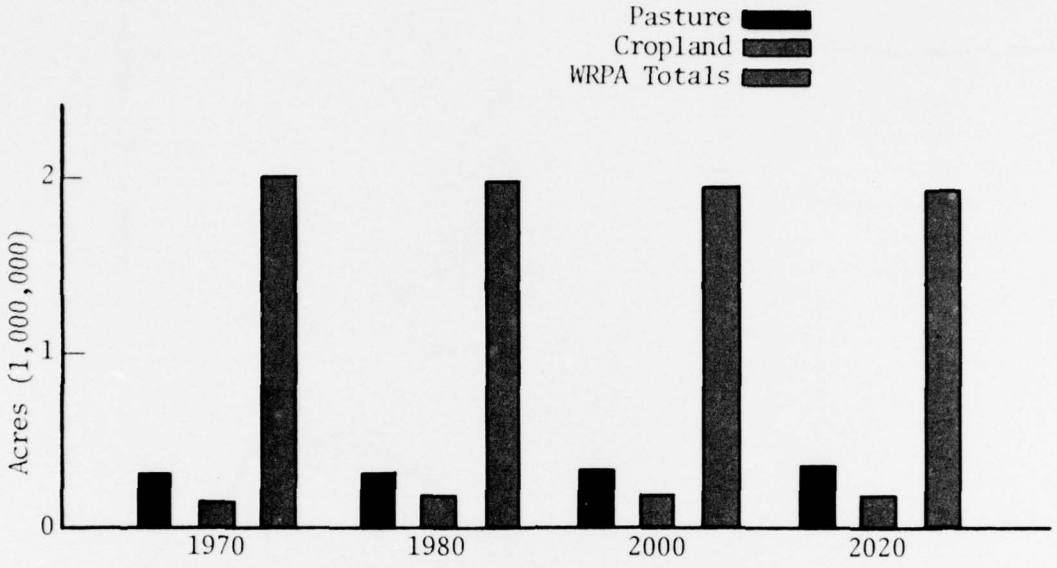


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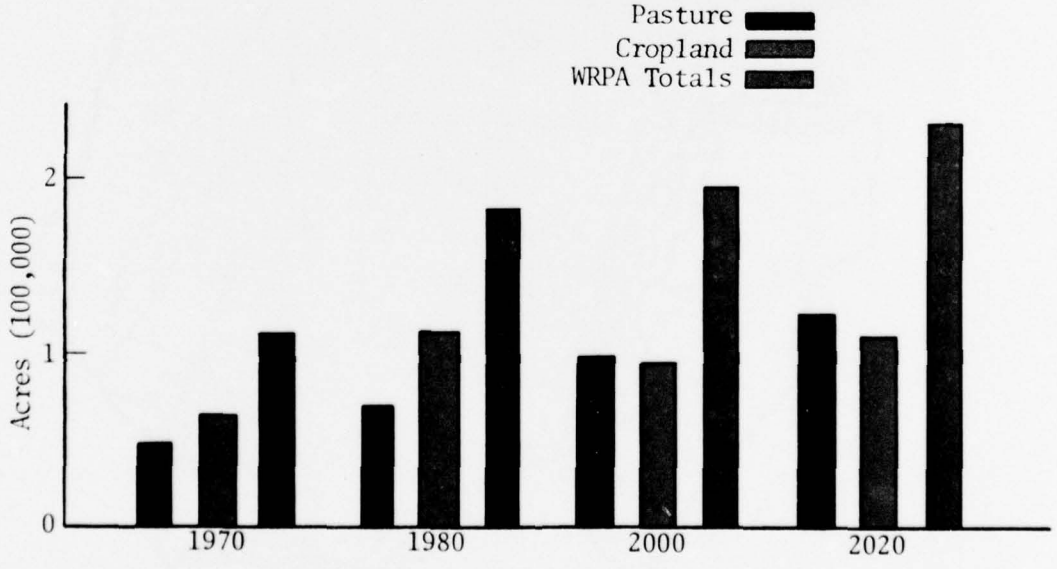
CNI HYDROLOGIC SUBBASINS

