SOIL SURVEY OF
Lee County, Arkansas

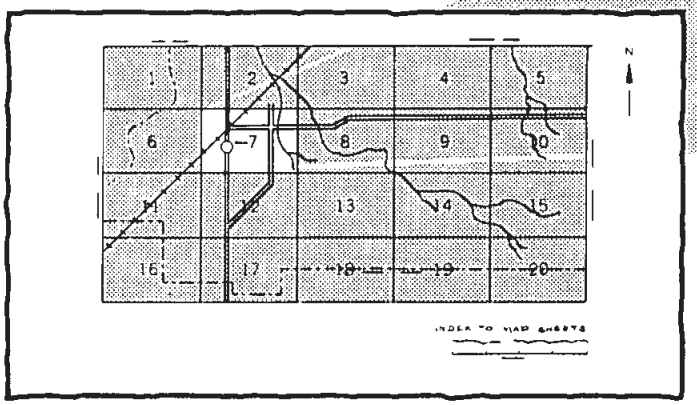
United States Department of Agriculture
Soil Conservation Service and Forest Service

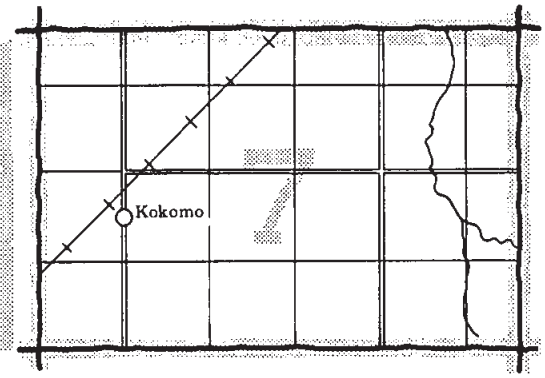
In cooperation with

Arkansas Agricultural Experiment Station

HOW TO USE

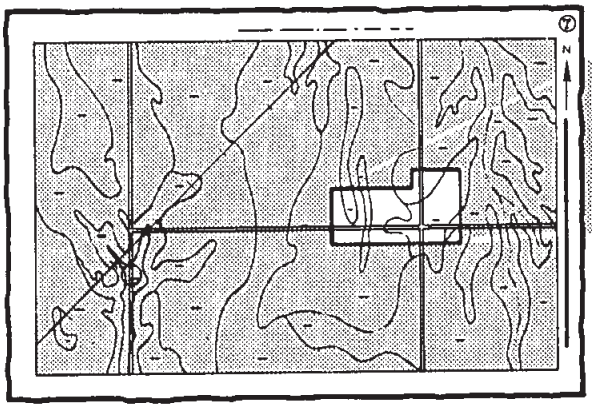
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

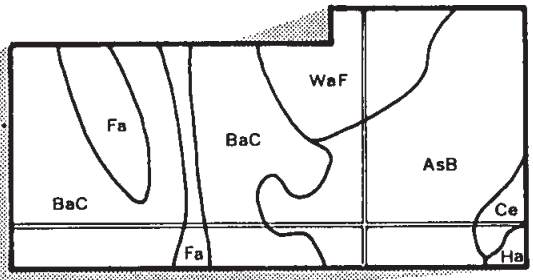




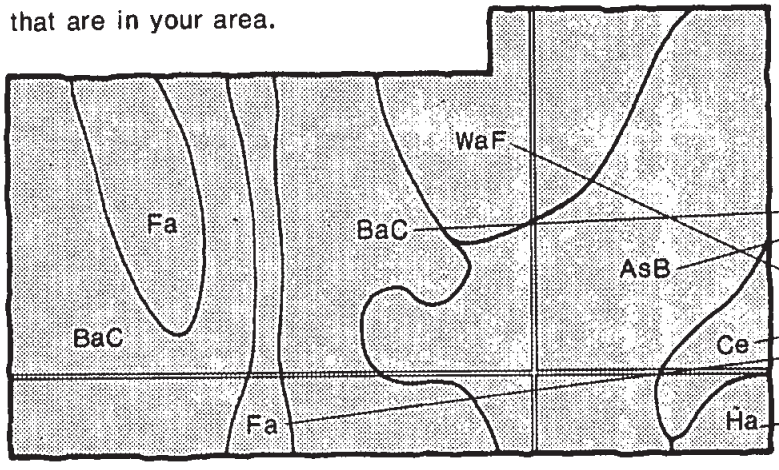
2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.





4. List the mapping unit symbols that are in your area.

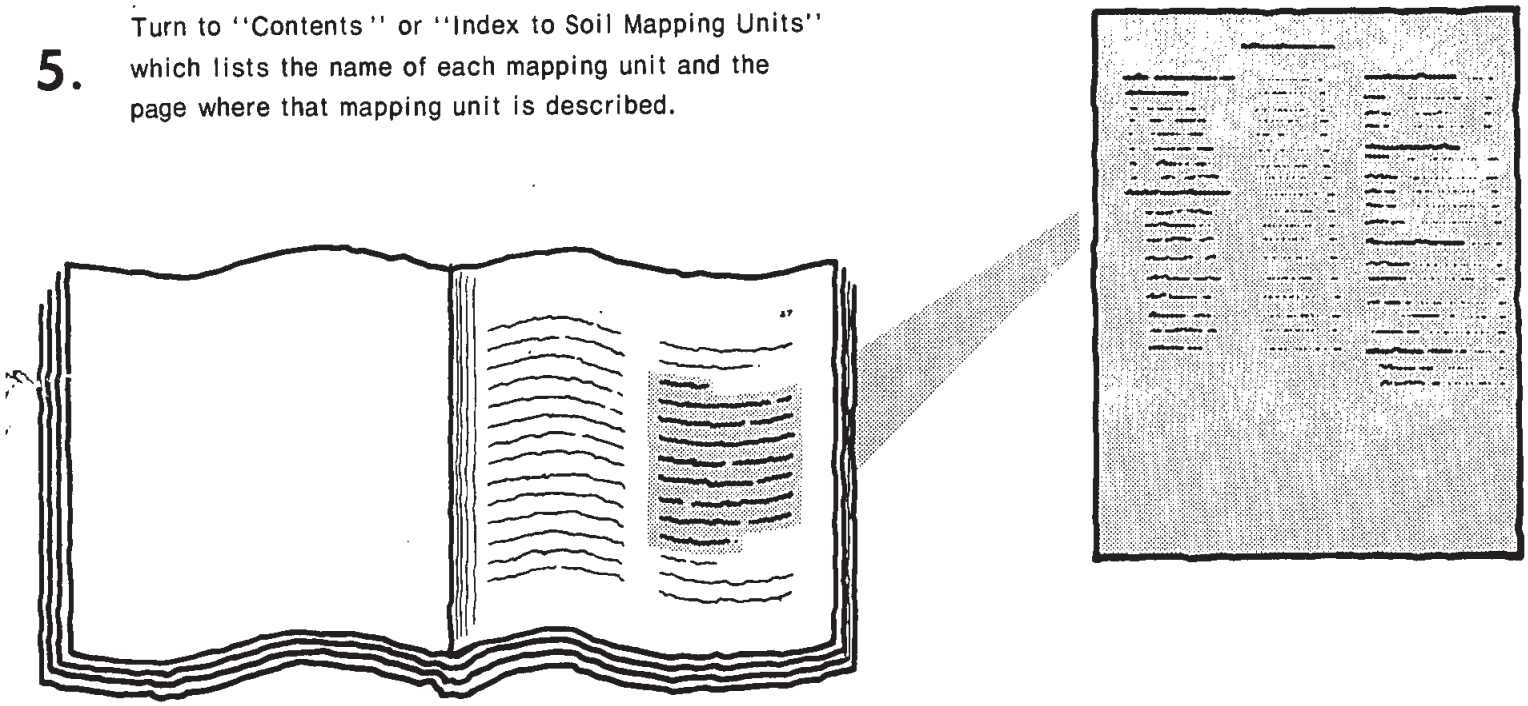


Symbols

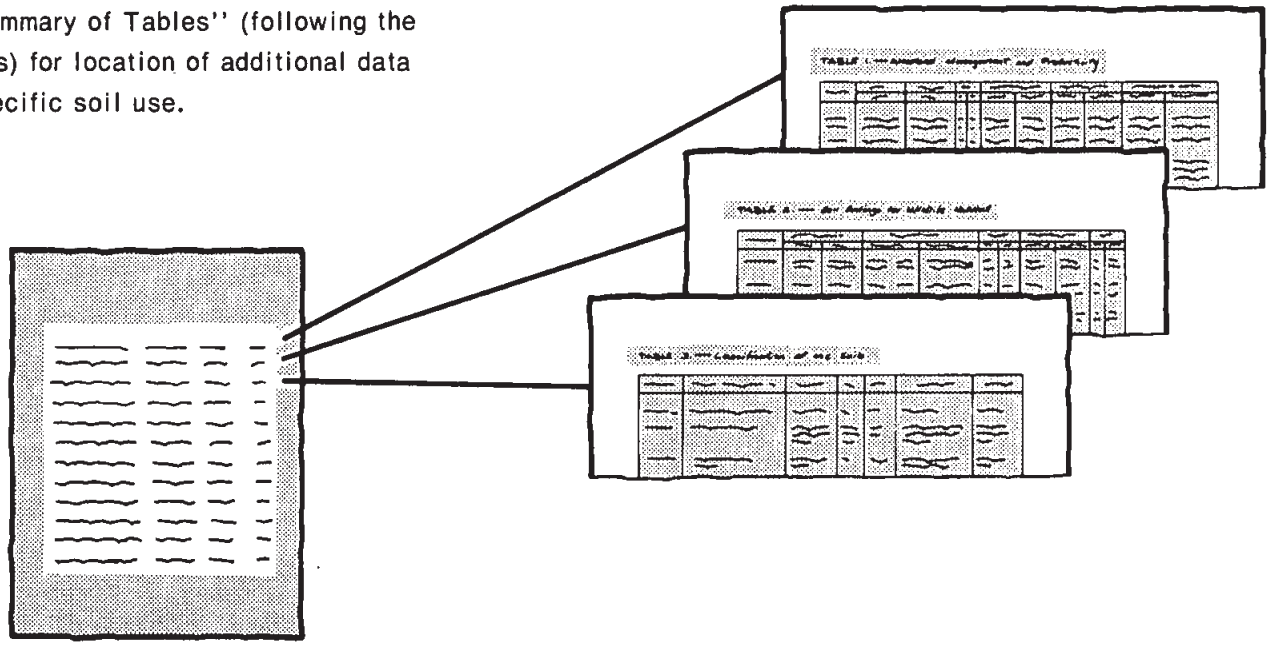
AsB
BaC
Ce
Fa
Ha
WaF

THIS SOIL SURVEY

5. Turn to "Contents" or "Index to Soil Mapping Units" which lists the name of each mapping unit and the page where that mapping unit is described.



6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



7. Consult "Contents" for parts of the publication that will meet your specific needs. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; for specialists in wildlife management, waste disposal, or pollution control.

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1967-73. Soil names and descriptions were approved in 1973. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1973. This survey was made cooperatively by the Soil Conservation Service, the Forest Service, and the Arkansas Agricultural Experiment Station. It is part of the technical assistance furnished to the Lee County Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps could cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

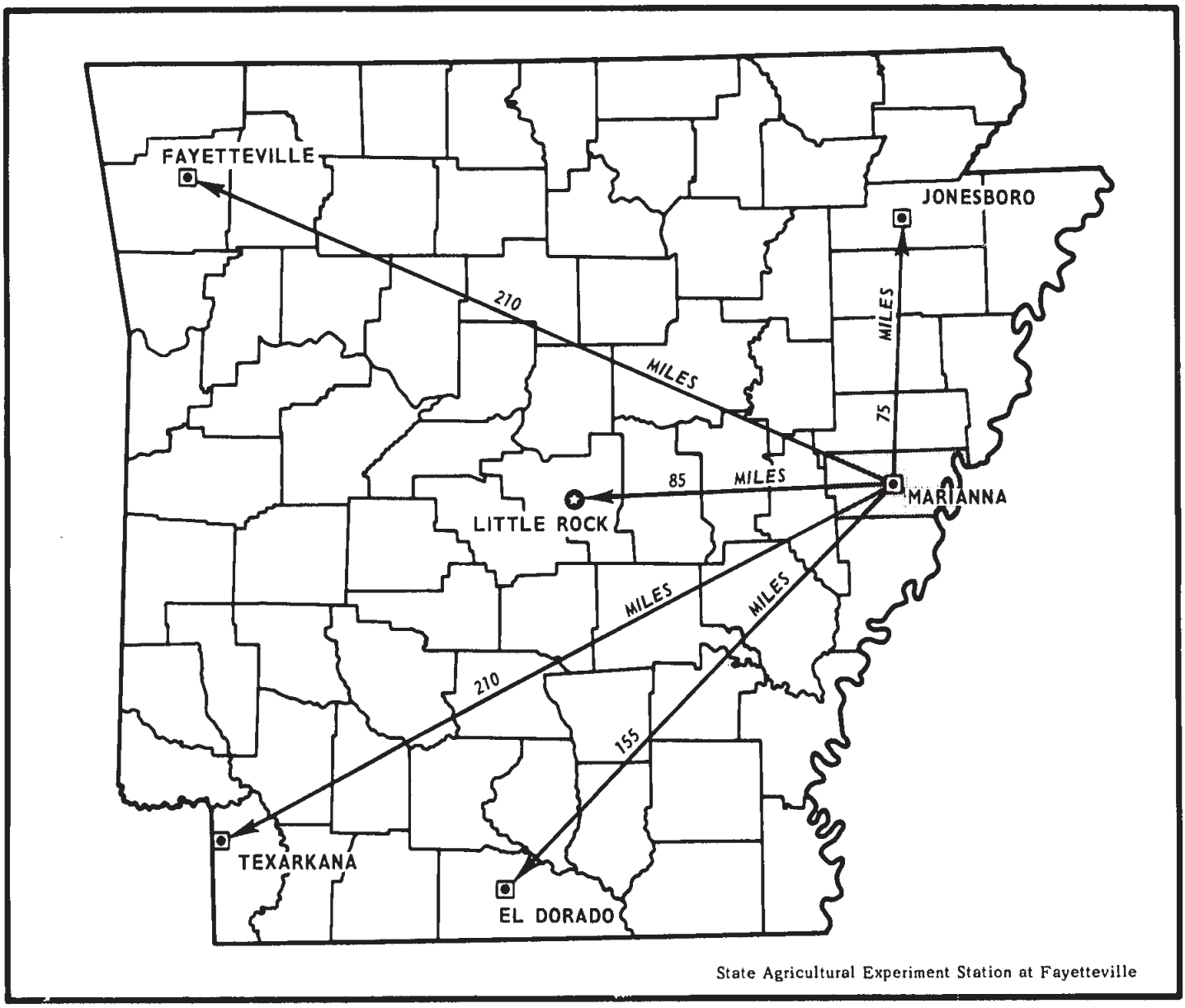
Contents

Issued August 1977

Index to Mapping Units

Summary of Tables

Summary of Tables—Continued



Location of Lee County in Arkansas.

SOIL SURVEY OF LEE COUNTY, ARKANSAS

BY JAMES L. GRAY, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE AND FOREST SERVICE, IN COOPERATION WITH THE ARKANSAS AGRICULTURAL EXPERIMENT STATION

LEE COUNTY is in east-central Arkansas (see facing page). It is roughly rectangular in shape. It is about 39 miles wide at the north boundary, about 26 miles wide at the south boundary, and the length is about 18 miles. The southwest corner is formed by the intersection of the fifth principal meridian and a base line. It is from this point of intersection that the Louisiana Purchase was surveyed.

The county is bounded on the east by Crittenden County and channels of the Mississippi River, some now abandoned. Lee County is bounded on the south by Phillips County and on the west by Monroe and St. Francis Counties. St. Francis County is also adjacent on the north. According to the United States Census Report, the approximate area is 388,992 acres, or 608 square miles.

In 1970, the population was 18,884. Marianna, the county seat, had a population of 6,196.

The economy of the county is based on farming. Except for a few manufacturing plants in Marianna, most of the businesses provide farm services.

General Nature of the County

This section discusses farming, physiography and drainage, and climate in Lee County. Statistics in the discussion of farming are from the 1969 Census of Agriculture.

Uplands, where the soils formed in thick layers of wind-blown sediments, make up about 55.4 percent of the county. The uplands lie across the central and western part of the county. They include Crowley Ridge. The part of the St. Francis National Forest in the county is mainly on Crowley Ridge.

Excepting the steep slopes on Crowley Ridge, most of the upland soils are suitable for cultivation or improved pasture. Excess water is a moderate to very severe hazard on the level tracts, as is erosion on the more sloping parts.

About 44.6 percent of the county is bottom lands and the associated lakes and rivers. This area lies mainly across the county east of Crowley Ridge. The soils in this area are suited to farming. Excepting a few large wooded tracts mainly between the Mississippi River and its levee, and a few river islands and cutoff points, nearly all the area is cultivated. Excess water drains away slowly or is ponded, and is a moderate to severe hazard over the area. With but a few exceptions, erosion is insignificant.

Farming

Farming in Lee County spread from the better drained parts of the uplands to the higher parts of the natural levees and then gradually spread to the poorly drained flats. According to a recent inventory about 231,903 acres is cultivated. The early economy was based on the plantation system, and cotton was the main cash crop. The people still depend mainly on farming as a means of livelihood, but cropping systems have become more diversified.

Since acreage allotments were placed on cotton and rice, the importance has declined. As machinery has replaced livestock as a source of power, corn and other feed crops also declined in importance. Soybeans and small grains have increased in importance.

Most farms in Lee County are general farms that produce soybeans, cotton, and wheat. Some also produce rice and grain sorghum, and some have herds of beef cattle. Table 1 shows the acreage of principal crops and pasture grown in selected years and table 2 gives the kind and number of livestock. Over much of the county, improved crop varieties, improved drainage outlets, along with major flood control measures on the floodplains, and other technology have led to rapid expansion of cropland into the wetter areas and a great reduction in acreage of woodland.

According to the 1969 Census of Agriculture, nearly 75 percent of the land area was in farms. The rest consisted of large wooded tracts, cities and towns, federally owned land, and transportation and utility facilities.

Farms in Lee County, as in most of eastern Arkansas, are decreasing in number and increasing in size. Between 1964 and 1969, the number of farms decreased from 1,423 to 992, and the average size increased from 198 to 292.

Farms of 500 acres and larger increased from 132 in 1964 to 145 in 1969. All farms smaller than 100 acres decreased from 732 in 1964 to 321 in 1969. Of the farm operators in the county in 1969, 420 were full owners, 340 were part owners, and 232 were tenants. Of these operators, 208 held jobs off the farm, and 203 of these worked off-farm 100 days or more.

The number of livestock in the county has been decreasing for several years. Most beef cattle are of good grade. Milk cows are generally of poor quality and are kept mainly for home use.

Farm-related industrial enterprises in the county are varied. They include cottongins and compresses; grain and soybean elevators and driers served by railway and truck; and farm equipment and supply companies.

Most of the farms are of a size that the family can do most of the work, with outside labor hired during peak seasons. The larger farms are operated with laborers who are supervised by the owner, manager, or tenant. Tenants pay a fixed rent or a percentage of the crop for use of the land. Most of the land is farmed by operators who have sufficient modern equipment to farm efficiently. Most farmers fertilize according to the needs of the crop, and many use chemicals for weed control.

Physiography and Drainage

The geological deposits at the surface of Lee County are alluvium and loess. Generally, alluvium comprises the eastern part of the county, and loess comprises the western part. These deposits are the parent material of the soils in the county. Total thickness of the alluvial sediment exceeds 200 feet, overlying unconsolidated material. The loess is from about 5 to more than 40 feet thick, overlying unconsolidated old alluvium and Coastal Plain sediments.

The alluvium is a mixture of minerals from throughout the Mississippi River Basin. It is derived from many kinds of soils, rocks, and unconsolidated sediments that came from more than 24 States (*4*).

The topography of the county can be divided into three main areas. These are the level to gently undulating bottom lands, the moderately steep to steep Crowley Ridge, and the level to moderately sloping upland plain west of Crowley Ridge.

The topography of the bottom lands ranges from broad flats to areas of alternating swales and low ridges. Except along a few streambanks, local differences in elevation are minor. Slopes are generally less than 1 percent, though they are as much as 3 percent on the sides of some low ridges.

In the Crowley Ridge area, topography is characterized by ridges with narrow, winding tops, short side slopes, and narrow valleys between the ridges. Slopes on the ridges predominantly range from 12 to 40 percent and along valley drainageways are generally less than 1 percent.

West of Crowley Ridge, the upland plain is predominantly level to nearly level, with slopes less than 3 percent. Scattered low ridges and escarpments along drainageways have slopes between 3 and 12 percent.

The drainage in the county is generally southward through a system of natural and improved drainageways and connecting artificial channels. The county is well supplied with drainageways and lakes. The major natural drains are the Mississippi, St. Francis, and L'Anguille Rivers; Walnut, Long, Johnson, Ellison, Massey, Cannon, and Millseed Lakes; Larkin, Big Spring, Big Cypress, Hog Tusk, Lick, Sugar, and Bear Creeks; and Cow, North Alligator, South Alligator, Raff, Frenchman, Otter, and Holcomb Bayous.

Big Spring, Big Cypress, Hog Tusk, and Lick Creeks drain the western part of the county and empty by way of the White River into the Mississippi River. Larkin Creek drains the north central part of the county and empties by way of the L'Anguille and St. Francis Rivers into the Mississippi River. The eastern part of the county is drained by Sugar Creek and Bear Creek and by North Alligator, South Alligator, Raff, Frenchman, Otter, Holcomb, and Cow Bayous. All empty by way of the St. Francis River into the Mississippi River.

The many streams and lakes furnish an abundant supply of surface water for recreation, agriculture, and industry. Except in Crowley Ridge, the supply of ground water is abundant. Wells 10 inches in diameter drilled to a depth of about 120 feet furnish an unfailing flow of good to fair quality water at rates of about 1,500 to 1,800 gallons per minute.

Climate

Lee County lies between the White and Mississippi Rivers in east-central Arkansas. Except for a small area in the central part, the county is relatively flat, and the large hilly areas are too distant to have a noticeable effect on the climate of the county. The relatively treeless, predominantly cultivated countryside offers little hindrance to windflow, and surface wind velocity may be somewhat greater than in more rugged, wooded terrain. Table 3 is a climatic summary of temperature and precipitation at Marianna and is representative for the county.

The climate of Lee County, like all of Arkansas, is one of generally warm summers and mild winters. Although there are outbreaks of Arctic weather, these cold fronts generally are of short duration, and winters are relatively free of severe cold and snow. Outdoor work can be done during much of the winter.

The most abrupt, violent weather changes are in spring. Strong frontal passages are often accompanied by turbulent weather and high intensity rains.

Summers are long, warm and frequently hot, and highly humid because of the moisture brought in from the Gulf of Mexico. Evaporation from the streams, lakes, marshes, and flooded rice fields contributes to the high humidity.

Annual average relative humidity is about 70 percent. Uncomfortably high temperatures and humidity are likely from mid-May to mid-September.

In fall days are warm and nights are cool. This is the driest and least humid season and is commonly the most pleasant. Prewinter cold fronts and sharp drops in temperature occur late in October and in November, but these generally are not accompanied by significant turbulence as are the front passages in spring. Dry air masses are most likely in the fall, when the day-to-night temperature range is the greatest.

The county has a wide range of temperature extremes. Average temperatures in winter are normally above freezing, but nighttime temperatures are occasionally in the teens and temperatures below 0 degrees F. have been recorded. Normally, 65 days or more have a temperature of 90 degrees F. or higher, mainly in July and August. The temperature can be expected to reach 100 degrees or higher for about 6 days in most years. Minimum summer temperatures are generally in the 65 degrees to 75 degrees range. Only a few cold fronts reach the area in summer, and rarely do they bring dry air masses into the county.

The precipitation, which averages nearly 50 inches a year, generally is adequate for most crops. It is fairly evenly distributed throughout the year. December through May are the wettest months and normally average 4.5 to 5.5 inches of precipitation. June through October is the driest period, but about 3 inches of rainfall can be expected each month in a normal year. Warm frontal systems, or those associated with a wintery low pressure system approaching from the southern plains or the Gulf of Mexico, are the most reliable sources of moisture. A single storm can bring as much as 2 to 5 inches or more of rainfall. Snowfall averages only about 2 to 4 inches per year and is a negligible source of moisture. Normally, snow melts within a few hours, and it frequently melts as it falls. Sleet and freezing rain are infrequent but can cause serious damage to evergreen trees and shrubs and disrupt transportation and utility service. Otherwise, they are of little significance.

Convective clouds occur almost daily in summer, but rain received is erratic and poorly distributed, and droughts are frequent. In some years droughts that are severe enough to injure seedlings and shallow rooted crops occur in spring and early in summer. In most years at least one drought, lasting 15 days or more, occurs in the period of June through September. Such droughts cause severe crop damage or crop failure on such soils as Bruno fine sandy loam.

During the hottest part of the summer, evaporation of soil moisture can average about one-third inch per day, and extended periods of high temperatures and maximum sunshine can deplete a large amount of soil moisture. A 1-inch summer rain can be dissipated in 2 or 3 days. In winter and spring, low evaporation and transpiration rates and high rainfall cause wetness and local flooding. In low-lying areas crop planting can be delayed up to several weeks during a wet period. The normally drier weather in late summer and fall is favorable for harvesting but may reduce the growth of pasture plants and cause difficulty in establishing a stand of fall seeded crops.

Occasionally, late frost will damage crops planted early, and they may have to be replanted. Rarely do frosts come early enough in fall to damage the quality or reduce the yield of crops.

The growing season is long. Normally, the 7-month period from April through October is free from vegetation-damaging low temperatures. Sunshine averages slightly more than 70 percent of the possible amount. The average date of the last freezing temperature in spring is March 24, and the first in fall is November 2.

The prevailing wind is from the south at an average velocity of about 9 miles per hour. Although thunderstorms are common, particularly in summer, severe thunderstorms and tornados are far less common. Thunderstorms with damaging winds and hail may occur 3 or 4 times in a 10-year period. Frequency of tornados is only 1 or 2 times in a 10-year period, which is far below the frequency in the tornado-alley areas to the west.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are located, and how they can be used. The soil scientists went into the area knowing they likely would locate many soils they already knew something about and perhaps identify some they had never seen before. They observed the steepness, length, and shape of slopes, the size of streams and the general pattern of drainage, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has been changed very little by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* (*9*) are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Soil series commonly are named for towns or other geographic features near the place where they were first observed and mapped. Memphis and Mhoon, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in characteristics.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Memphis silt loam, 3 to 8 percent slopes, eroded, is one of several phases within the Memphis series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map in the back of this publication was prepared from the aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent, because it is not practical to show on such a map all the small, scattered bits of soil of some other kind that have been seen within an area that is dominantly of a named soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series, and some have little or no soil.

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. Existing ratings of suitabilities and limitations (interpretations) of the soils are field tested and modified as necessary during the course of the survey, and new interpretations are added to meet local needs. This is done mainly through field observations of behavior of different kinds of soil for different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and other information available from state and local specialists. For example, data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so to be readily useful to different groups of users, among them farmers, managers of rangeland and woodland, engineers, planners, developers and builders, homebuyers, and those seeking recreation. Presenting the detailed information in an organized, understandable manner is the purpose of this publication.

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Lee County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area, or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field, or for selecting the exact location of a road, building, or similar structure, because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The soil associations in Lee County are discussed in the following pages.

The soil associations in this survey have been grouped into 10 general kinds of landscapes for broad interpretative purposes. Each of the broad groups and their included soil associations are described in the following pages. The terms for texture used in the title for several of the associations apply to the texture of the surface layer. For example, in the title of association 4, the word "loamy" refers to the texture of the surface layer.

Soil associations and delineations on the general soil map in the survey area do not fully agree with those of the general soil maps for adjacent counties, published at a different date. Differences in the maps are the result of improvement in soil classification. Also, soils of major extent in one survey area may be of a minor extent in an adjacent area.

Loamy soils formed in thick, wind-laid sediments on uplands characterized by wide flats and low ridges

The soils in soil associations 1, 2, 3, and 4 make up about 53 percent of the county. They occupy most of the Southern Mississipi Valley Silty Uplands west of Crowley Ridge. These well drained to poorly drained loamy soils formed in material sorted by wind from ancient flood plains and laid down in thick deposits over older loamy and clayey alluvial sediments.

The soils in this group are used extensively for cultivated crops and for most of the orchards and pecan groves in the county. In wooded areas the vegetation is mainly cutover hardwoods.

1. Hillemann-Calloway-Henry association:

Poorly drained and somewhat poorly drained, level and nearly level loamy soils

This association is in the northwestern part of the county. It consists of broad flats broken by low ridges

that rise 1 to 5 feet higher than the flats. Natural drainageways are mainly slow-flowing, intermittent streams. Henry soils are on the lower part of the flats. Calloway and Hillemann soils are on the low generally broad ridges.

This association occupies about 3 percent of the county. Hillemann soils make up about 46 percent, Calloway soils about 23 percent, Henry soils 23 percent, and the remaining 8 percent is Loring and Grenada soils.

Hillemann soils are somewhat poorly drained. The surface layer is dark brown silt loam. The subsurface layer is grayish brown, mottled silt loam. The uppermost part of the subsoil is light brownish gray, mottled silt loam. The middle part is grayish brown, mottled silty clay loam, and the lowermost part is light brownish gray, mottled silt loam that extends to a depth of about 49 inches. The material beneath is grayish brown and light brownish gray, mottled silt loam.

Calloway soils are somewhat poorly drained. The surface layer is dark grayish brown silt loam. The upper part of the subsoil is yellowish brown, mottled silt loam. The lower part is a light brownish gray, brown, and dark yellowish brown, mottled, brittle, silt loam fragipan that extends to a depth of about 57 inches. The material beneath is dark yellowish brown, mottled silt loam.

Henry soils are poorly drained. The surface layer is brown silt loam, and the subsurface layer is gray, mottled silt loam. The subsoil is a gray and light brownish gray, mottled, brittle silty clay loam fragipan that extends to a depth of about 63 inches. The material beneath is light gray, mottled silt loam.

Soils in this association are suited to farming, and most of the acreage is cultivated. Most of the area needs surface drainage for efficient farm management. The main crops are soybeans, rice, and cotton, but winter small grains are also grown.

Farms range from 80 to 800 acres in size. About half the farms are operated by owners. The rest are operated by renters.

Because of wetness, seasonal high water table, and low-bearing capacity, most of the association has severe limitations for residences, other buildings, or highways. Soils in this association have severe limitations for septic tank absorption fields because of the slow percolation rate and seasonal high water table.

2. Calloway-Henry-Foley association:

Poorly drained and somewhat poorly drained, level and nearly level loamy soils

This association is in the western part of the county. It consists of broad flats broken by low ridges that rise 1 to 5 feet higher than the flats. Natural drainageways are mainly slow-flowing, intermittent streams. Henry soils are on the lower part of the flats. Calloway and Foley soils are on the flats and low ridges.

This association occupies about 5 percent of the county. Calloway soils make up about 35 percent, Henry about 35 percent, Foley soils about 20 percent, and the remaining 10 percent is Loring, Grenada, Bonn, Zachary, and Calhoun soils.

Calloway soils are somewhat poorly drained. The surface layer is dark grayish brown silt loam. The upper part of the subsoil is yellowish brown, mottled silt loam. The lower part is a light brownish gray, brown, and dark yellowish brown, firm, mottled, brittle silt loam fragipan that extends to a depth of about 57 inches. The material beneath is dark yellowish brown, mottled silt loam.

Henry soils are poorly drained. The surface layer is brown silt loam, and the subsurface layer is gray, mottled silt loam. The subsoil is a gray and light brownish gray, mottled, firm, brittle, silty clay loam fragipan that extends to a depth of about 63 inches. The material beneath is light gray, mottled silt loam.

Foley soils are poorly drained. The surface layer is dark grayish brown silt loam. The subsurface layer is gray, mottled silt loam. The upper part of the subsoil is light brownish gray, mottled silt loam; the middle part is light brownish gray, mottled silty clay loam; and the lower part is light brownish gray, mottled silt loam that extends to about 60 inches. The material beneath is light brownish gray, mottled silt loam.

Soils in this association are suited to farming, and most of the acreage is cultivated. Most of the area needs surface drainage for efficient farm management. The main crops are soybeans, cotton, and rice, but small grains are also grown.

Farms range from 80 to 600 acres in size. About half the farms are operated by owners. The rest are operated by renters.