WRPA 8

FIGURE 23



Acres of Land With a Wetness Hazard
WRPA 8
Figure 24



Acres of Land Needing Drainage
WRPA 8
Figure 25

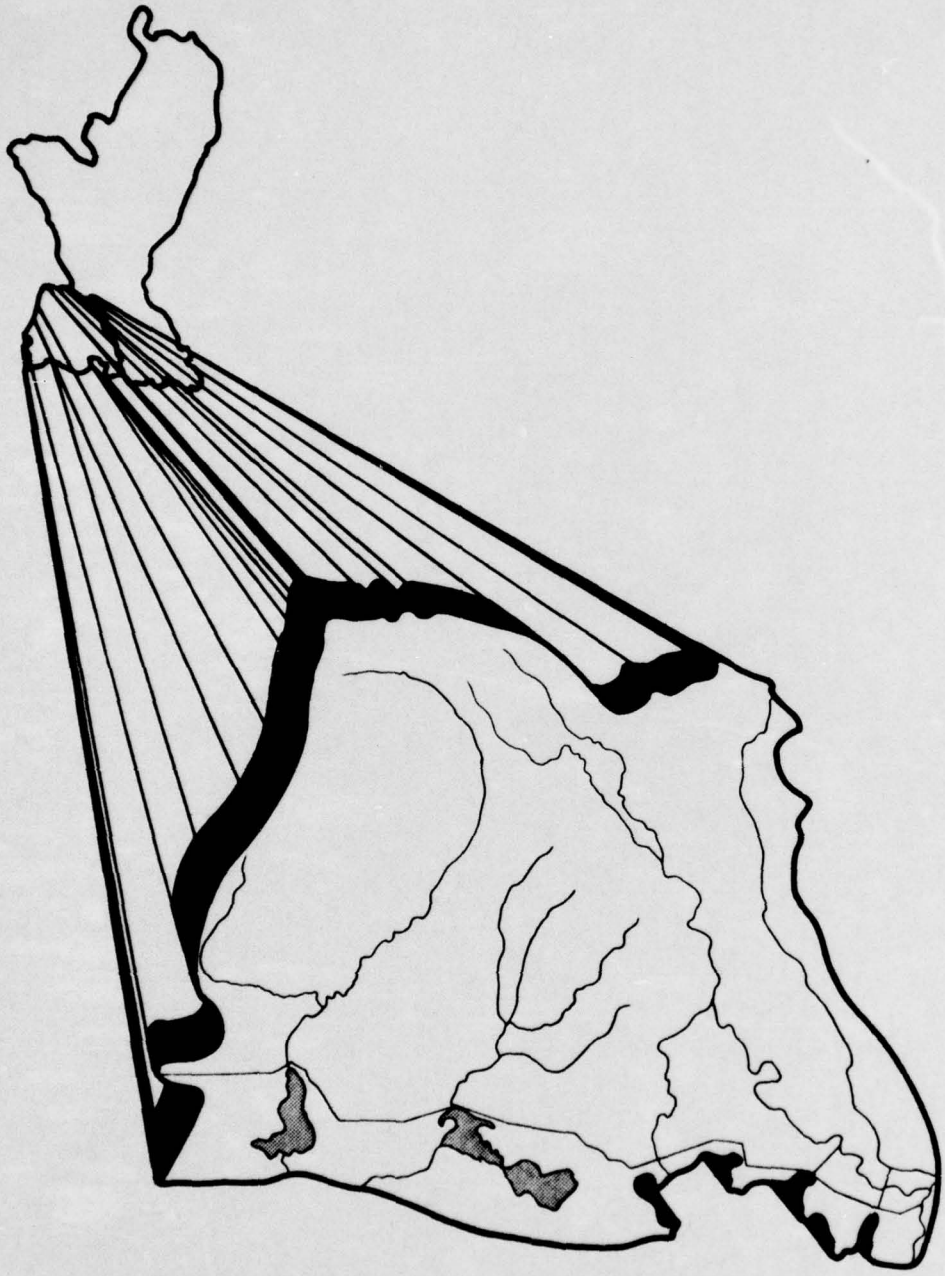
EFFECTS OF DRAINAGE

Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 9

W R P A 9

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 5.9 million acres of land in WRPA 9 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 29 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 30 gives this same information by land resource areas instead of land capability classes. Table 31 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 26 shows the CNI hydrologic subbasins. Figure 27 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 31 indicates that drainage is not needed or has already been established on about 4.1 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 2.1 million acres of forest and 771,000 acres of other miscellaneous uses in this category within this WRPA.

Table 29 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 9

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	330.5	1,704.9	184.9	11.2	-	-	-	2,231.5
(2) Drainage needed	159.1	1,250.1	142.6	0.5	-	-	-	1,552.3
Pasture:								
(1) With a wetness hazard	138.9	306.8	26.7	15.1	-	230.0	-	717.5
(2) Drainage needed	-	202.5	12.3	-	-	-	-	214.8
Forest:								
(1) With a wetness hazard	67.3	818.5	165.6	834.2	-	244.5	1.2	2,131.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	11.5	45.4	3.1	1.4	-	116.7	592.9	771.0
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	548.2	2,875.6	380.3	861.9	-	591.2	594.1	5,851.3
(2) Drainage needed	159.1	1,452.6	154.9	0.5	-	-	-	1,767.1
				1980				
Crops:								
(1) With a wetness hazard	323.0	1,841.4	177.9	40.6	-	14.1	-	2,397.0
(2) Drainage needed	159.2	1,393.2	142.6	29.9	-	14.1	-	1,739.0
Pasture:								
(1) With a wetness hazard	139.1	337.4	28.7	16.1	-	240.0	-	761.3
(2) Drainage needed	-	233.5	14.3	1.0	-	10.0	-	258.8
Forest:								
(1) With a wetness hazard	67.3	662.9	170.6	803.8	-	230.3	1.2	1,936.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	11.5	30.3	3.1	1.4	-	106.7	592.7	745.7
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	540.9	2,872.0	380.3	861.9	-	591.1	593.9	5,840.1
(2) Drainage needed	159.2	1,626.7	156.9	30.9	-	24.1	-	1,997.8
				2000				
Crops:								
(1) With a wetness hazard	330.1	1,927.7	147.4	46.8	-	14.1	-	2,466.1
(2) Drainage needed	165.7	1,511.0	138.5	36.1	-	14.1	-	1,865.4
Pasture:								
(1) With a wetness hazard	139.1	373.5	58.7	16.1	-	250.0	-	837.4
(2) Drainage needed	-	269.6	44.3	1.0	-	20.0	-	334.9
Forest:								
(1) With a wetness hazard	56.7	526.9	170.6	797.6	-	230.3	1.2	1,783.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	10.1	30.3	3.1	1.4	-	96.7	592.7	734.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	536.0	2,858.4	379.8	861.9	-	591.1	593.9	5,821.1
(2) Drainage needed	165.7	1,780.6	182.8	37.1	-	34.1	-	2,200.3
				2020				
Crops:								
(1) With a wetness hazard	334.5	1,964.5	136.4	49.2	-	24.4	-	2,509.0
(2) Drainage needed	163.4	1,569.2	127.5	41.5	-	24.4	-	1,926.0
Pasture:								
(1) With a wetness hazard	135.1	425.4	68.7	19.1	-	264.4	-	912.7
(2) Drainage needed	-	321.6	54.3	4.0	-	34.4	-	414.3
Forest:								
(1) With a wetness hazard	55.3	431.6	170.6	792.1	-	228.3	1.2	1,679.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	6.1	21.1	3.1	1.4	-	74.0	592.7	698.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	531.0	2,842.6	378.8	861.8	-	591.1	593.9	5,799.2
(2) Drainage needed	163.4	1,890.8	181.8	45.5	-	58.8	-	2,340.3