Because of wetness, seasonal high water table, and low bearing capacity, most of the association has severe limitation for residences, other buildings, or highways. Calloway soils on the low ridges have moderate limitation for these uses. Soils in this association have severe limitations for septic tank absorption fields because of the slow percolation rate and seasonal high water table.

3. Henry-Calloway-Loring association:

Poorly drained to moderately well drained, level to gently sloping loamy soils

This association is in the western part of the county. It consists of broad flats, broken by low ridges that rise 1 to 10 feet higher than the flats. Natural drainageways are mainly slow-flowing, intermittent streams. Henry soils are on the lower part of the flats, Calloway soils are on the flats and low ridges, and the Loring soils are on the higher parts of the ridges.

This association occupies about 40 percent of the county. Henry soils make up about 35 percent, Calloway soils 20 percent, Loring soils 18 percent, and the remaining 27 percent is Foley-Bonn complex and Marvell, Lagrange, Memphis, Grenada, Jeanerette, Zachary, Mhoon, and Calhoun soils.

Calloway soils are somewhat poorly drained. The surface layer is dark grayish brown silt loam. The upper part of the subsoil is yellowish brown, mottled silt loam. The lower part is a light brownish gray, brown, and dark yellowish brown, firm, brittle silt loam fragipan that extends to a depth of about 57 inches. The material beneath is dark yellowish brown, mottled silt loam.

Henry soils are poorly drained. The surface layer is brown silt loam, and the subsurface layer is gray, mottled silt loam. The subsoil is a gray and light brownish gray, mottled, firm, brittle silty clay loam fragipan that extends to a depth of about 63 inches. The material beneath is light gray, mottled silt loam.

Loring soils are moderately well drained. The surface layer is brown silt loam. The upper part of the subsoil is dark brown and brown silt loam. The lower part is a brown, mottled, brittle silt loam fragipan that extends to a depth of about 52 inches. The material beneath is shades of brown and gray silt loam.

Soils in this association are suited to farming, and most of the acreage is cultivated. Most of the association needs surface drainage for efficient farm management. The main crops are cotton and soybeans, but rice and winter small grains are also grown.

Farms range in size from about 80 to 600 acres in size. About half the farms are operated by owners. The rest are operated by renters.

Because of wetness, seasonal high water table, and low bearing capacity, most of the association has severe limitations for residences, other buildings, or highways. Loring soils on the ridges have moderate limitation for these uses. Soils in the association have severe limitations for septic tank absorption fields because of the slow percolation rate and seasonal high water table.

4. Loring-Memphis-Grenada association:

Moderately well drained and well drained, nearly level to moderately sloping loamy soils

This association is in the central part of the county. It consists of ridgetops and side slopes and escarpments along drainageways. The ridges and escarpments are 10 to 25 feet higher than adjacent areas. Loring and Grenada soils are on the lower ridges and the tops of higher ridges. The Memphis soils are on the side slopes of higher ridges and escarpments.

This association occupies about 7 percent of the county. Loring soils make up about 30 percent, Memphis soils about 20 percent, Grenada soils about 20 percent, and the remaining 30 percent is mainly Calloway, Calhoun, Lagrange, Marvell, Henry, Falaya, and Zachary soils.

Loring soils are moderately well drained. The surface layer is brown silt loam. The upper part of the subsoil is dark brown and brown silt loam. The lower part is a brown, mottled, firm, brittle silt loam fragipan that extends to a depth of about 52 inches. The material beneath is shades of brown and gray silt loam.

Memphis soils are well drained. The surface layer is brown silt loam. The upper part of the subsoil is brown silty clay loam, and the lower part is brown silt loam that extends to a depth of about 60 inches. The material beneath is brown silt loam.

Grenada soils are moderately well drained. The surface layer is dark brown silt loam. The upper part of the subsoil is yellowish brown silt loam, and the lower part is a light gray, dark yellowish brown and yellowish brown, mottled, firm, brittle silt loam fragipan that extends to a depth of about 60 inches.

Soils in this association are suited to farming, and most of the acreage is cultivated. They require careful management to help control erosion. The main crops are cotton and soybeans, but winter small grains are also grown. Some areas are better suited to pasture than other uses.

Farms range in size from about 80 to 500 acres. About half the farms are operated by owners. The rest are operated by renters.

Because of the moderate bearing capacity and traffic supporting capacity, most of these soils have moderate limitations for residences, other buildings, or highways. The Memphis soils have slight limitations for septic tank absorption fields except where slopes are excessive, but other soils of the association have severe limitations for septic tank absorption fields because of slow percolation rates.

Loamy soils formed in thick wind-laid sediments on uplands characterized by narrow ridgetops and steep sides

These soils are in soil association 5 and make up about 6 percent of the county. They occupy all of the Crowley Ridge part of the Southern Mississippi Valley Silty Uplands. These well drained loamy soils formed in material sorted by wind from ancient flood plains and laid down in thick deposits over older, loamy and gravelly alluvial sediments.

The soils in this group, except those in urban areas and pasture, are used mainly for forest and for extensive recreational use. Most of the area is within the St. Francis National Forest.

5. Memphis-Natchez association:

Well drained, moderately steep to steep loamy soils

This association is in the central part of the county and includes Crowley Ridge. It consists of narrow, moderately steep ridges with steep side slopes and narrow, winding valleys between the ridges.

This association occupies about 6 percent of the county. Memphis soils make up about 50 percent, Natchez soils 15 percent, and the remaining 35 percent is Loring, Convent, and Falaya soils.

Memphis soils are well drained. The surface layer is brown silt loam. The upper part of the subsoil is brown silty clay loam, and the lower part is brown silt loam that

extends to a depth of about 60 inches. The material beneath is brown silt loam.

Natchez soils are well drained. The surface layer is dark brown silt loam. The subsoil is brown and dark yellowish brown silt loam that extends to a depth of about 28 inches. The material beneath is brown silt loam.

Soils in this association are poorly suited to farming because of the slopes. Most of the acreage is woodland, but some is pasture and urban and built-up areas. The St. Francis National Forest is within the association.

Because of slopes, most of these soils have severe limitations for highways, residences, other buildings, and septic tank absorption fields. Considerable grading is necessary to prepare building sites. The soils are highly erodible and difficult to stabilize.

Soils formed in clayey to sandy sediments on flood plains, natural levees, and slack-water areas characterized by broad flats and low terraces

These soils occur in soil associations 6, 7, 8, 9, and 10, and together make up about 41 percent of the county. They occupy the flood plains of L'Anguille River, Larkin Creek, and Big Creek within the area of the Southern Mississippi Valley Silty Uplands, and all of the Southern Mississippi Valley Alluvium. These are sandy, loamy, and clayey soils formed in sediments of the Mississippi River and its local tributaries.

The soils in this group are used extensively for cultivated crops. Other than the hardwood forests on a few river islands, a few large wooded tracts remain.

6. Zachary-Mhoon association:

Poorly drained, level loamy soils on flood plains

This association is in the north central and southwestern parts of the county. It consists of level flood plains along Big Creek and L'Anguille River and their tributaries.

This association includes about 3 percent of the county. Zachary soils make up about 60 percent, Mhoon soils make up about 30 percent, and the remaining 10 percent is Falaya and Henry soils.

Zachary soils are poorly drained. The surface layer is grayish brown, mottled silt loam. The subsurface layer is gray, mottled silt loam. The subsoil is gray, mottled silty clay loam. The material beneath is gray, mottled silt loam.

Mhoon soils are poorly drained. The surface layer is dark grayish brown silt loam. The subsoil is gray, mottled silt loam. The material beneath is gray, mottled silty clay loam and silty clay.

Soils in this association are poorly suited to farming because of frequent flooding. Floods generally occur between January and June. About 10 percent of the association is cultivated. The main crop is soybeans. Most of the remaining acreage is wooded.

Farms range from 80 to 500 acres in size. About half the farms are operated by owners. The rest are operated by renters.

Because of frequent flooding and a seasonal high water table, these soils have severe limitations for residences, other buildings, highways, or septic tank absorption fields.

7. Alligator-Earle association:

Poorly drained and somewhat poorly drained, level and gently undulating clayey soils in slack-water areas

This association is in the northeastern part of the county mainly along the north boundary of the county. It consists of slack-water flats broken by gently undulating areas of alternating swales and low ridges that rise 2 to 5 feet above the flats. The soils are intermingled over the area, but generally the Earle soils are on the undulating parts.

The association includes about 9 percent of the county. Alligator soils make up about 54 percent, Earle soils 29 percent, and the remaining 17 percent is mainly Sharkey, Tunica, and Newellton soils.

Alligator soils are poorly drained. The surface layer is very dark grayish brown clay. The subsoil is gray, mottled clay. The material beneath is gray, mottled clay and silty clay loam.

Earle soils are poorly drained. The surface layer is dark grayish brown silty clay. The subsoil is gray, mottled clay. The material beneath is gray, mottled silt loam.

Soils in this association are suited to farming. About 85 percent of the acreage is cultivated, and the rest is chiefly scattered patches of hardwood trees. Part of the association is in the St. Francis River Floodway and is subject to frequent flooding, mainly between January and June. The main crop in this area is soybeans. Areas protected by levees need surface drainage for efficient farm management. The main crops in this area are cotton and soybeans, but rice and winter small grain are also grown.

Most farms range from 160 to 600 acres in size and are highly mechanized. About 40 percent of the farms are operated by owners. The rest are operated by renters.

These soils shrink and crack when they dry, and when wet they expand and the cracks seal. Because of wetness, instability, and low bearing capacity, the soils have severe limitations for residences, other buildings, or highways. Because of a slow percolation rate and seasonal high water table, they have severe limitations for septic tank absorption fields.

8. Sharkey-Newellton-Tunica association:

Poorly drained and somewhat poorly drained, level and gently undulating clayey and loamy soils in slack-water areas

This association is in the eastern part of the county. It consists of slack-water flats broken by undulating areas of alternating swales and low ridges that rise 2 to 5 feet above the flats. The soils are intermingled over the areas,

but generally Newellton and Tunica soils are on the undulating parts.

The association includes about 19 percent of the county. Sharkey soils make up about 50 percent, Newellton soils about 27 percent, Tunica soils about 15 percent, and the remaining 8 percent is mainly Commerce soils, Fluvaquents, levees, and water areas.

Sharkey soils are poorly drained. The surface layer is about 8 inches thick. The upper part is very dark gray clay, and the lower part is very dark grayish brown, mottled clay. The subsoil is gray, mottled clay. The material beneath is gray, mottled silty clay.

Newellton soils are somewhat poorly drained. The surface layer is dark grayish brown silty clay loam. The subsoil is dark grayish brown, mottled silty clay. The material beneath is grayish brown and gray, mottled, stratified silt loam to fine sandy loam.

Tunica soils are poorly drained. The surface layer is dark grayish brown silty clay. The subsoil is dark gray, mottled clay and silty clay loam. The material beneath is mottled, stratified fine sandy loam and silt loam.

Soils in this association are suited to farming. About 80 percent of the acreage is cultivated, and the rest is scattered patches and a few large tracts of hardwood trees. Part of the association is between the Mississippi River and its levee and in the St. Francis River Floodway. These tracts are subject to frequent flooding, mainly between January and June. Surface drainage generally is not practical in these areas. The main crop grown on these tracts is soybeans. Areas protected by the levees need surface drainage for efficient farm management. The main crops in these areas are cotton and soybeans, but winter small grain is also grown.

Most farms range from 160 to 1,000 acres in size and are highly mechanized. About 40 percent of the farms are operated by owners. The rest are operated by renters.

These soils shrink and crack when they dry, and when wet they expand and the cracks seal. Because of wetness, instability, and low bearing capacity, the soils have severe limitations for residences, other buildings, and highways. Because of a slow percolation rate and seasonal high water table, they have severe limitations for septic tank absorption fields.

9. Dundee-Dubbs association:

Somewhat poorly drained and well drained, level and gently undulating loamy soils on old natural levees

This association is mainly in the east central part of the county. It consists of level and gently undulating, loamy natural levees. The undulating areas are alternating swales and low ridges that rise 2 to 5 feet above the swales. Generally the Dubbs soils are on the higher parts, and the Dundee soils are on the lower parts of the areas.

This association includes about 2 percent of the county. Dundee soils make up about 45 percent, Dubbs soils 45 percent, and the remaining 10 percent is mainly Bruno soils.

Dundee soils are somewhat poorly drained. The surface layer is dark grayish brown silt loam and is mottled in the lower part. The upper part of the subsoil is grayish brown, mottled silty clay loam, and the lower part is light brownish gray, mottled silt loam. The material beneath is gray, mottled silty clay and clay.

Dubbs soils are well drained. The surface layer is dark grayish brown loam. The upper part of the subsoil is dark brown and brown silty clay loam, and the lower part is yellowish brown, mottled silt loam. The material beneath is light brownish gray loamy fine sand.

This association is one of the major cotton-farming areas. Except for a few patches of hardwood trees along drainageways, nearly all of the acreage is cultivated. The Dundee soils need surface drainage for efficient farm management. The main crops are cotton and soybeans, but grain sorghum, winter small grain, and pasture plants are also grown. Truck crops are also suited.

Most farms range from 60 to 500 acres in size. About 70 percent of the farms are operated by owners. The rest are operated by renters.

Dubb soils have slight to moderate limitations for residences, other buildings, or highways, and Dundee soils have moderate to severe limitatons. Dundee soils have severe limitations for septic tank absorption fields because of a seasonal high water table and a slow percolation rate.

10. Commerce-Robinsonville association:

Somewhat poorly drained and well drained, level and gently undulating loamy soils on young natural levees

This association is in strips, generally adjacent to and parallel with the Mississippi River. It includes the larger areas of recent loamy and sandy natural levees deposited by the river. Generally, the Commerce soils are on the lower areas, and Robinsonville soils are on the higher areas and near the river.

This association includes about 6 percent of the county. Commerce soils make up about 30 percent, Robinsonville soils 30 percent, and the remaining 40 percent is Bruno, Newellton, and Sharkey soils, Fluvaquents, levees, and water areas.

Commerce soils are somewhat poorly drained. The surface layer is dark grayish brown silt loam. The subsoil is grayish brown, mottled silty clay loam. The material beneath is dark grayish brown and grayish brown, mottled silt loam.

Robinsonville soils are well drained. The surface layer is dark brown fine sandy loam. The material beneath is brown and grayish brown, stratified silt loam, fine sandy loam, loamy fine sand, and loamy sand.

Soils in this association generally are well suited to farming if they are protected from flooding. Except for small, scattered patches of hardwood trees, most of the acreage is cultivated. Part of this association is between the Mississippi River and its levee and is subject to frequent flooding, mainly between January and June. The

main crops grown between the levee and the Mississippi River are soybeans and grain sorghum. The main crops in areas protected by the levee are cotton and soybeans, but winter small grain and pasture plants are also grown, and truck crops are suited. Most farms range from 100 to 1,000 acres in size and are highly mechanized. About half the farms are operated by owners. The rest are operated by renters.

In areas not protected from flooding, limitations are severe for most nonfarm uses. Robinsonville soils that are protected from flooding have slight limitations for residences, other buildings and highways, but Commerce soils have moderate to severe limitations for these uses.

Robinsonville soils have slight limitations for septic tank absorption fields, but Commerce soils have severe limitations for this use because of slow percolation rate and a seasonal high water table.

Soil Maps for Detailed Planning

The soil series and the kinds of soil (mapping units) shown on the detailed soil maps at the back of this publication are described in this section. These descriptions together with the soil maps can be useful in determining the potential of soil and in managing it for food and fiber production, in planning land use and developing soil resources, and in enhancing, protecting, and preserving the environment. More detailed information for each soil is given in the section "Planning the Use and Management of the Soils."

Following the name of each mapping unit is the symbol that identifies the unit on the detailed soil map. Each mapping unit description includes general facts about the soil. The potential of the soil for various major land uses is estimated. The principal hazards and limitations are indicated, and the management concerns and practices for the major uses are discussed.

A mapping unit represents an area on the landscape and consists of a dominant soil or soils for which the unit is named. Most mapping units have one dominant soil, but some have two or more dominant soils. A mapping unit commonly includes small, scattered areas of other soils. The properties of some included soils can differ substantially from those of the dominant soil or soils and thus greatly influence the use of the dominant soil. How the included soils may affect the use and management of the mapping unit is discussed.

The acreage and proportionate extent of each mapping unit are given in table 4, and additional information on each unit is given in interpretive tables in other sections (see "Summary of Tables"). Many of the terms used in describing soils are defined in the Glossary.

Alligator Series

The Alligator series consists of poorly drained, level soils in slack-water areas on bottom lands of the Mississippi River. These soils formed in thick beds of predominantly clayey sediments.

In a representative profile, the surface layer is very dark grayish brown clay about 4 inches thick. The subsoil is gray, mottled clay that extends to a depth of about 48 inches. The material beneath is gray, mottled clay and silty clay loam.

Alligator soils are moderate to high in natural fertility, and the content of organic matter is medium to low. Permeability is very slow, and the available water capacity is high. These soils respond well to fertilizer. Because of the high content of clay in the surface layer, good tilth is difficult to maintain and seedbeds are difficult to prepare. These soils clod if plowed when wet. They shrink and crack when they dry, and when wet they expand and the cracks seal.

If these soils are drained and well managed, they are suited to most crops grown in the county. Most of the acreage is cultivated.

Representative profile of Alligator clay, frequently flooded, in a moist, cultivated area in NW1/4NW1/4SE1/4 sec. 35, T. 3 N, R. 3 E.

Ap—0 to 4 inches, very dark grayish brown (10YR 3/2) clay; weak fine granular structure; firm, plastic; common fine roots; medium acid; abrupt smooth boundary.

B21g—4 to 10 inches, gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm, plastic; common fine roots; few fine pores; strongly acid; clear smooth boundary.

B22g—10 to 20 inches, gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; firm, plastic; few fine and medium roots; few fine pores; few fine dark concretions; few medium slickensides that do not intersect; very strongly acid; clear smooth boundary.

B23g—20 to 36 inches, gray (10YR 6/1) clay; common medium and fine distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm, plastic; few fine and medium roots; few fine pores; few fine dark concretions; common medium slickensides that do not intersect; very strongly acid; clear smooth boundary.

B24g—36 to 48 inches, gray (10YR 6/1) clay; common fine distinct yellowish brown mottles; weak medium subangular blocky structure; firm, plastic; few fine roots; few fine pores; few fine dark concretions; few medium slickensides that do not intersect; very strongly acid; clear smooth boundary.

C1g—48 to 63 inches, gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles; structureless, massive; firm, plastic; few fine roots; common fine dark concretions; slightly acid; gradual wavy boundary.

C2g—63 to 78 inches, gray (10YR 5/1) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; structureless, massive; few dark concretions; neutral.

The A horizon is very dark grayish brown or very dark gray clay to silty clay loam. The B horizon is dark gray or gray and is mottled yellowish brown, strong brown, or dark yellowish brown. The C horizon is dark gray or gray clay, silty clay, or silty clay loam. The A horizon is slightly acid to strongly acid, the B horizon is strongly acid to very strongly acid, and the C horizon is slightly acid or neutral.

Alligator soils are chiefly associated with Earle, Newellton, Sharkey, and Tunica soils. They closely resemble Sharkey soils but are more acid to a depth of 40 inches or more. Alligator soils formed in thicker beds of clay than Earle, Newellton, and Tunica soils.

Alligator clay (Ac).—This soil generally is in large areas on broad slack-water flats. Areas range up to several hundred acres in size. Slopes are less than 1 percent. The profile of this soil is similar to the one described as representative for the series. Included in mapping were small areas of gently undulating soils and spots of Sharkey, Earle, Tunica, and Newellton soils.

This soil is suited to farming, but excess water is a severe hazard. Fieldwork is frequently delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans and cotton. Grain sorghum and rice also are suited. Winter small grain can be grown if surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-1; woodland group 2w6.

Alligator clay, frequently flooded (Ag)—This soil is in slack-water areas, mainly along the L'Anguille River. Individual areas range from about 50 to 600 acres in size. Slopes are less than 1 percent. The profile of this soil is similar to the one described as representative for the series, but the surface layer ranges from clay to silty clay loam. This soil is flooded for periods of 1 week to 4 months, generally between January and June. Floods occur about 9 years in 10. Included in mapping were small areas of undulating soils, spots of Sharkey and Tunica soils, and small areas where the surface layer is silty clay or silty clay loam.

This soil is suited to farming, but flooding is a very severe hazard. Only warm-season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crops are soybeans and grain sorghum. Bermudagrass is a better suited pasture plant than are other plants. Capability unit IVw-1; woodland group 3w6.

Bonn Series

The Bonn series consists of poorly drained, level soils on upland flats. These soils formed in thick deposits of loess.

In a representative profile, the surface layer is grayish brown silt loam about 4 inches thick. The subsurface layer is light brownish gray silt loam. The subsoil is grayish brown, light brownish gray, and gray, mottled silty clay loam that extends to a depth of about 59 inches. The material beneath is gray, mottled silty clay.

Bonn soils are low in natural fertility. Content of organic matter is low. Permeability is very slow, and the available water capacity is low.

Because of the high content of sodium and magnesium, at levels toxic to most plants, these soils are poorly suited to cultivated crops. They are better suited to pasture and wildlife habitat than to other uses.

The Bonn soils in Lee County are mapped only as part of a complex with Foley soils. The mapping unit is described under the heading "Foley Series."

Representative profile of Bonn silt loam in a moist, cultivated area of Foley-Bonn complex in NE1/4NE1/4NE1/4 sec. 24, T. 2 N., R. 1 W.

Ap—0 to 4 inches, grayish brown (10YR 5/2) silt loam, weak fine subangular blocky structure; friable; many fine roots; common fine black concretions that are more numerous on the surface; medium acid; abrupt smooth boundary.

A2g—4 to 8 inches, light brownish gray (10YR 6/2) silt loam; moderate medium subangular blocky structure; friable; common fine roots; few fine pores; common fine black concretions; some root channels filled with light gray (10YR 7/1) silt; neutral; clear smooth boundary.

B21tg & A2—8 to 14 inches, grayish brown (10YR 5/2) silty clay loam; few fine distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; friable; patchy clay films; few fine pores; few fine black concretions; gray (10YR 7/1) silt on faces of peds and in some root holes; vertical veins of gray silt loam; few fine black concretions; moderately alkaline; clear smooth boundary.

B22tg & A2—14 to 27 inches, light brownish gray (10YR 6/2) silty clay loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak coarse primatic structure that breaks to moderate medium subangular blocky structure; firm; clay films on faces of peds and in some pores; few fine pores; few fine black concretions; vertical veins of light gray (10YR 7/1) silt; moderately alkaline; clear smooth boundary.

B23tg—27 to 42 inches, gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; clay films on faces of peds and in pores; few fine pores; common fine and medium black concretions; few calcium concretions; moderately alkaline; clear smooth boundary.

B24tg—42 to 59 inches, gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; firm; patchy clay films on faces of peds; few fine pores; common medium and fine black concretions; few medium calcium concretions; moderately alkaline; clear smooth boundary.

Cg—59 to 75 inches, gray (10YR 6/1) silty clay; many medium and coarse dark yellowish brown (10YR 4/4) mottles; massive; firm; many fine and medium black concretions; few medium calcium concretions; slightly alkaline.

The Ap horizon is dark grayish brown to light brownish gray. The B horizon is light brownish gray, grayish brown, or gray. The C horizon is silt loam, silty clay loam, or silty clay. The A horizon is medium acid to neutral. The B horizon is moderately alkaline or slightly alkaline.

Bonn soils are chiefly associated with Foley and Calhoun soils. They have a high content of sodium and magnesium nearer to the surface than Foley soils. They are higher in sodium and magnesium throughout the B and C horizons than the Calhoun soils.

Bruno Series

The Bruno series consists of excessively drained, gently undulating soils at the highest local elevations on natural levees. These soils formed in sandy and loamy sediments.

In a representative profile, the surface layer is dark grayish brown loamy fine sand about 6 inches thick. The material beneath is stratified grayish brown, dark grayish brown, and light brownish gray silt loam, loamy fine sand, fine sand, and sand.

Bruno soils are low in natural fertility, and the content of organic matter is low. Permeability is rapid. The available water capacity is low. The soils respond

moderately well to fertilizer, and good tilth is easy to maintain. These soils warm early in spring and can be planted early, but they are droughty and in some areas are subject to frequent flooding. They are poorly suited to farming, and only about half of the acreage is cultivated.

Representative profile of Bruno loamy fine sand in an area of Bruno soils, frequently flooded, in a moist cultivated area on Island No. 58 (survey incomplete; approximate location, by extension of existing section lines in NW1/4SW1/4NW1/4 sec. 6, T. 1 S., R. 6 E.).

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) loamy fine sand; weak fine granular structure; friable; common fine roots; mildly alkaline; abrupt smooth boundary.

C1—6 to 16 inches, dark grayish brown (10YR 4/2) loamy fine sand; single grained; loose; few fine roots; few lenses of silt loam 1/2 inch thick; mildly alkaline; abrupt smooth boundary.

C2—16 to 20 inches, dark grayish brown (10YR 4/2) silt loam; few fine yellowish brown stains along some roots; weak coarse subangular blocky structure; friable; common fine roots; mildly alkaline; abrupt smooth boundary.

C3—20 to 29 inches, grayish brown (10YR 5/2) fine sand; single grained; loose; few fine roots; mildly alkaline; gradual wavy boundary.

C4—29 to 52 inches, light brownish gray (10YR 6/2) fine sand; single grained; loose; common black grains of sand; mildly alkaline; gradual smooth boundary.

C5—52 to 70 inches, light brownish gray (10YR 6/2) sand; single grained; loose; common black and yellow grains of sand; mildly alkaline.

The Ap horizon is dark grayish brown or dark brown loamy fine sand to sand. The C horizon is dark grayish brown, grayish brown, or light brownish gray, stratified loamy fine sand, silt loam, fine sand, and sand. Reaction ranges from slightly acid to moderately alkaline throughout the profile.

Bruno soils are chiefly associated with Robinsonville and Commerce soils, but they are coarser textured and better drained than these soils.

Bruno fine sandy loam, gently undulating (BrB).—This soil is in areas where short slopes alternate with narrow depressions. Individual areas generally range from 10 to 100 acres in size. Slope ranges from 0 to 3 percent. Included in the mapping are spots of Commerce and Robinsonville soils.

This soil is poorly suited to farming. Soybeans is the crop most commonly grown, but winter small grain is grown. Droughtiness is a very severe limitation for warm-season crops. Soil blowing is a severe hazard in spring if the soil is bare. Crops should be those that leave a large amount of residue. Bermudagrass is a suitable pasture plant. Capability unit IIIs-1; woodland group 2s5.

Bruno soils, frequently flooded (Bs).—This undifferentiated group consists of level and gently undulating soils at the higher elevations bordering the Mississippi River and its abandoned channels. Generally, the soils are in areas where long, narrow depressions alternate with low ridges that rise 3 to 8 feet above the swales. Slope is less than 3 percent. The profile is the one described as representative of the series, but the surface layer ranges from loamy fine sand to sand.

These soils are in areas 10 to 400 acres in size between the levee and the Mississippi River. They are flooded for periods of 3 to 95 days, generally between January and June. Floods occur on an average of about once every 2 years. Included in mapping were spots of Robinsonville and Commerce soils.

These Bruno soils are poorly suited to farming. Soybeans is the crop most commonly grown, but winter small grain is grown in some areas. Droughtiness is a very severe limitation for warm-season crops, and cool-season crops are likely to be lost to floods. Soil blowing is a severe hazard in spring if the soil is bare. Crops should be those that leave a large amount of residue. Bermudagrass is a suitable pasture plant. Capability unit IVw-2; woodland group 2s5.

Calhoun Series

The Calhoun series consists of poorly drained soils in level areas and in depressions, on uplands. These soils formed in thick deposits of loess.

In a representative profile, the surface layer is dark grayish brown silt loam about 5 inches thick. The subsurface layer is gray, mottled silt loam about 12 inches thick. The upper 12 inches of the subsoil is gray, mottled silty clay loam, and the lower 18 inches is light brownish gray, mottled silt loam. Below this is light brownish gray, mottled silt loam that extends to a depth of 68 inches or more.

Calhoun soils are moderate in natural fertility. Organic matter content is low. Permeability is slow, and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Calhoun silt loam in a moist, cultivated area in SE1/4NW1/4SW1/4 sec. 28, T. 3 N., R. 2 E.

Ap—0 to 5 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

A2g—5 to 18 inches, gray (10YR 6/1) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; few fine pores; few fine black concretions; very strongly acid; clear irregular boundary.

B2tg—18 to 30 inches, gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; patchy clay films; tongues 1/2 to 2 inches wide extending from horizon above; few fine roots; common fine black concretions; very strongly acid; clear smooth boundary.

B3g—30 to 48 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; friable; few fine roots; few fine pores; common fine black concretions; very strongly acid; clear irregular boundary.

Cg—48 to 68 inches, light brownish gray (10YR 6/2) silt loam; few medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; few fine dark concretions; medium acid.

The Ap horizon is dark grayish brown, brown, or grayish brown. The A2 horizon is gray or light gray. The B horizon is gray or light brownish

gray silt loam or silty clay loam. The A horizon is strongly acid to slightly acid, the B2 horizon is very strongly acid or strongly acid, and the C horizon is medium acid to mildly alkaline.

Calhoun soils are chiefly associated with Calloway, Henry, Foley, and Bonn soils. They lack the fragipan that Calloway and Henry soils have. Calhoun soils have a grayer B horizon than Calloway soils and lack the A'2 horizon. They lack the high content of sodium in the B and C horizons that Foley and Bonn soils have.

Calhoun silt loam (Ca).—This soil is on broad, upland flats. Individual areas range from about 20 to 80 acres in size. Slope is less than 1 percent. Included in mapping were spots of Calloway, Henry, Foley, and Bonn soils.

This soil is suited to farming, but wetness is a severe hazard. Fieldwork is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans and cotton. Grain sorghum and rice also are suited, and winter small grain can be grown if surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-2; woodland group 3w9.

Calloway Series

The Calloway series consists of somewhat poorly drained, level and nearly level soils on uplands. These soils formed in thick deposits of loess.

In a representative profile, the surface layer is dark grayish brown silt loam about 8 inches thick. The upper 15 inches of the subsoil is yellowish brown and light brownish gray, mottled silt loam. The lower 34 inches is a firm, brittle, mottled silt loam fragipan. The upper 7 inches of the pan is brown. The next 17 inches is light brownish gray, and the lower 10 inches is dark yellowish brown. The material beneath is dark yellowish brown, mottled silt loam.

Calloway soils are moderate in natural fertility. Organic matter content is low. Permeability is slow, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Calloway silt loam, 0 to 1 percent slopes, in a moist, cultivated area in SE1/4NW1/4NE1/4 sec. 29, T. 3 N., R. 3 E.

Ap1—0 to 4 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

Ap2—4 to 8 inches, dark grayish brown (10YR 4/2) silt loam; weak coarse subangular blocky structure; friable; compact; many fine roots; slightly acid; abrupt smooth boundary.

B—8 to 19 inches, yellowish brown (10YR 5/4) silt loam; common fine distinct light brownish gray mottles; weak fine subangular blocky structure; friable; common fine roots; common fine pores; few fine black concretions; very strongly acid; clear smooth boundary.

A'2—19 to 23 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; brittle; many fine pores; many fine black concretions; light gray coatings on some peds; very strongly acid; clear smooth boundary.

B'x1—23 to 30 inches, brown (10YR 5/3) silt loam; common fine faint yellowish brown mottles; moderate coarse prismatic structure that breaks to moderate medium subangular blocky structure; firm; compact, brittle; patchy clay films; few fine roots; few fine pores; common medium black concretions; some peds coated with light gray silt; very strongly acid; gradual wavy boundary.

B'x2—30 to 47 inches, light brownish gray (10YR 6/2) silt loam; many medium distinct dark yellowish brown (10YR 4/4) and common medium yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure that breaks into medium subangular blocky structure; firm; compact, brittle; patchy clay films; few fine pores; common medium and fine black concretions; thick gray silt coatings in cracks and on peds; polygonal cracks filled with gray silty material; very strongly acid; gradual wavy boundary.

B'x3—47 to 57 inches, dark yellowish brown (10YR 4/4) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak coarse prismatic structure that breaks into moderate medium subangular blocky stucture; firm; compact, brittle; thin patchy clay films; few fine pores; common medium black concretions; thick gray silt coatings in cracks filled with gray silty material; strongly acid; gradual wavy boundary.

C—57 to 74 inches, dark yellowish brown (10YR 4/4) silt loam; common fine distinct light brownish gray (10YR 6/2) mottles; massive; friable; few fine pores; common medium black concretions; neutral.