Table 30 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 9

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
131	387.0	166.6	1,122.1	22.5	1,698.2
133	135.2	30.8	780.1	4.7	950.8
134	427.4	161.3	26.4	16.5	631.6
150	1,253.0	123.4	166.0	37.2	1,579.6
151	28.9	235.4	36.7	690.1	991.1
Total	2,231.5	717.5	2,131.3	771.0	5,851.3
			1980		
131	568.3	184.4	926.8	17.4	1,696.9
133	125.8	35.2	785.1	4.7	950.8
134	418.2	167.5	26.4	16.5	628.6
150	1,252.7	131.9	161.0	27.1	1,572.7
151	32.0	242.3	36.8	680.0	991.1
Total	2,397.0	761.3	1,936.1	745.7	5,840.1
			2000		
131	698.1	197.5	783.0	17.4	1,696.0
133	100.8	63.2	782.1	4.7	950.8
134	415.7	172.5	20.4	15.0	623.6
150	1,219.5	151.9	161.0	27.2	1,559.6
151	32.0	252.3	36.8	670.0	991.1
Total	2,466.1	837.4	1,783.3	734.3	5,821.1
			2020		
131	760.0	220.5	694.6	14.9	1,690.0
133	83.2	88.2	772.1	4.7	948.2
134	411.3	182.5	18.9	10.9	623.6
150	1,213.9	156.9	156.8	18.7	1,546.3
151	40.6	264.6	36.7	649.2	991.1
Total	2,509.0	912.7	1,679.1	698.4	5,799.2

Table 31 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 9

Land Use	Lands With A Wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Calcasieu (19 & 19a)												
Cropland	464.3	445.6	397.4	370.4	95.4	76.7	40.2	16.2	368.9	368.9	357.2	354.2
Pasture	144.9	152.3	190.3	210.3	107.8	107.7	117.7	107.7	37.1	44.6	72.6	102.6
Forest	638.6	643.4	643.4	643.4	638.6	643.4	643.4	643.4	-	-	-	-
Other	54.1	54.1	54.1	54.1	54.1	54.1	54.1	54.1	-	-	-	-
Total	1,301.9	1,295.4	1,285.2	1,278.2	895.9	881.9	855.4	821.4	406.0	413.5	429.8	456.8
Mermentau (20 & 20a)												
Cropland	1,032.4	1,032.9	1,022.9	1,022.1	269.7	260.1	250.5	269.8	762.7	772.8	772.4	752.3
Pasture	288.0	302.7	322.7	335.0	251.5	248.4	238.4	248.3	36.5	54.3	84.3	86.7
Forest	245.3	245.3	242.3	242.2	245.3	245.3	242.3	242.2	-	-	-	-
Other	477.1	456.9	446.9	426.5	477.1	456.9	446.9	426.5	-	-	-	-
Total	2,042.8	2,037.8	2,034.8	2,025.8	1,243.6	1,210.7	1,178.1	1,186.8	799.2	827.1	856.7	839.0
Vermillion (11)												
Cropland	495.5	592.6	605.5	626.2	200.8	210.0	193.7	186.6	294.7	382.6	411.8	439.6
Pasture	152.3	161.6	169.7	181.7	72.0	74.0	74.0	70.0	80.3	87.6	95.7	111.7
Forest	206.2	106.2	81.4	58.3	206.2	106.2	81.4	58.3	-	-	-	-
Other	189.5	184.4	183.0	167.5	189.5	184.4	183.0	167.5	-	-	-	-
Total	1,043.5	1,044.8	1,039.6	1,033.7	668.5	574.6	532.1	482.4	375.0	470.2	507.5	551.3
Atchafalaya (10)												
Cropland	239.3	325.9	440.3	490.3	113.3	111.2	116.3	110.4	126.0	214.7	324.0	379.9
Pasture	132.3	144.7	154.7	185.7	71.4	72.4	72.4	72.4	60.9	72.3	82.3	113.3
Forest	1,041.2	941.2	816.2	735.2	1,041.2	941.2	816.2	735.2	-	-	-	-
Other	50.3	50.3	50.3	50.3	50.3	50.3	50.3	50.3	-	-	-	-
Total	1,463.1	1,462.1	1,461.5	1,461.5	1,276.2	1,175.1	1,055.2	968.3	186.9	287.0	406.3	493.2
Totals for WRPA 9												
Cropland	2,231.5	2,397.0	2,466.1	2,509.0	679.2	658.0	600.7	583.0	1,552.3	1,739.0	1,865.4	1,926.0
Pasture	717.5	761.3	837.4	912.7	502.7	502.5	502.5	498.4	214.8	258.8	334.9	414.3
Forest	2,131.3	1,936.1	1,783.3	1,679.1	2,131.3	1,936.1	1,783.3	1,679.1	-	-	-	-
Other	771.0	745.7	734.3	698.4	771.0	745.7	734.3	698.4	-	-	-	-
WRPA Total	5,851.3	5,840.1	5,821.1	5,799.2	4,084.2	3,842.3	3,620.8	3,458.9	1,767.1	1,997.8	2,200.3	2,340.3