The Ap horizon is dark grayish brown to brown. The B horizon is yellowish brown to grayish brown. The B'x horizon is brown, light brownish gray, or dark yellowish brown silt loam or silty clay loam. The A horizon is strongly acid to slightly acid; the B, A'2, and B'x horizons are strongly acid or very strongly acid; and the C horizon is medium acid to neutral.

Calloway soils are chiefly associated with Grenada, Calhoun, and Henry soils. They have an A'2 horizon and a fragipan that the Calhoun soils lack, and they have a browner B horizon. They have mottles in the upper 10 inches of the B horizon that Grenada soils lack. In contrast with Henry soils, they are browner, have a B horizon above the fragipan, and have an A'2 horizon that tongues into the B'x horizon.

Calloway silt loam, 0 to 1 percent slopes (CbA).—This somewhat poorly drained soil is on uplands. Individual areas range from 20 to 200 acres in size. The profile of this soil is the one described as representative for the series. Included in mapping were spots of Grenada, Calhoun, and Henry soils.

This soil is suited to farming, but wetness is a moderate hazard. Fieldwork is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans and cotton. Grain sorghum and rice (fig. 1) also are suited, and winter small grain can be grown if surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-1; woodland group 2w8.

Calloway silt loam, 1 to 3 percent slopes (CbB).—This somewhat poorly drained soil is on uplands. Individual areas range from 20 to 80 acres in size. The profile of this soil is similar to the one described as representative for the series, but erosion has removed some of the original surface layer. Included in mapping were spots of Grenada, Calhoun, and Henry soils.

This soil is suited to farming, but runoff is medium and erosion is a moderate hazard on long slopes. In less sloping areas wetness is a moderate hazard. Clean-tilled crops that leave large amounts of residue can be grown year after year if the soil is cultivated on the contour, terraced on long slopes, adequately drained in less sloping areas, and otherwise well managed.

The main crops are cotton and soybeans. Corn, grain sorghum, rice, and winter small grain also are suited. Okra is a suitable truck crop. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIe-2; woodland group 2w8.

Commerce Series

The Commerce series consists of somewhat poorly drained, level soils on the lower part of young natural levees. These soils formed in stratified beds of loamy sediments.

In a representative profile, the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil is grayish brown, mottled silty clay loam that extends to a depth of about 28 inches. The material beneath is dark grayish brown and grayish brown, mottled silt loam.

Commerce soils are high in natural fertility. Content of organic matter is medium to low. Permeability is moderately slow, and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Commerce silt loam in a moist, cultivated area in SE1/4SE1/4SE1/4 sec. 14, T. 3 N., R. 5 E.

Ap1—0 to 5 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; neutral; abrupt smooth boundary.

Ap2—5 to 10 inches, dark grayish brown (10YR 4/2) silt loam; platy structure in the upper part and weak fine granular in the lower part; friable; common fine roots; neutral; clear smooth boundary.

B2—10 to 28 inches, grayish brown (10YR 5/2) silty clay loam; common medium distinct dark brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; firm; few fine roots; common fine pores; few fine dark concretions; slightly acid; clear smooth boundary.

C1—28 to 42 inches, dark grayish brown (10YR 4/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure that breaks to weak fine granular; friable; few fine dark concretions; neutral; clear smooth boundary.

C2—42 to 60 inches, grayish brown (10YR 5/2) silt loam; common fine distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; few fine roots; few fine pores; few fine dark concretions; neutral; gradual smooth boundary.

C3—60 to 72 inches, grayish brown (10YR 5/2) silt loam; common fine distinct yellowish brown (10YR 5/4) mottles; massive; friable; common fine pores; few fine dark concretions; neutral.

The A horizon is dark grayish brown or grayish brown fine sandy loam to silty clay loam. The B horizon is dark grayish brown or grayish brown silt loam or silty clay loam. In some areas the C horizon is gray to dark grayish brown, stratified very fine sandy loam to silty clay loam. The A horizon is slightly acid to mildly alkaline, and the B and C horizons are neutral to moderately alkaline.

Commerce soils are chiefly associated with Bruno, Robinsonville, and Newellton soils. They are more poorly drained, grayer, and less permeable than Bruno and Robinsonville soils. They have less clay in the B horizon than the Newellton soils.

Commerce silt loam (Cm).—This soil is on the lower part of natural levees. Individual areas range from about 50 to 400 acres in size. Slope is less than 1 percent. The profile of this soil is the one described as representative for the series. Included in mapping were spots of Bruno, Robinsonville, and Newellton soils and small areas of gently undulating soil.

This soil is well suited to farming. Wetness early in spring may delay planting. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans and cotton. Corn, grain sorghum, alfalfa, and winter small grain, and such truck crops as okra, green beans, and tomatoes also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-2; woodland group 1w5.

Commerce soils, frequently flooded (Cs).—This undifferentiated group consists of level soils on the lower part of natural levees. Individual areas range from about 20 to 400 acres in size. Slope is less than 3 percent. The profile of these soils is similar to the one described as representative for the series, but the surface layer ranges from fine sandy loam to silty clay loam. These soils are between the levee and the Mississippi River and are flooded for periods of 3 to 95 days, generally between January and June. Floods occur on an average of about once every 2 years. Included in mapping were spots of Bruno, Robinsonville, and Newellton soils.

These soils are suited to farming, but flooding is a very severe hazard (fig. 2). Only warm-season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crops are soybeans and grain sorghum. Bermudagrass is a better suited pasture plant than other plants. Capability unit IVw-3; woodland group 1w5.

Convent Series

The Convent series consists of somewhat poorly drained, level soils on young natural levees, and on alluvial fans at the foot of Crowley Ridge. These soils formed in loamy sediments.

In a representative profile the surface layer is dark brown silt loam about 14 inches thick. The next 46 inches is stratified grayish brown, light brownish gray, and gray, mottled silt loam. The material beneath is gray, mottled silty clay loam.

Convent soils are high in natural fertility. Content of organic matter is medium to low. Permeability is moderate, and the available water capacity is high. These

soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. About half of the acreage is cultivated. Part of the area is within the St. Francis National Forest.

Representative profile of Convent silt loam, occasionally flooded, in a moist, cultivated area in SE1/4SW1/4NE1/4 sec. 24, T. 1 N., R. 3 E.

Ap1—0 to 6 inches, dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

Ap2—6 to 14 inches, dark brown (10YR 4/3) silt loam; weak coarse subangular blocky structure; friable; common fine roots; few fine pores; slightly acid; abrupt smooth boundary.

C1—14 to 21 inches, grayish brown (10YR 5/2) silt loam; many coarse distinct brown (10YR 5/3) mottles; few fine roots; few fine pores; neutral; clear smooth boundary.

C2—21 to 26 inches, light brownish gray (10YR 6/2) silt loam; many medium and fine yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; few fine pores; few fine dark concretions; neutral; clear smooth boundary.

C3—26 to 43 inches, light brownish gray (10YR 6/2) silt loam; common coarse yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; common fine pores; few fine dark concretions; bedding planes; mildly alkaline; abrupt smooth boundary.

C4g—43 to 60 inches, gray (10YR 5/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; massive; firm; few fine dark concretions; neutral; diffuse boundary.

C5g—60 to 72 inches, gray (10YR 5/1) silty clay loam; common fine yellowish brown (10YR 5/6) and light gray (10YR 7/1) mottles; massive; firm; common fine dark concretions; neutral.

The A horizon is dark brown to brown. The C5g horizon is silt loam or silty clay loam. The A horizon is medium acid to neutral, and the C horizon is neutral to moderately alkaline.

Convent soils are chiefly associated with Falaya soils. They are medium acid to moderately alkaline in reaction, and Falaya soils are medium acid to very strongly acid. Convent soils have a thicker A horizon than Falaya soils.

Convent silt loam, occasionally flooded (Cv).—This soil is on young natural levees and on alluvial fans at the foot of Crowley Ridge. Individual areas range from about 50 to 200 acres in size. Slope is less than 1 percent. Included in mapping were small spots of Falaya soil.

This soil is well suited to farming. Wetness in early spring may delay planting. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans and cotton. Corn, grain sorghum, alfalfa, and winter small grain and such truck crops as okra, green beans, and tomatoes also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-2; woodland group 1w5.

Dubbs Series

The Dubbs series consists of well drained, gently undulating soils on older natural levees along bayous and abandoned river channels. These soils formed in stratified beds of loamy sediments.

In a representative profile, the surface layer is dark grayish brown loam about 6 inches thick. The upper 31 inches of the subsoil is dark brown and brown silty clay loam that is mottled in the lower part. The lower 17 inches is yellowish brown, mottled silt loam. The material beneath is light brownish gray loamy fine sand.

Dubbs soils are high in natural fertiliy. Content of organic matter is medium to low. Permeability is moderate, and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Dubbs loam, gently undulating, in a moist, cultivated area in NW1/4SW1/4NE1/4 sec. 16, T. 3 N., R. 5 E.

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) loam; weak fine granular structure; friable; many fine roots; strongly acid, abrupt smooth boundary.

B21t—6 to 15 inches, dark brown (10YR 4/3) silty clay loam; moderate medium angular blocky structure; firm; continuous clay films on ped faces; common fine roots; few fine pores; ped faces darker than inside; strongly acid; clear smooth boundary.

B22t—15 to 26 inches, brown (10YR 5/3) silty clay loam; moderate medium subangular blocky structure; firm; patchy clay films on ped faces; root holes lined with clay; common fine roots; common fine pores; strongly acid; clear smooth boundary.

B23t—26 to 37 inches, brown (10YR 5/3) silty clay loam; few fine distinct light brownish gray mottles; moderate medium subangular blocky structure; firm; patchy clay films; few fine roots; few fine pores; strongly acid; clear smooth boundary.

B3—37 to 54 inches, yellowish brown (10YR 5/4) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; few fine roots; few fine pores; medium acid; clear smooth boundary.

C—54 to 72 inches, light brownish gray (10YR 6/2) loamy fine sand; massive; friable; slightly acid.

The Ap horizon is dark grayish brown, dark brown, or brown. The B horizon is dark brown to yellowish brown and is not mottled in places. The B2 horizon is silty clay loam or silt loam. The B3 horizon is silt loam to fine sandy loam. The A horizon is strongly acid to neutral, the B2 horizon is strongly acid or very strongly acid, and the B3 horizon is strongly acid or medium acid.

Dubbs soils are chiefly associated with Dundee soils. They have less mottling and are better drained than the Dundee soils.

Dubbs loam, gently undulating (DsB).—This soil is in areas where narrow swales alternate with low ridges that rise 2 to 5 feet above the swales. The areas generally are on the tops and slopes of natural levees. Individual areas range from 10 to 100 acres in size. Slope is less than 3 percent. Included in mapping were a few small areas of level soils and spots of Dundee soils.

This soil is suited to farming, but runoff is slow to medium, and erosion is a moderate hazard on the upper part of slopes. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crops are cotton and soybeans. Corn, grain sorghum, peanuts, and winter small grain and such truck crops as okra, green beans, potatoes, sweet corn, tomatoes, strawberries, and melons also are suited. Adapted pasture plants are bermudagrass and white clover. Capability unit IIe-1; woodland group 2o4.

Dundee Series

The Dundee series consists of somewhat poorly drained soils on the lower part of old natural levees along bayous and abandoned river channels. These soils formed in stratified beds of loamy sediments.

In a representative profile the surface layer is dark grayish brown silt loam about 12 inches thick and is mottled in the lower part. The upper part of the subsoil is grayish brown, mottled silty clay loam. The lower part is light brownish gray, mottled silt loam that extends to a depth of about 46 inches. The material beneath is gray, mottled silty clay and clay.

Dundee soils are high in natural fertility. Content of organic matter is medium to low. Permeability is moderately slow, and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Dundee silt loam in a moist, cultivated area in NW1/4SE1/4NE1/4 sec. 34, T. 3 N., R. 4 E.

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

A1—6 to 12 inches, dark grayish brown (10YR 4/2) silt loam; few fine distinct yellowish brown mottles; weak coarse that breaks to fine subangular blocky structure; friable; common fine roots; few fine pores; strongly acid; abrupt smooth boundary.

B21tg—12 to 29 inches, grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; moderate fine and medium subangular blocky structure; firm; continuous clay films on faces of peds; faces of peds darker than crushed mass; root holes coated with clay; few fine roots; fine roots follow along ped faces; few fine pores; few fine dark concretions; strongly acid; clear smooth boundary.

B22tg—29 to 36 inches, grayish brown (10YR 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; continuous clay films on faces of peds; ped faces darker than crushed mass; root holes coated with clay; few fine roots; few fine pores; few fine dark concretions; strongly acid; clear smooth boundary.

B3tg—36 to 46 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; firm; few patchy clay films; few fine roots; few fine pores; few fine dark concretions; strongly acid; gradual smooth boundary.

C1g—46 to 59 inches, gray (10YR 5/1) silty clay; common medium distinct dark yellowish brown (10YR 4/4) mottles; structureless, massive; firm; few fine dark concretions; strongly acid; gradual wavy boundary.

C2g—59 to 72 inches, gray (10YR 6/1) clay; common medium distinct dark yellowish brown (10YR 4/4) mottles; structureless, massive; medium acid.

The A horizon is dark grayish brown to brown. The B2 horizon is grayish brown silty clay loam or silt loam. The C horizon is light brownish gray to gray clay to fine sandy loam. The A horizon is strongly acid or medium acid, the B horizon is strongly acid or very strongly acid, and the C horizon is slightly acid to very strongly acid.

Dundee soils are chiefly associated with Dubbs soils. They are grayer and more poorly drained than Dubbs soils.

Dundee silt loam (Du).—This soil is on the lower part of natural levees. Individual areas range from about 20 to 300 acres in size. Slope is less than 1 percent. Included in mapping were a few small areas of undulating soils and spots of Dubbs soils.

This soil is well suited to farming, but wetness is a moderate hazard. Fieldwork is commonly delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained.

The main crops are cotton and soybeans. Corn, peanuts, grain sorghum, and winter small grains and such truck crops as okra, green beans, potatoes, sweet corn, tomatoes, strawberries, and melons also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-2; woodland group 2w5.

Earle Series

The Earle series consists of somewhat poorly drained, gently undulating soils at high elevations in slack-water areas. These soils formed in thin beds of clayey sediments over coarser textured sediments.

In a representative profile, the surface layer is dark grayish brown silty clay about 5 inches thick. The subsoil is gray, mottled clay that extends to a depth of about 27 inches. The material beneath is gray, mottled silt loam.

Earle soils are moderate to high in natural fertility, and the content of organic matter is medium to low. Permeability is very slow, and the available water capacity is high. These soils respond well to fertilizer. Because of the high content of clay in the surface layer, good tilth is difficult to maintain and seedbeds are difficult to prepare. These soils clod if plowed when wet. They shrink and crack when they dry, and when wet they expand and the cracks seal.

These soils are suited to most crops grown in the county. Most of the acreage is cultivated.

Representative profile of Earle silty clay, gently undulating, in a moist, cultivated area in NE1/4NW1/4NE1/4 sec. 19, T. 3 N., R. 5 E.

Ap—0 to 5 inches, dark grayish brown (10YR 4/2) silty clay; moderate medium and fine subangular blocky structure; firm, plastic; many fine roots; few fine pores; medium acid; abrupt smooth boundary.

Bg—5 to 27 inches, gray (10YR 5/1) clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm, plastic; common pressure faces; few fine roots; few fine dark concretions; very strongly acid; clear wavy boundary.

IIC1g—27 to 46 inches, gray (10YR 5/1) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; few fine dark concretions; strongly acid; gradual wavy boundary.

IIC2g—46 to 67 inches, gray (10YR 5/1) silt loam; common medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; few fine dark concretions; strongly acid; gradual wavy boundary.

IIC3g—67 to 80 inches, gray (10YR 5/1) silt loam; many medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; few fine dark concretions; medium acid.

The Ap horizon is dark grayish brown or very dark grayish brown. The B horizon is gray or dark gray. The C horizon is silt loam to sandy loam. The A horizon is very strongly acid to medium acid. The B, IIC1g, and IIC2g horizons are strongly acid or very strongly acid, and the IIC3g horizon is strongly acid or medium acid. Depth to loamy sediments ranges from 20 to 36 inches.

Earle soils are chiefly associated with Alligator and Sharkey soils. They formed in thinner beds of clay than Sharkey and Alligator soils.

Earle silty clay, gently undulating (EaB).—This soil is in broad slack-water areas where long, narrow swales alternate with low ridges that rise 2 to 5 feet above the swales. Individual areas range from 20 to 500 acres in size. Slope is less than 3 percent. Included in the mapping were spots of Alligator and Sharkey soils.

This soil is suited to farming, but wetness is a severe hazard. Water accumulates in the undulating swales, and fieldwork is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is drained and good management is used.

The main crops are cotton and soybeans. Grain sorghum is also suited. Winter small grain can be grown where surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-1; woodland group 2w6.

Falaya Series

The Falaya series consists of somewhat poorly drained, level soils on flood plains of local streams. These soils formed in loamy alluvium washed from deposits of loess.

In a representative profile, the surface layer is dark brown silt loam about 6 inches thick. The upper 9 inches of the material beneath is dark yellowish brown, mottled silt loam, and the lower 53 inches is gray or shades of gray, mottled silt loam.

Falaya soils are moderate in natural fertility. Content of organic matter is low. Permeability is moderately slow and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Falaya silt loam, occasionally flooded, in a moist, cultivated area in NE1/4SE1/4NE1/4 sec. 12, T. 1 N., R. 3 E.

Ap—0 to 6 inches, brown (10YR 4/3) silt loam; weak fine granular structure; friable; common fine roots; medium acid; abrupt smooth boundary.

C1—6 to 15 inches, dark yellowish brown (10YR 4/4) silt loam; few medium distinct light brownish gray (10YR 6/2) mottles; weak coarse subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; clear wavy boundary.

C2g—15 to 24 inches, light brownish gray (10YR 6/2) silt loam; common medium and large dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; clear wavy boundary.

C3g—24 to 36 inches, light gray (10YR 7/2) silt loam; common coarse distinct yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; common fine pores; few fine dark concretions; strongly acid; clear wavy boundary.

C4g—36 to 51 inches, light gray (10YR 6/1) silt loam; common medium and coarse distinct dark yellowish brown mottles; massive; friable; common fine dark concretions; strongly acid; diffuse boundary.

C5g—51 to 68 inches, gray (10YR 7/1) silt loam; many coarse distinct dark yellowish brown mottles; massive; friable; common fine dark concretions; strongly acid.

The Ap horizon is brown or dark grayish brown. Reaction is strongly acid or very strongly acid. Where limed, the surface layer is slightly acid or neutral.

Falaya soils are mainly associated with Zachary and Convent soils. They are better drained than Zachary soils and lack the abrupt textural change from the A horizon to the B horizon. Falaya soils are acid and Convent soils are nonacid in the 40-inch control section.

Falaya silt loam, occasionally flooded (Fa).—This soil is on flood plains. Individual areas range from about 15 to 180 acres in size. Slope is less than 1 percent. Included in mapping were spots of Zachary and Convent soils.

This soil is suited to farming, but wetness is a moderate hazard. Fieldwork is commonly delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are cotton and soybeans. Grain sorghum and winter small grain also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-2; woodland group 1w8.

Fluvaquents

Fluvaquents, frequently flooded (Ff).—This unit consists of somewhat poorly drained and poorly drained soils in borrow pits 6 to 15 feet deep, mainly on the riverside of levees. These soils are subject to frequent flooding. They occur chiefly as narrow strips that parallel levees where soil material has been excavated for use in constructing the levees. The pits have been partly filled with 10 to 15 inches of stratified young sediments. These sediments were deposited by water trapped during floods after the pits were excavated, during the period 1935 to 1940.

Fluvaquents are young soils that are similar in some respects to the Commerce, Newellton, Sharkey, and Tunica soils. Some of the pits hold water much of the year and are well suited to habitat for wetland wildlife. Others are dry most of the year and are wooded with willow and cottonwood trees. Some are grazed by cattle. In some pits the walls have been smoothed to make them accessible to farm equipment, and catch crops of soybeans or grain sorghum are grown. Not placed in a capability unit or a woodland group.

Foley Series

The Foley series consists of poorly drained, level soils on upland flats. These soils formed in loamy thick deposits of loess.

In a representative profile the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is gray, mottled silt loam about 6 inches thick. The upper 7 inches of the subsoil is light brownish gray, mottled silt loam; the next 27 inches is light brownish gray, mottled silty clay loam; and the lower 16 inches is light brownish gray, mottled silt loam. The material beneath is light brownish gray, mottled silt loam.

Foley soils are moderate in natural fertility. Content of organic matter is low. Permeability is slow, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. Because of the high content of sodium and magnesium in the lower part of the subsoil, the effective rooting depth is limited.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Foley silt loam in a moist, cultivated area of Foley-Bonn complex in the NE1/4NW1/4NW1/4 sec. 9, T. 1 N., R. 1 E.

Ap—0 to 4 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

A2g—4 to 10 inches, gray (10YR 6/1) silt loam; common medium distinct yellowish brown (10YR 5/6) and few medium distinct dark gray (10YR 4/1) mottles; weak coarse subangular blocky structure; friable; few fine roots; few fine pores, few fine black concretions; medium acid; abrupt smooth boundary.

B21tg—10 to 17 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; few root channels lined with clay; few fine roots; few fine pores; few fine black concretions; silt coats on ped faces; medium acid; clear smooth boundary.

B22tg—17 to 25 inches, light brownish gray (10YR 6/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; common patchy clay films; few fine roots; few fine pores; few small dark concretions; silt coats on faces of peds; strongly acid; clear smooth boundary.

B23tg—25 to 44 inches, light brownish gray (2.5Y 6/2) silty clay loam; common medium fine yellowish brown (10YR 5/6) mottles; moderate medium prismatic structure that breaks to moderate medium subangular blocky structure; firm; few patchy clay films on faces of peds; some pores lined with clay; black stains on faces of some peds; moderately alkaline; diffuse boundary.

B3g—44 to 60 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate coarse subangular blocky structure; firm; common fine black concretions; moderately alkaline; clear smooth boundary.

C1g—60 to 74 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown mottles; massive; friable; common small black concretions; few calcium concretions; moderately alkaline; diffuse boundary.

C2g—74 to 80 inches, light brownish gray (10YR 6/2) silt loam; common fine yellowish brown mottles; massive; friable; many fine black concretions; moderately alkaline.

The Ap horizon is very dark grayish brown to grayish brown. The A2g horizon is gray or light gray. The B horizon is light brownish gray or grayish brown silt loam or silty clay loam. The A horizon is medium acid or strongly acid. The B horizon is medium acid to very strongly acid in the upper 16 to 25 inches and neutral to strongly alkaline below.

Foley-Bonn complex (Fo).—This complex formed in thick deposits of loess on broad upland flats. The soils are so closely associated and so intermingled that it was not practical to map them separately. About 60 percent of the area is Foley soils, 25 percent Bonn soils, and the rest is spots of Calloway and Henry soils. A Bonn soil is described in detail under the heading "Bonn Series."

The complex is poorly suited to farming because of droughtiness and the high concentration of sodium and magnesium in the subsoil of both soils in the complex. Areas of Bonn soils within the complex can generally be identified by the vegetation. Plants grown on these areas commonly die before they mature. These areas are locally referred to as "slickspots" or "glades." Plants grown on the Foley soils within the complex thrive better, and they are more productive. Wetness is a severe hazard. Fieldwork is delayed several days after a rain unless surface drains are installed. Land grading is hazardous because of the high content of sodium and magnesium in the subsoil of both soils in the complex. Depth to the sodium-affected layers should be determined before cuts are made. If sodium-affected material is brought too near the surface, productivity is impaired.

The main crops are soybeans, cotton, and rice. Grain sorghum also is suited, and winter small grain can be grown if surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IVs-1; woodland group 3w9.

Grenada Series

The Grenada series consists of moderately well drained, nearly level soils on uplands. These soils formed in thick deposits of loess.

In a representative profile the surface layer is dark brown silt loam about 4 inches thick. The upper 17 inches of the subsoil is mostly yellowish brown silt loam. The lower 39 inches is a firm, brittle, mottled silt loam fragipan. The upper 15 inches of the pan is yellowish brown, and the lower 24 inches is dark yellowish brown.

Grenada soils are moderate in natural fertility. Content of organic matter is low. Permeability is slow, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. These soils warm early in spring and can be planted early.

Grenada soils are suited to the crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Grenada silt loam, 1 to 3 percent slopes, in a moist, cultivated area in the NE1/4NE1/4SW1/4 sec. 20, T. 3 N., R. 1 E.

Ap—0 to 4 inches, dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

B21—4 to 8 inches, yellowish brown (10YR 5/4) silt loam; weak coarse subangular blocky structure; friable; common fine roots; few fine pores; few fine dark concretions; very strongly acid; clear smooth boundary.

B22—8 to 19 inches, yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; light brownish gray silt coats on faces of some peds; few fine dark concretions; very strongly acid; clear smooth boundary.

A'2—19 to 21 inches, light gray (10YR 7/1) silt loam; many medium distinct yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) mottles; weak medium and fine subangular blocky structure; friable; brittle; common fine pores; common fine dark concretions; very strongly acid; abrupt irregular boundary.

B'x1—21 to 36 inches, yellowish brown (10YR 5/4) silt loam; many medium faint dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; compact, brittle; continuous clay films on faces of peds; gray silt between prisms; few fine pores; few fine dark concretions; very strongly acid; clear smooth boundary.

B'x2—36 to 46 inches, dark yellowish brown (10YR 4/4) silt loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak coarse prismatic structure; firm; compact, brittle; continuous clay films on faces of peds; few fine pores; few fine dark concretions; tongues of light brownish gray (10YR 6/2) silty material between prisms; strongly acid; gradual smooth boundary.

B'x3—46 to 60 inches, dark yellowish brown (10YR 4/4) silt loam; common coarse distinct light brownish gray (10YR 6/2) mottles; weak coarse subangular blocky structure; firm; compact, brittle; patchy clay films; dark stains in some pores; medium acid.

The Ap horizon is dark grayish brown to yellowish brown. The B2 horizon is dark yellowish brown or yellowish brown silt loam or silty clay loam. The A'2 horizon is light brownish gray, gray, or light gray. The B'x horizon is dark yellowish brown or yellowish brown silt loam or silty clay loam. The A horizon is very strongly acid to slightly acid; the B2, A'2, B'x1, and B'x2 horizons are very strongly acid or strongly acid; and the B'x3 horizon is very strongly acid to medium acid.

Grenada soils are chiefly associated with Calloway and Loring soils. Unlike Calloway soils, they are not mottled in the upper 10 inches of the B horizon. Unlike Loring soils, they have an A'2 horizon.

Grenada silt loam, 1 to 3 percent slopes (GrB).—This moderately well drained soil is on uplands. Individual areas range from about 20 to 50 acres in size. Included in mapping were spots of Calloway and Loring soils.

This soil is suited to farming, but runoff is medium and erosion is a moderate hazard. Clean-tilled crops that leave large amounts of residue can be grown year after year if the soil is cultivated on the contour, terraced on long slopes, and otherwise well managed.

The main crops are cotton and soybeans. Corn, grain sorghum, and winter small grain also are suited. Okra is a suitable truck crop. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIe-2; woodland group 3o7.

Henry Series

The Henry series consists of poorly drained soils on broad upland flats and in depressions. These soils formed in thick deposits of loess.

In a representative profile the surface layer is brown silt loam about 5 inches thick. The subsurface layer is gray, mottled silt loam about 32 inches thick. The subsoil is a fragipan of gray and light brownish gray, mottled, firm, brittle silty clay loam that extends to a depth of about 63 inches. The material beneath is light gray, mottled silt loam.

Henry soils are moderate to low in natural fertility. Organic-matter content is low. Permeability is slow, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. Most of the acreage is cultivated.

Representative profile of Henry silt loam in a moist, cultivated area in the SE1/4NW1/4NE1/4 sec. 21, T. 2 N., R. 2 E.

Ap—0 to 5 inches, brown (10YR 5/3) silt loam; weak fine granular structure; friable; many fine roots; few fine dark concretions; medium acid; abrupt smooth boundary.

A21g—5 to 11 inches, gray (10YR 6/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak fine granular structure; friable; common fine roots; few fine pores; few fine dark concretions; very strongly acid; clear smooth boundary.

A22g—11 to 20 inches, gray (10YR 6/1) silt loam; common fine distinct yellowish brown (10YR 5/4) and (10YR 5/6) mottles; weak fine granular structure; friable; few fine roots; few fine pores; few fine dark concretions; very strongly acid; clear smooth boundary.

A23g—20 to 32 inches, gray (10YR 6/1) silt loam; common medium distinct yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) mottles; weak fine granular structure; friable; few fine roots; common fine pores, few dark concretions; very strongly acid; clear smooth boundary.

Bx1—32 to 36 inches, gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; firm; brittle; common fine pores; patchy clay films on faces of peds; few fine dark concretions; very strongly acid; clear smooth boundary.

Bx2—36 to 49 inches, gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse parting to weak medium subangular blocky structure; firm; brittle; common fine pores; patchy clay films on faces of peds; few fine dark concretions; very strongly acid; gradual smooth boundary.

Bx3—49 to 63 inches, light brownish gray (2.5Y 6/2) silty clay loam; common medium faint light yellowish brown (2.5Y 6/4) mottles; weak coarse subangular blocky structure; firm; brittle; few fine pores; common fine dark concretions; very strongly acid; gradual smooth boundary.

C—63 to 76 inches, light gray (10YR 7/1) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; common fine concretions; medium acid.

The Ap or A1 horizon is dark gray to brown. The A2 horizon is gray or light brownish gray. The Bx horizon is gray, light olive gray, or light brownish gray. The C horizon is light gray or gray. The Ap or A1 horizon is medium acid to very strongly acid, the A2 and B horizons are very strongly acid or strongly acid, and the C horizon is very strongly acid to mildly alkaline.

Henry soils are chiefly associated with Calhoun, Calloway, Falaya, Jeanerette, and Lagrange soils. They have a fragipan that the Calhoun, Falaya, Jeanerette, and Lagrange soils lack. Henry soils are grayer than the Calloway soils and lack an A'2 horizon. They are more poorly drained than Falaya soils and have an A horizon of higher color value than Jeanerette soils. They are finer textured in the A horizon and the upper part of the B horizon than the Lagrange soils.

Henry silt loam (He).—This poorly drained soil is on broad upland flats and in depressions. Individual areas range from 20 to 500 acres in size. Slope is less than 1

percent. Included in mapping were spots of Calhoun, Calloway, and Falaya soils.

This soil is suited to farming, but wetness is a severe hazard. Fieldwork is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans (fig. 3) and cotton. Grain sorghum also is suited, and winter small grain can be grown if surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-2; woodland group 3w9.

Hillemann Series

The Hillemann series consists of somewhat poorly drained, level soils on uplands. These soils formed in thick deposits of loess.

In a representative profile the surface layer is dark brown silt loam about 3 inches thick. The subsurface layer is about 10 inches of grayish brown, mottled silt loam. The upper 8 inches of the subsoil is light brownish gray, mottled silt loam; the next 13 inches is grayish brown, mottled silty clay loam; and the lower 15 inches is light brownish gray, mottled silt loam. The material beneath is grayish brown and light brownish gray, mottled silt loam.

Hillemann soils are moderate in natural fertility. Organic-matter content is low. Permeability is slow, and the available water capacity is moderate. These soils respond well to fertilizer and are easy to keep in good tilth. They have a high content of sodium and magnesium beginning about 20 inches below the surface. Because of the high content of sodium and magnesium, the effective root depth is limited.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Hillemann silt loam in a moist, cultivated area in the NE1/4NE1/4SE1/4 sec. 4, T. 2 N., R. 1 E.

Ap—0 to 3 inches, dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

A2—3 to 13 inches, grayish brown (10YR 5/2) silt loam; common medium distanct dark yellowish brown (10YR 4/4) mottles; weak fine granular structure; friable; many fine roots; common fine pores; few fine concretions; medium acid; abrupt smooth boundary.

B1—13 to 21 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; friable; patchy clay films on faces of peds; streaks of light gray silt between peds; common few fine roots; common fine pores; common fine black concretions; strongly acid; clear smooth boundary.

B21t—21 to 26 inches, grayish brown (10YR 5/2) silty clay loam; many medium prominent red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm, plastic; patchy clay films on faces of peds; streaks of light gray silt between peds; few fine roots; few fine pores; few fine black concretions; strongly acid; clear smooth boundary.