DRAINAGE NEEDS

Present Needs

Tables 29 and 31 and figure 28 show that approximately 1.8 million acres of land need to be drained, of which 1.6 million acres is cropland and 214,800 acres is pasture. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

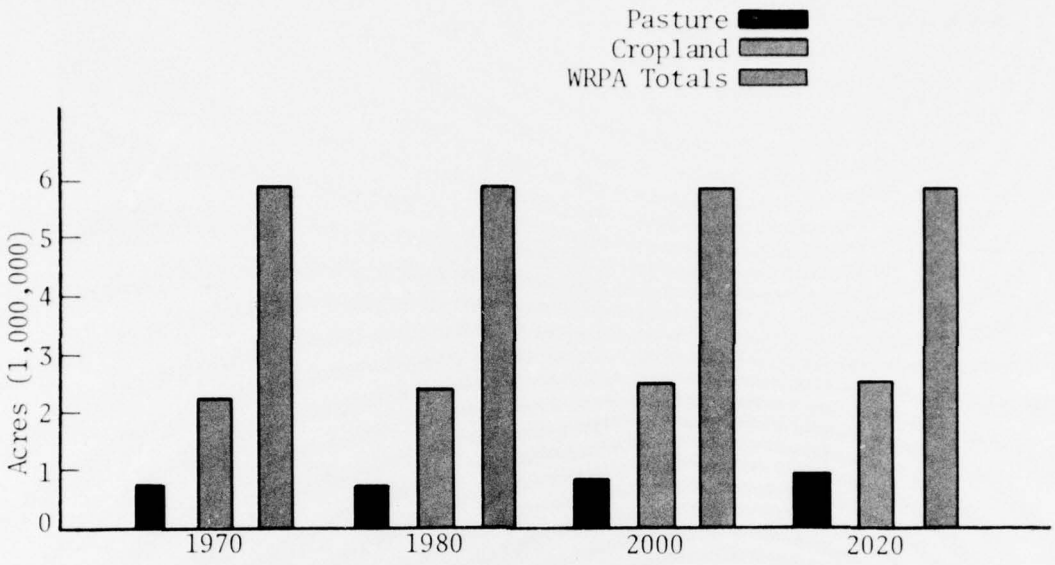


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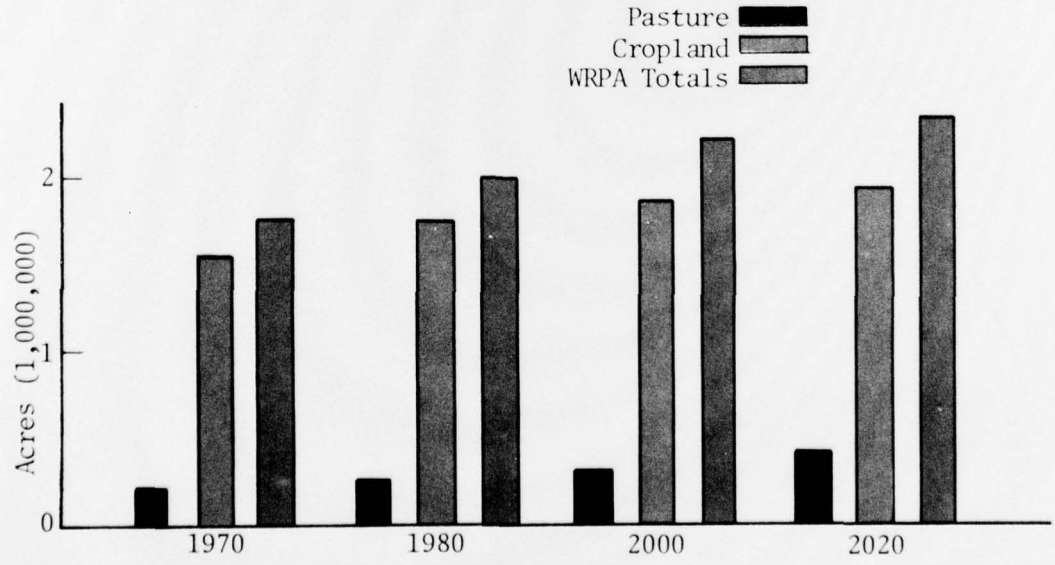
CNI HYDROLOGIC SUBBASINS

WRPA 9

FIGURE 26



Acres of Land With a Wetness Hazard
WRPA 9
Figure 27



Acres of Land Needing Drainage
WRPA 9
Figure 28

Future Needs

Future drainage needs in WRPA 9 for 1980, 2000, and 2020 are approximately 2.0 million acres, 2.2 million acres, and 2.3 million acres respectively, based on an assumed future land use as previously explained. Tables 29 and 31 and figure 28 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.

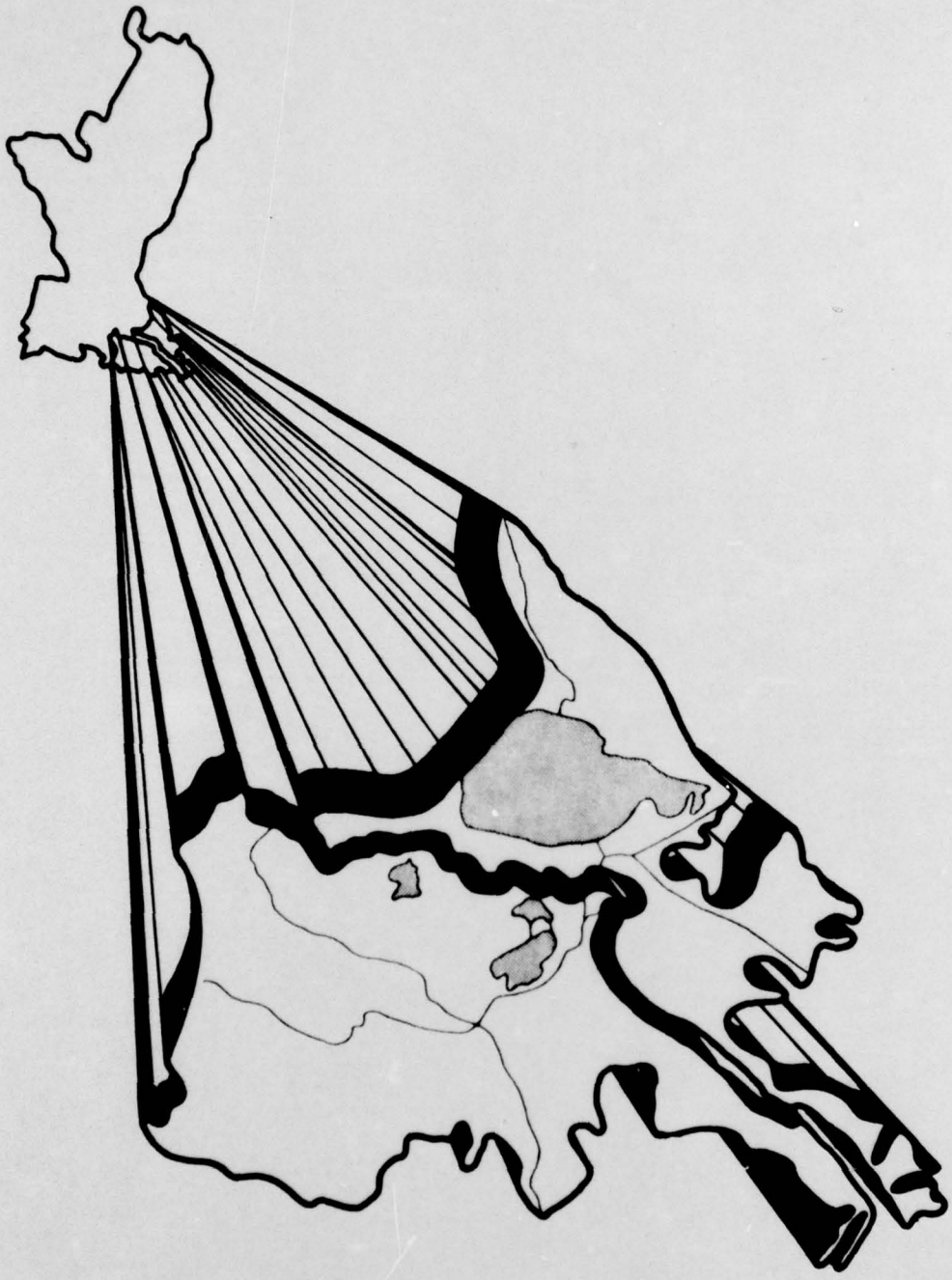
EFFECTS OF DRAINAGE

Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.