B22t—26 to 34 inches, grayish brown (10YR 5/2) silty clay loam; many medium faint brown (10YR 4/3) and yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; few fine pores; few fine black concretions; medium acid; clear smooth boundary.

B3—34 to 49 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine pores; common fine black concretions; slightly acid; clear smooth boundary.

C1—49 to 64 inches, grayish brown (10YR 5/2) silt loam; common medium yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) mottles; massive; friable; few fine pores; few fine black concretions; moderately alkaline; clear smooth boundary.

C2—64 to 80 inches, light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; massive; friable; common fine medium black concretions; mildly alkaline.

The Ap horizon is dark brown to grayish brown. The B horizon is light brownish gray or grayish brown. Depth to the high concentration of sodium and magnesium ranges from 17 to 26 inches. The A and B2 horizons are strongly acid or medium acid, and the B3 and C horizons are slightly acid to moderately alkaline.

Hillemann soils are chiefly associated with Calloway, Grenada, and Henry soils. Hillemann soils lack the fragipan that is characteristic of Calloway and Henry soils, and they are more poorly drained than Grenada soils.

Hillemann silt loam (Hn).—This somewhat poorly drained soil is on uplands. Individual areas range from 40 to 600 acres in size. Slope is less than 1 percent. Included in mapping are spots of Calloway, Grenada, and Henry soils and a few areas with a slope gradient of 1 to 3 percent.

This soil is suited to farming, but wetness is a moderate hazard. Fieldwork is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used. Land grading is hazardous because of the high content of sodium and magnesium in the lower part of the subsoil. Depth to the sodium-affected layers should be determined before cuts are made. If sodium-affected material is brought too near the surface, productivity is impaired.

The main crops are soybeans, rice (fig. 4), and cotton. Grain sorghum also is suited, and winter small grain can be grown if surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-1; woodland group 3w9.

Jeanerette Series

The Jeanerette series consists of poorly drained soils in level areas and slight depression areas on uplands. These soils formed in sediments similar to loess but are of uncertain origin.

In a representative profile the surface layer is silt loam about 14 inches thick. The upper 4 inches is very dark grayish brown, and the lower 10 inches is black. The upper 32 inches of the subsoil is dark grayish brown and light brownish gray, mottled silty clay loam, and the lower 14 inches is light brownish gray, mottled silt loam. The material beneath is gray, mottled silt loam.

Jeanerette soils are moderate to high in natural fertility. Content of organic matter is high. Permeability is moderately slow, and the available water capacity is high. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

If these soils are adequately drained and well managed, they are suited to most crops grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Jeanerette silt loam in a moist, cultivated area in the SE1/4SE1/4SE1/4 sec. 13, T. 2 N., R. 2 E.

Ap—0 to 4 inches, very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

A1—4 to 14 inches, black (10YR 2/1) silt loam; weak coarse subangular blocky structure that breaks to weak fine granular structure; friable; common fine root; neutral; clear smooth boundary.

B1tg—14 to 19 inches, dark grayish brown (2.5Y 4/2) silty clay loam; few fine distinct yellowish brown mottles; weak medium subangular blocky structure; firm; common fine roots; common fine pores; few fine black concretions; mildly alkaline; clear smooth boundary.

B21tg—19 to 33 inches, light brownish gray (2.5Y 6/2) silty clay loam; common fine faint light yellowish brown and few fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; patchy clay films; few fine roots; few fine pores; few fine black concretions; mildly alkaline; clear smooth boundary.

B22tg—33 to 46 inches, light brownish gray (2.5Y 6/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; patchy clay films; few fine roots; common fine pores; few fine black concretions; large root holes filled with very dark grayish brown (10YR 3/2) silt; mildly alkaline; gradual smooth boundary.

B3g—46 to 60 inches, light brownish gray (2.5Y 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; friable; few patchy clay films; few fine roots; few fine pores; few root holes filled with grayish brown (2.5Y 5/2) silt; few calcium concretions; moderately alkaline; noncalcareous; gradual wavy boundary.

Cg—60 to 78 inches, gray (10YR 6/1) silt loam; common medium distinct light yellowish brown (10YR 6/4) mottles; few calcium concretions; moderately alkaline; noncalcareous.

The Ap horizon is very dark grayish brown or black. The A1 horizon is black, very dark gray, or very dark grayish brown. The B horizon is dark gray to light brownish gray silt loam or silty clay loam. The A horizon is medium acid to neutral, and the B and C horizons are neutral to moderately alkaline.

Jeanerette soils are chiefly associated with the Henry soils. They are lower in color value than Henry soils and lack the fragipan that the Henry soils have.

Jeanerette silt loam (Je).—This soil is in slight depressions on uplands. Individual areas range from 15 to 80 acres in size. Slope is less than 1 percent. Included in mapping were spots of soil that has a dark brown surface layer and spots of Henry soils.

This soil is suited to farming. Wetness is a moderate hazard, and fieldwork can be delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are cotton and soybeans. Corn, grain sorghum, and winter small grain also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-2; woodland group 2w6.

Lagrange Series

The Lagrange series consists of poorly drained, level soils on flood plains. These soils formed in moderately thick loamy deposits that have a high content of sand and are underlain by thick loamy deposits that have a high content of silt.

In a representative profile the surface layer is dark grayish brown fine sandy loam about 5 inches thick. The upper 17 inches of the subsoil is light brownish gray, mottled fine sandy loam; the next 13 inches is gray, mottled fine sandy loam; and the lower 25 inches is gray, mottled silt loam. The material beneath is gray, mottled silt loam.

Lagrange soils are low in natural fertility. Content of organic matter is low. Permeability is moderately slow, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Lagrange fine sandy loam in a moist, cultivated area in the SE1/4NE1/4SW1/4 sec. 24, T. 1 N., R. 2 E.

Ap—0 to 5 inches, dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; friable; many fine roots; medium acid; abrupt smooth boundary.

B11g—5 to 22 inches, light brownish gray (10YR 6/2) fine sandy loam; many medium distinct yellowish brown (10YR 5/4) mottles; weak coarse subangular blocky structure; friable; common fine roots; few fine pores; strongly acid; gradual smooth boundary.

B12g—22 to 35 inches, gray (10YR 6/1) fine sandy loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; friable; few fine roots; few fine pores; few fine black concretions; strongly acid; abrupt smooth boundary.

IIB21tg—35 to 49 inches, gray (10YR 6/1) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds and in pores; few fine pores; few fine black concretions; strongly acid; gradual smooth boundary.

IIB22tg—49 to 60 inches, gray (10YR 6/1) silt loam; common coarse distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds and in pores; few fine pores; common fine black concretions; strongly acid; gradual smooth boundary.

IIB3—60 to 77 inches, gray (10YR 6/1) silt loam; common coarse dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; friable; common fine black concretions; slightly acid.

The A horizon is dark yellowish brown, brown, or dark grayish brown. The B1 horizon is light brownish gray or gray fine sandy loam or sandy loam, mottled brown, yellowish brown, or dark yellowish brown. The IIB horizon is light brownish gray, light gray, or gray. The A horizon is slightly acid to very strongly acid; the B1, IIB21tg, and IIB22tg horizons are strongly acid or very strongly acid; and the B3 horizon is medium acid to neutral.

Lagrange soils are chiefly associated with Henry and Marvell soils. They are coarser textured in the A horizon and upper part of the B

horizon than Henry soils. They are more poorly drained and grayer than the Marvell soils.

Lagrange fine sandy loam (La).—This soil is on flood plains. Individual areas range from about 10 to 80 acres in size. Slope is less than 1 percent. Included in mapping were spots of Henry and Marvell soils.

This soil is suited to farming, but wetness is a severe hazard. Fieldwork is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans and cotton. Grain sorghum also is suited, and winter small grain can be grown if surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-4; woodland group 2w9.

Loring Series

The Loring series consists of moderately well drained, nearly level to moderately sloping soils on uplands. These soils formed in thick deposits of loess.

In a representative profile the surface layer is brown silt loam about 5 inches thick. The upper 21 inches of the subsoil is dark brown and brown silt loam. The lower 26 inches is a fragipan of firm, brittle, brown, mottled silt loam. The material beneath is shades of brown and gray silt loam.

Loring soils are moderate in natural fertility. Content of organic matter is low. Permeability is moderately slow, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. The fragipan restricts the penetration of roots and movement of water but does not seriously affect soil productivity or restrict the suitability for plants. These soils are susceptible to erosion.

These soils are suited to crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Loring silt loam, 1 to 3 percent slopes, in a moist, cultivated area in the NE1/4SW1/4SW1/4 sec. 4, T. 3 N., R. 3 E.

Ap—0 to 5 inches, brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

B21t—5 to 15 inches, dark brown (7.5YR 4/4) silt loam; moderate medium and fine subangular blocky structure; friable; patchy clay films on ped faces; common fine roots; few fine pores; very strongly acid; clear smooth boundary.

B22t—15 to 26 inches, brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; continuous clay films on peds; few fine roots; common fine pores; very strongly acid; clear smooth boundary.

Bx1—26 to 34 inches, brown (7.5YR 4/4) silt loam; many medium fine distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; compact, slightly brittle; patchy clay films on faces of peds and in some pores; few fine roots; few fine pores; few fine holes; common fine black concretions; very strongly acid; clear smooth boundary.

Bx2—34 to 52 inches, brown (7.5YR 4/4) silt loam; many medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; friable; compact, slightly brittle; patchy clay films on faces of peds ; few fine pores; common fine black concretions; very strongly acid; clear smooth boundary.

C1—52 to 67 inches, brown (7.5YR 4/4) silt loam; many medium distinct light brownish gray (10YR 6/2) mottles; massive; friable; few fine pores; few fine black concretions; very strongly acid; diffuse boundary.

C2—67 to 80 inches, mottled brown (7.5YR 4/4) and light brownish gray (10YR 6/2) silt loam; massive; friable; common fine black concretions; very strongly acid.

The A horizon is brown, dark grayish brown, grayish brown, or yellowish brown. The B horizon above the Bx horizon is brown, dark brown, or strong brown silt loam or silty clay loam. Depth to the Bx horizon is 24 to 32 inches. The Bx horizon is brown, dark brown, or strong brown. The C horizon is brown, dark brown, strong brown, or yellowish brown. The A horizon is strongly acid to slightly acid, and the B and C horizons are very strongly acid or strongly acid.

Loring soils are chiefly associated with Memphis and Grenada soils. Unlike Memphis soils, they have a fragipan. Unlike Grenada soils, they lack an A'2 horizon.

Loring silt loam, 1 to 3 percent slopes (LoB).—This moderately well drained soil is on uplands. Individual areas range from about 20 to 160 acres in size. The profile of this soil is the one described as representative for the series. Included in mapping were spots of Memphis and Grenada soils.

This soil is suited to farming, but runoff is medium and erosion is a moderate hazard. Clean-tilled crops that leave large amounts of residue can be grown year after year if the soil is cultivated on the contour, terraced on long slopes, and otherwise well managed.

The main crops are cotton and soybeans. Corn, grain sorghum, okra, and winter small grain also are suited. This soil is suited to peach orchards. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIe-2; woodland group 3o7.

Loring silt loam, 3 to 8 percent slopes, eroded (LoC2).—This moderately well drained soil is on uplands. Individual areas range from 20 to 60 acres in size. The profile of this soil is similar to the one described as representative for the series, but most of the original surface layer has been removed by erosion and the plow layer is a mixture of the original surface layer and the subsoil. Most areas have a few rills. Included in mapping were a few shallow gullies and spots of Memphis soils.

This soil is suited to farming, but runoff is medium to rapid, and erosion is a severe hazard. Sown crops that leave large amounts of residue can be safely grown year after year if the soil is cultivated on the contour, terraced, and otherwise well managed. Clean-tilled crops can be grown most years if the cropping system includes a sod crop or a winter cover crop. In areas where length and gradient of slope increase, more intensive management is needed. The surface layer of this soil puddles and crusts over readily after a rain because of the low content of organic matter and weak structure.

The main crops are cotton and soybeans. Corn, grain sorghum, okra, and winter small grain also are suited. This soil is suited to peach orchards if the trees are planted on contour terrace ridges. Adapted pasture plants

are bermudagrass, tall fescue, and white clover. Capability unit IIIe-1; woodland group 3o7.

Loring silt loam, 8 to 12 percent slopes, eroded (LoD2).—This moderately well drained soil is on uplands. Individual areas range from 10 to 40 acres in size. The profile of this soil is similar to the one described as representative for the series, but most of the original surface layer has been removed by erosion and the plow layer is a mixture of the original surface layer and the subsoil. Most areas have a few rills. Included in mapping were a few spots of Memphis soils and a few gullies.

Runoff is rapid, and the hazard of erosion is very severe. This soil is poorly suited to cultivated crops. Sown crops can be safely grown occasionally if the soil is in close-growing cover most of the time. The soil is suited to pasture. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IVe-1; woodland group 3o7.

Marvell Series

The Marvell series consists of well drained, level soils on flood plains. These soils formed in moderately thick loamy deposits that have a high content of sand and are underlain by thick loamy deposits that have a high content of silt.

In a representative profile the surface layer is brown and dark yellowish brown fine sandy loam about 13 inches thick. The upper 20 inches of the subsoil is yellowish brown and brown fine sandy loam. The lower part is light brownish gray and gray, mottled silt loam that extends to a depth of 72 inches or more.

Marvell soils are moderate in natural fertility. Content of organic matter is low. Permeability is moderately slow, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed below the plow layer. This pan restricts root penetration and movement of water through the soil. These soils warm early in spring and can be planted early.

These soils are suited to most of the crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Marvell fine sandy loam in a moist, cultivated area in the NW1/4NE1/4NE1/4 sec. 21, T. 1 N., R. 2 E.

Ap—0 to 6 inches, brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

A1—6 to 13 inches, dark yellowish brown (10YR 4/4) fine sandy loam; weak fine granular structure; friable; common fine roots; few clean sand grains; very strongly acid; clear smooth boundary.

B11—13 to 22 inches, yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few clean sand grains; very strongly acid; clear smooth boundary.

B12—22 to 33 inches, brown (10YR 5/3) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; clean sand grains; strongly acid; abrupt smooth boundary.

IIB21g—33 to 36 inches, light brownish gray (10YR 6/2) silt loam; common fine distinct light olive brown mottles; weak medium subangular blocky structure; friable; few patchy clay films on faces of peds; few fine pores; few fine black concretions; medium acid; gradual smooth boundary.

IIB22tg—36 to 53 inches, light gray (10YR 7/1) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; clay films on faces of peds and in pores; common fine pores; common fine medium black concretions; medium acid; gradual smooth boundry.

IIB23tg—53 to 72 inches, light brownish gray (10YR 6/2) silt loam; many medium distinct dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; common patchy clay films on faces of peds and in pores; common fine pores; common medium black concretions; very strongly acid.

The A horizon is dark brown to dark yellowish brown. The B1 horizon is brown to dark yellowish brown sandy loam or fine sandy loam. The IIB21tg horizon is yellowish brown or brown or light brownish gray. The IIB22tg and IIB23tg horizons are light gray, light brownish gray, or gray. Reaction is very strongly acid to medium acid throughout the profile.

Marvell soils are chiefly associated with Calloway and Lagrange soils. They are better drained and have browner colors than those soils. They are coarser textured in the A horizon and the upper part of the B horizon than the Calloway soils and lack the fragipan typical of those soils.

Marvell fine sandy loam (Ma).—This soil is on flood plains. Individual areas range from about 10 to 60 acres in size. Slope is less than 1 percent. Included in mapping were small areas of soil that have slopes of as much as 2 percent and spots of Calloway and Lagrange soils.

This soil is well suited to farming. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crops are cotton and soybeans. Corn, grain sorghum, peanuts, and winter small grain also are suited. Such truck crops as okra, green beans, potatoes, sweet corn, tomatoes, and melons are well suited. Adapted pasture plants are bermudagrass and white clover. Capability unit I-1; woodland group 2o4.

Memphis Series

The Memphis series consists of well drained, nearly level to steep soils on uplands. These soils formed in thick deposits of loess.

In a representative profile the surface layer is brown silt loam about 10 inches thick. The upper 36 inches of the subsoil is brown silty clay loam, and the lower 14 inches is brown silt loam. The material beneath is brown silt loam.

Memphis soils are moderate in natural fertility, and the content of organic matter is medium to low. Permeability is moderate, and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain.