WRPA 10

W R P A 10

PRESENT STATUS

Lands With A Wetness Hazard

Presently there are 3.2 million acres of land in WRPA 10 that have a wetness hazard. This hazard varies in intensity and may be internal or external. Table 32 shows this land by land capability classes and subclasses for present and future time frames by land use categories. Table 33 gives this same information by land resource areas instead of land capability classes. Table 34 shows lands with a wetness hazard by subbasins, by land use categories for present and future time frames. Figure 29 shows the CNI hydrologic subbasins. Figure 30 shows the total land, the cropland, and the pasture with this problem.

Existing Projects Effects

Table 34 indicates that drainage is not needed or has already been established on about 3.1 million acres. Past drainage works have been established by drainage and levee districts, counties, watershed improvement districts, farmer groups, and individual farmers. In more recent years, federally assisted projects by the Corps of Engineers have resulted in establishment of major drainage outlets on some projects. The U. S. Department of Agriculture, under Public Law 566, the Watershed Protection and Flood Prevention Act, has planned or established watershed projects in this WRPA. These projects were predominantly for flood prevention but also provided outlets for drainage in most cases. Details of each project in this planning area are shown in Appendix D, Inventory of Facilities.

Drainage Not Needed or Not Recommended

At this time, drainage is not considered to be needed or recommended on all forests or other miscellaneous uses and a portion of the land used for pasture, although these lands continue to have a wetness hazard. There are presently 1.2 million acres of forest and 1.6 million acres of other miscellaneous uses in this category within this WRPA.

Table 32 - Acres of land by major land use, capability class, and subclass, that (1) have a wetness hazard, and (2) need drainage, WRPA 10

Land Use	Class And Subclass (1,000 Acres)							
	IIw	IIIw	IVw	Vw	VIw	VIIw	VIIIw	Total
				PRESENT				
Crops:								
(1) With a wetness hazard	109.8	109.5	2.0	5.5	-	-	-	226.8
(2) Drainage needed	56.0	54.6	0.4	-	-	-	-	111.0
Pasture:								
(1) With a wetness hazard	17.0	44.2	20.3	7.1	-	57.7	0.9	147.2
(2) Drainage needed	-	7.9	13.6	-	-	-	-	21.5
Forest:								
(1) With a wetness hazard	35.3	247.6	108.0	510.1	-	307.1	3.3	1,211.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	6.4	6.2	0.8	8.4	-	609.1	1,002.5	1,633.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	168.5	407.5	131.1	531.1	-	973.9	1,006.7	3,218.8
(2) Drainage needed	56.0	62.5	14.0	-	-	-	-	132.5
				1980				
Crops:								
(1) With a wetness hazard	117.8	93.9	2.0	6.0	-	-	-	219.7
(2) Drainage needed	64.1	54.6	0.5	0.5	-	-	-	119.7
Pasture:								
(1) With a wetness hazard	17.3	60.2	19.6	10.1	-	57.7	0.9	165.8
(2) Drainage needed	1.0	25.4	13.6	3.0	-	-	-	43.0
Forest:								
(1) With a wetness hazard	30.2	247.7	108.0	510.1	-	307.0	3.3	1,206.3
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	2.4	4.2	0.8	4.9	-	609.1	1,002.7	1,624.1
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	167.7	406.0	130.4	531.1	-	973.8	1,006.9	3,215.9
(2) Drainage needed	65.1	80.0	14.1	3.5	-	-	-	162.7
				2000				
Crops:								
(1) With a wetness hazard	119.5	100.0	1.0	2.9	-	-	-	223.4
(2) Drainage needed	65.7	54.6	0.5	-	-	-	-	120.8
Pasture:								
(1) With a wetness hazard	17.3	76.6	20.6	10.1	-	67.7	0.9	193.2
(2) Drainage needed	1.0	41.8	14.6	3.0	-	10.0	-	70.4
Forest:								
(1) With a wetness hazard	24.2	219.2	108.0	510.1	-	307.0	3.3	1,171.8
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	0.8	2.2	0.8	3.0	-	579.1	1,002.7	1,588.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	161.8	398.0	130.4	526.1	-	953.8	1,006.9	3,177.0
(2) Drainage needed	66.7	96.4	15.1	3.0	-	10.0	-	191.2
				2020				
Crops:								
(1) With a wetness hazard	127.1	89.0	0.5	1.9	-	-	-	218.5
(2) Drainage needed	73.4	54.6	0.5	-	-	-	-	128.5
Pasture:								
(1) With a wetness hazard	14.7	87.4	21.0	11.1	-	87.4	0.9	222.5
(2) Drainage needed	1.4	52.6	15.0	4.0	-	29.7	-	102.7
Forest:								
(1) With a wetness hazard	19.1	215.0	108.0	510.1	-	307.1	3.3	1,162.6
(2) Drainage needed	-	-	-	-	-	-	-	-
Other:								
(1) With a wetness hazard	0.8	1.7	0.8	3.0	-	527.4	1,002.7	1,536.4
(2) Drainage needed	-	-	-	-	-	-	-	-
Total:								
(1) With a wetness hazard	161.7	393.1	130.3	526.1	-	921.9	1,006.9	3,140.0
(2) Drainage needed	74.8	107.2	15.5	4.0	-	29.7	-	231.2

Table 33 - Acres of land that have a wetness hazard by land resource areas and major land use, WRPA 10

LRA	Cropland	Pasture	Forest	Other	Total
			1,000 Acres		
			PRESENT		
131	212.1	92.8	875.7	89.2	1,269.8
133	14.7	6.2	266.2	5.2	292.3
151	-	48.2	69.5	1,539.0	1,656.7
Total	226.8	147.2	1,211.4	1,633.4	3,218.8
			1980		
131	205.0	111.3	870.6	79.9	1,266.8
133	14.7	6.3	266.2	5.2	292.4
151	-	48.2	69.5	1,539.0	1,656.7
Total	219.7	165.8	1,206.3	1,624.1	3,215.9
			2000		
131	207.6	124.9	851.6	65.8	1,249.9
133	15.8	10.1	250.7	3.8	280.4
151	-	58.2	69.5	1,519.0	1,646.7
Total	223.4	193.2	1,171.8	1,588.6	3,177.0
			2020		
131	209.0	132.6	842.4	45.8	1,229.8
133	9.5	12.0	250.7	3.3	275.5
151	-	77.9	69.5	1,487.3	1,634.7
Total	218.5	222.5	1,162.6	1,536.4	3,140.0

DRAINAGE NEEDS

Present Needs

Tables 32 and 34 and figure 31 show that approximately 132,500 acres of land need to be drained, of which 111,000 acres is cropland and 21,500 acres is pasture. Drainage is needed on this land to meet the demand for food and fiber and for efficiency in production.

Table 34 - Lands with a wetness hazard, drainage already applied or not needed, and drainage needed, by major land use and subbasins, WRPA 10

Land Use	Lands With A wetness Hazard				Drainage Already Applied or Not Needed				Drainage Needed			
	1970	1980	2000	2020	1970	1980	2000	2020	1970	1980	2000	2020
	1,000 Acres											
Mississippi River (0)												
Cropland	171.8	168.6	169.4	171.3	78.5	68.3	70.1	62.9	93.3	100.3	99.3	108.4
Pasture	106.7	119.8	137.0	159.8	93.1	90.2	90.2	87.2	13.6	29.6	46.8	72.6
Forest	678.1	674.6	663.7	658.6	678.1	674.6	663.7	658.6	-	-	-	-
Other	1,431.2	1,421.9	1,387.9	1,338.1	1,431.2	1,421.9	1,387.9	1,338.1	-	-	-	-
Total	2,387.8	2,384.9	2,358.0	2,327.8	2,280.9	2,255.0	2,211.9	2,146.8	106.9	129.9	146.1	181.0
Amite River (9)(Portion)												
Cropland	14.7	14.7	15.8	9.5	11.0	11.0	10.0	5.1	3.7	3.7	5.8	4.4
Pasture	9.7	9.7	13.6	15.5	9.3	9.3	9.3	9.3	0.4	0.4	4.3	6.2
Forest	272.4	272.4	256.9	256.9	272.4	272.4	256.9	256.9	-	-	-	-
Other	81.8	81.8	80.3	77.8	81.8	81.8	80.3	77.8	-	-	-	-
Total	378.6	378.6	366.6	359.7	374.5	374.5	356.5	349.1	4.1	4.1	10.1	10.6
Atchafalaya River (10)(Portion)												
Cropland	40.3	36.4	38.2	37.7	26.3	20.7	22.5	22.0	14.0	15.7	15.7	15.7
Pasture	30.8	36.3	42.6	47.2	23.3	23.3	23.3	23.3	7.5	13.0	19.3	23.9
Forest	260.9	259.3	251.2	247.1	260.9	259.3	251.2	247.1	-	-	-	-
Other	120.4	120.4	120.4	120.5	120.4	120.4	120.4	120.5	-	-	-	-
Total	452.4	452.4	452.4	452.5	430.9	423.7	417.4	412.9	21.5	28.7	35.0	39.6
Totals for WRPA 10												
Cropland	226.8	219.7	223.4	218.5	115.8	100.0	102.6	90.0	111.0	119.7	120.8	128.5
Pasture	147.2	165.8	193.2	222.5	125.7	122.8	122.8	119.8	21.5	43.0	70.4	102.7
Forest	1,211.4	1,206.3	1,171.8	1,162.6	1,211.4	1,206.3	1,171.8	1,162.6	-	-	-	-
Other	1,633.4	1,624.1	1,588.6	1,536.4	1,633.4	1,624.1	1,588.6	1,536.4	-	-	-	-
WRPA Total	3,218.8	3,215.9	3,177.0	3,140.0	3,086.3	3,053.2	2,985.8	2,908.8	132.5	162.7	191.2	231.2

Future Needs

Future drainage needs in WRPA 10 for 1980, 2000, and 2020 are approximately 162,700 acres, 191,200 acres, and 231,200 acres respectively, based on an assumed future land use as previously explained. Tables 32 and 34 and figure 31 show expected future needs for drainage. In the future, some of the land with a remaining wetness hazard and needing drainage is expected to continue to be used for pasture and forage production.

EFFECTS OF DRAINAGE

Economic

Agricultural drainage will increase the net income from agricultural land because of increased yields from more favorable plant environment, increased operating efficiencies, shifts in cropping patterns, and increased land values. Also drainage will bring about more sanitary conditions on farms, improvement of living conditions, improvement in

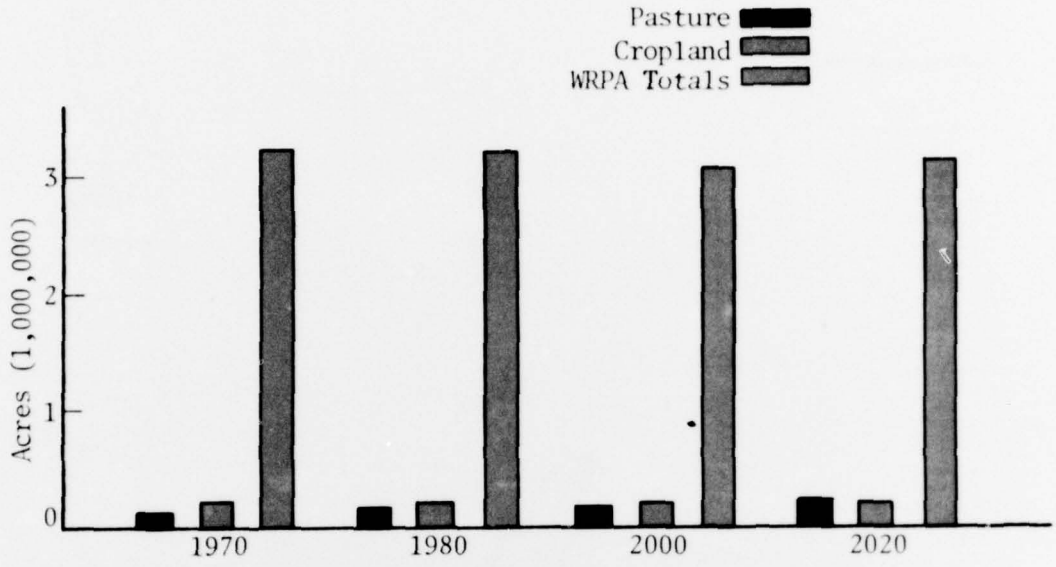


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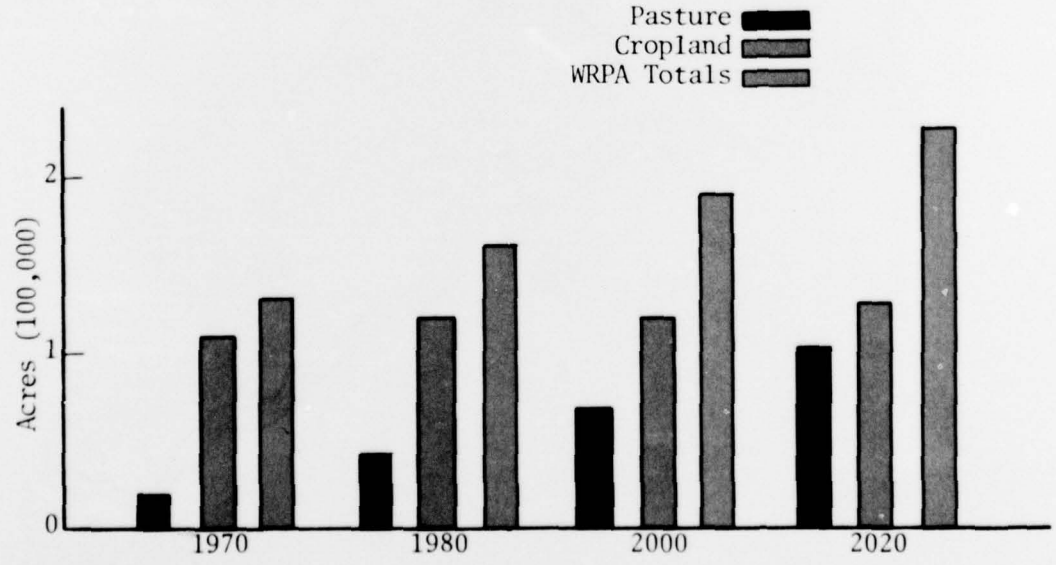
CNI HYDROLOGIC SUBBASINS

WRPA 10

FIGURE 29



Acres of Land With a Wetness Hazard
WRPA 10
Figure 30



Acres of Land Needing Drainage
WRPA 10
Figure 31

environment, and economical stabilization of enterprises related to agricultural production. Health will be improved from proper drainage because of the reduction of habitat suitable for the production of pest species of mosquitoes. Planned maintenance on improved channels will enhance the effectiveness of mosquito control programs.

Other Effects

The more significant adverse effects of installation of drainage measures include reducing wetland wildlife habitat areas, inducing additional clearing of forest lands, reducing or destroying stream fishery resources, and decreasing stream water quality by turbidity, following construction of drainage channels. These adverse effects could be minimized by addition of measures to maintain water levels in selected low areas, avoiding construction on streams with good fishery resources, installation of vegetative plantings on newly constructed areas, and other measures, such as informational efforts with landowners to refrain from additional clearing of forest lands.