Nearly level and gently sloping areas are suited to most of the commonly grown crops, but erosion control and careful management are needed. Steeper areas are poorly suited or unsuited to crops but are suited to pasture, except where slopes are too steep to permit good pasture management. The steeper areas are well suited to woodland, and most are used for this purpose. Memphis soils are the major soils within the St. Francis National Forest.

Representative profile of Memphis silt loam, 1 to 3 percent slopes, in a moist, cultivated area in the NW1/4SE1/4NW1/4 sec. 21, T. 3 N., R. 3 E.

Ap—0 to 6 inches, brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; strongly acid; abrupt smooth boundary.

A1—6 to 10 inches, brown (7.5YR 5/4) silt loam; weak medium and fine subangular blocky structure; friable; common small roots; few small pores; strongly acid; clear smooth boundary.

B21t—10 to 28 inches, brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; continuous clay films; few small roots; common fine pores; very strongly acid; clear smooth boundary.

B22t—28 to 46 inches, dark yellowish brown (10YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; continuous thin clay films; few small roots; few small pores; gray silt coatings on some faces of peds; very strongly acid; clear smooth boundary.

B23t—46 to 60 inches, brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; thin discontinuous clay films on faces of peds; few small pores; gray coatings on some faces of peds; very strongly acid; clear smooth boundary.

C—60 to 80 inches, brown (7.5YR 5/4) silt loam; massive; friable; light gray coatings on some peds; strongly acid.

The A horizon is dark brown, brown, or dark yellowish brown. The B horizon is silt loam or silty clay loam. The C horizon is brown or light brown. The A horizon is slightly acid to strongly acid, the B horizon is strongly acid or very strongly acid, and the C horizon is medium acid or strongly acid.

Memphis soils are chiefly associated with Grenada, Loring, and Natchez soils. They are free of mottles and do not have the fragipan that is characteristic of the Grenada and Loring soils. Memphis soils have an accumulation of translocated clay that is lacking in Natchez soils.

Memphis silt loam, 1 to 3 percent slopes (MeB).—This well drained soil is on uplands. Individual areas range from about 20 to 200 acres in size. The profile of this soil is the one described as representative for the series. Included in mapping were small spots of Loring and Grenada soils.

This soil is suited to farming, but runoff is medium, and erosion is a moderate hazard. Clean-tilled crops that leave large amounts of residue can be grown year after year if the soil is cultivated on the contour, terraced on long slopes, and otherwise well managed.

The main crops are cotton and soybeans. Corn, grain sorghum, okra, and winter small grain also are suited. This soil is suited to peach orchards. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIe-2; woodland group 2o7.

Memphis silt loam, 3 to 8 percent slopes, eroded (MeC2).—This well drained soil is on uplands. Individual areas range from 20 to 100 acres in size. The profile of this soil is similar to the one described as representative for the series, but most of the original surface layer has been removed by erosion and the plow layer is a mixture of the original surface layer and the subsoil. Included in mapping were a few spots of Loring soils and a few gullies.

This soil is suited to farming, but runoff is medium to rapid, and erosion is a severe hazard.

Sown crops that leave large amounts of residue can be safely grown year after year if the soil is cultivated on the contour, terraced, and otherwise well managed. Clean-tilled crops can be grown most years if the cropping system includes a sod crop or a winter cover crop. In areas where length and gradient of slope increase, more intensive management is needed. The surface layer of this soil puddles and crusts over readily after a rain because of the low content of organic matter and weak structure.

The main crops are cotton and soybeans. Other suitable crops are corn, grain gorghum, okra, and winter small grain. This soil is suited to peach orchards if trees are planted on contour terrace ridges. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIe-1; woodland group 2o7.

Memphis silt loam, 8 to 12 percent slopes, eroded (MeD2).—This is a well drained soil on uplands. Individual areas range from 20 to 60 acres in size. The profile of this soil is similar to the one described as respresentative for the series, but erosion has removed some of the original surface layer and exposed patches of subsoil. In places plowing has mixed the original surface layer with part of the subsoil. Included in mapping were a few spots of Loring soils and a few gullies.

Runoff is rapid, and the hazard of erosion is very severe. This soil is poorly suited to cultivated crops. Sown crops can be safely grown occasionally if the soil is in close-growing cover most of the time. The soil is suited to pasture. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IVe-1; woodland group 2o7.

Memphis silt loam, 15 to 40 percent slopes (MeF).—This well drained soil is on uplands. Individual areas range up to several hundred acres in size. Included in mapping were spots of Loring and Natchez soils, a few gullies, and a few gravel pits.

Runoff is very rapid, and the hazard of erosion is very severe. This soil is not suited to cultivated crops and is poorly suited to pasture. It is better suited to woodland, and most of the acreage is used for this purpose. Most of the acreage is in the St. Francis National Forest. Capability unit VIIe-1; woodland group 2r8.

Mhoon Series

The Mhoon series consists of poorly drained, level soils on flood plains. These soils formed in stratified beds of loamy sediments.

In a representative profile the surface layer is dark grayish brown silt loam about 5 inches thick. The subsoil is gray, mottled silt loam that extends to a depth of about 30 inches. The material beneath is gray, mottled silty clay loam and silty clay.

Mhoon soils are high in natural fertility. Content of organic matter is medium to low. Permeability is slow, and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This

pan restricts root penetration and movement of water through the soil.

Because of frequent flooding, these soils are suited to only warm season annual crops that require a short growing season. About one-fifth of the acreage is cultivated. The rest is dominantly wooded.

Representative profile of Mhoon silt loam in a moist, wooded area of Mhoon soils, frequently flooded, in the SW1/4SE1/4NW1/4 sec. 28, T. 1 N., R. 2 E.

O1—1 inch to 0, partially decomposed hardwood leaves and grass.
A1—0 to 5 inches, dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine roots; medium acid; clear smooth boundary.
B1g—5 to 15 inches, gray (10YR 6/1) silt loam; common medium distinct dark brown (10YR 3/3) mottles; weak coarse subangular blocky structure; friable; common fine roots; few fine pores; few fine black concretions; strongly acid; clear smooth boundary.
B2g—15 to 23 inches, gray (10YR 6/1) silt loam; common medium fine distinct yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; few fine dark concretions; strongly acid; clear smooth boundary.
B3g—23 to 30 inches, light gray (10YR 7/1) silt loam; common medium fine distinct light yellowish brown (2.5Y 6/4) mottles; weak coarse subangular blocky structure; friable; few fine roots; few fine pores; few fine dark concretions; neutral; clear smooth boundary.
C1g—30 to 43 inches, gray (5Y 5/1) silty clay loam; few faint fine light olive brown mottles; massive; firm; few fine pores; moderately alkaline; gradual smooth boundary.
C2g—43 to 59 inches, gray (5Y 5/1) silty clay loam; few fine pale olive mottles; massive; firm; few fine roots; few fine pores; few small dark concretions; moderately alkaline; gradual smooth boundary.
C3g—59 to 78 inches, gray (5Y 5/1) silty clay; common medium distinct olive (5Y 5/4) mottles; massive; firm; common large black concretions; moderately alkaline.

The A horizon is dark grayish brown to gray silt loam or silty clay loam. The B horizon is gray to grayish brown silt loam. The C horizon is stratified silt loam, silty clay loam, and silty clay. Reaction in the A, B1, and B2 horizons ranges from very strongly acid to medium acid. Below this the soil is neutral to moderately alkaline.

Because these soils are more acid in the upper part of the profile and have colors of higher value in the lower part, they are outside the range of characteristics for the series. Use, behavior, and management, however, are similar to those of the Mhoon series.

Mhoon soils are chiefly associated with Zachary and Falaya soils. They are less acid than Zachary and Falaya soils. Falaya soils lack the B horizon of clay accumulations that Mhoon and Zachary soils have.

Mhoon soils, frequently flooded (Mh).—This undifferentiated group consists of soils on flood plains, mainly along Big Creek. Individual areas range to several hundred acres in size. Slope is less than 1 percent. These soils are flooded for periods of about 1 week to 4 months, generally between January and June. Floods occur 9 years in 10. The surface layer is silt loam or silty clay loam. Included in the mapping were spots of Zachary and Falaya soils.

These soils are suited to farming, but flooding is a very severe hazard. Only warm season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if good management is used.

The main crops are soybeans and grain sorghum. Bermudagrass is a better suited pasture plant than are other plants. Capability unit IVw-4; woodland group 1w6.

Natchez Series

The Natchez series consists of well drained, steep soils on uplands. These soils formed in thick deposits of loess.

In a representative profile the surface layer is dark brown silt loam about 3 inches thick. The upper 5 inches of the subsoil is brown silt loam, and the lower 20 inches is dark yellowish brown silt loam. The material beneath is brown silt loam.

Natchez soils are high in natural fertility. Content of organic matter is medium. Permeability is moderately rapid, and the available water capacity is high.

Because of steep slopes and the severe erosion hazard, these soils are unsuited to cultivated crops. They are used for woodland and wildlife habitat. Most of the acreage is within the St. Francis National Forest.

Representative profile of Natchez silt loam, 20 to 40 percent slopes, in a moist, wooded area in the SW1/4NW1/4SW1/4 sec. 20, T. 2 N., R. 4 E.

A0—1 inch to 0, partially decomposed, matted leaves and twigs.
A1—0 to 3 inches, dark brown (10YR 4/3) silt loam; weak fine granular structure; very friable; many fine roots; medium acid; clear smooth boundary.
B1—3 to 8 inches, brown (10YR 5/3) silt loam; weak coarse subangular blocky structure; friable; common fine roots; common fine pores; strongly acid; clear smooth boundary.
B2—8 to 28 inches, dark yellowish brown (10YR 4/4) silt loam; weak coarse that breaks to medium subangular blocky structure; friable; common fine few medium roots; common fine pores; gray silt on some faces of peds; strongly acid; clear smooth boundary.
C1—28 to 46 inches, brown (10YR 5/3) silt loam; structureless; massive; very friable; few fine roots; few fine pores; neutral; diffuse boundary.
C2—46 to 63 inches, brown (10YR 5/3) silt loam; structureless; massive; very friable; few fine roots; few fine pores; calcium along some root channels; few shell fragments; moderately alkaline; diffuse boundary.
C3—63 to 80 inches, brown (10YR 5/3) silt loam; massive; very friable; few shell fragments; moderately alkaline.

The A horizon is dark grayish brown to yellowish brown. The B and C horizons are brown, dark brown, or dark yellowish brown. The A and B horizons are strongly acid or medium acid, and the C horizon is neutral to moderately alkaline.

Natchez soils are chiefly associated with Memphis soils. They lack the B horizon of translocated clay accumulation that the Memphis soils have, and they have a higher reaction value in the 40 inch control section.

Natchez silt loam, 20 to 40 percent slopes (NaF).—This well drained soil is on uplands. Individual areas range from 40 to 300 acres in size. Included in mapping were spots of Memphis soils and narrow strips of Convent soils along drainageways.

Runoff is very rapid, and erosion is a very severe hazard. This soil is not suited to cultivated crops and is poorly suited to pasture. It is better suited to woodland, and most is used for this purpose. Most of the acreage is within the St. Francis National Forest. Capability unit VIIe-1; woodland group 2r8.

Newellton Series

The Newellton series consists of somewhat poorly drained, level and gently undulating soils at high elevations in slack-water areas. These soils formed in thin beds of clayey sediments over coarser textured sediments.

In a representative profile the surface layer is dark grayish brown silty clay loam about 6 inches thick. The subsoil is dark grayish brown, mottled silty clay that extends to a depth of about 15 inches. The material beneath is grayish brown and gray, mottled, stratified silt loam to fine sandy loam.

Newellton soils are moderate to high in natural fertility. Content of organic matter is medium. Permeability is slow, and the available water capacity is high. These soils respond well to fertilizer. Good tilth is difficult to maintain and seedbeds are difficult to prepare because of the high content of clay in the surface layer. These soils clod if plowed when wet. They shrink and crack when they dry, and when wet, they expand and the cracks seal.

If these soils are drained and well managed, they are suited to most crops grown in the county. Most of the acreage is cultivated.

Representative profile of Newellton silty clay loam, gently undulating, in a moist, cultivated area in the SE1/4NE1/4SW1/4 sec. 6, T. 1 N., R. 5 E.

Ap—0 to 6 inches, dark grayish brown (10YR 4/2) silty clay loam; weak medium and fine subangular blocky structure; firm; many fine roots; neutral; abrupt smooth boundary.

B—6 to 15 inches, dark grayish brown (10YR 4/2) silty clay; common fine distinct yellowish brown mottles; moderate medium subangular blocky structure; firm, plastic; common fine roots; few fine pores; few fine black concretions; neutral; clear smooth boundary.

C1—15 to 19 inches, grayish brown (10YR 5/2) silt loam; many medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; few fine roots; few fine pores; neutral; clear smooth boundary.

C2—19 to 36 inches, grayish brown (10YR 5/2) very fine sandy loam; many medium distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; few fine pores; neutral; clear smooth boundary.

C3—36 to 54 inches, grayish brown (10YR 5/2) fine sandy loam; many medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; few bedding planes; neutral; diffuse wavy boundary.

C4—54 to 70 inches, gray (10YR 5/1) fine sandy loam; many medium distinct yellowish brown (10YR 5/4) mottles; massive; friable; neutral.

The A horizon is grayish brown, dark grayish brown, or dark gray clay to silty clay loam. The B horizon is gray, dark gray, or dark grayish brown clay or silty clay. The C horizon is gray, dark grayish brown, grayish brown, or light brownish gray silt loam to loamy fine sand. The A and B horizons are slightly acid to mildly alkaline, and the C horizon is neutral to moderately alkaline.

Newellton soils are chiefly associated with the Tunica, Sharkey, and Commerce soils. They formed in thinner beds of clayey sediments and are better drained internally then the Tunica and Sharkey soils. They have a B horizon that contains more clay than that of Commerce soils.

Newellton silty clay loam, 0 to 1 percent slopes (NeA).—This soil is on the higher part of slack-water areas. Individual areas range from about 15 to 150 acres in size. Slope is less than 1 percent. The profile of this soil is similar to the one described as representative for the series. Included in mapping were spots of Tunica, Sharkey, and Commerce soils.

This soil is suited to farming, but wetness is a moderate hazard. Fieldwork frequently is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are cotton and soybeans. Alfalfa, grain sorghum, and winter small grain also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-3; woodland group 2w5.

Newellton silty clay loam, gently undulating (NeB).—This soil is in areas where long, narrow swales alternate with low ridges that rise 2 to 5 feet above the swales. Individual areas range from about 10 to 400 acres in size. Slope is less than 3 percent. The profile of this soil is the one described as representative for the series. Included in mapping were spots of Tunica, Sharkey, and Commerce soils.

This soil is suited to farming, but wetness is a moderate hazard. Water accumulates in the undulating swales. Fieldwork is delayed several days after a rain unless surface drains are installed. Land grading and smoothing can be done, but careful planning is needed. Deep cuts in the ridges will expose the permeable underlying material, and material from the clayey upper layers will be moved into the depressions. This will result in narrow strips of loamy soil alternating with narrow strips of clayey soil across the graded field. Thus, a field may be more difficult to manage after grading than before. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are cotton and soybeans. Alfalfa, grain sorghum, and winter small grain also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-3; woodland group 2w5.

Newellton soils, frequently flooded (Nf).—This undifferentiated group consists of level and gently undulating soils at the higher elevations in slack water areas. Individual areas range from about 15 to 400 acres in size. Slope is less than 3 percent. The profile of these soils is similar to the one described as representative for the series, but the surface layer ranges from clay to silty clay loam. These soils are mainly between the Mississippi River and its levee. Some are within the St. Francis River Floodway. All are flooded for periods of 3 to 95 days, generally between January and June. Floods occur on an average of about once every 2 years. Included in mapping were spots of Tunica, Sharkey, and Commerce soils.

These soils are suited to farming, but flooding is a very severe hazard. Only warm season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if good management is used.

The main crops are soybeans and grain sorghum. Bermudagrass is a better suited pasture plant than are other plants. Capability unit IVw-1; woodland group 2w5.

Robinsonville Series

The Robinsonville series consists of well drained, level soils on higher parts of young natural levees. These soils formed in stratified loamy sediments.

In a representative profile the surface layer is dark brown fine sandy loam about 6 inches thick. The material beneath is brown and grayish brown stratified silt loam, fine sandy loam, loamy fine sand, and loamy sand that extends to a depth of 74 inches or more.

Robinsonville soils are moderate to high in natural fertility. Content of organic matter is medium to low. Permeability is moderately rapid, and the available water capacity is moderate. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil. These soils warm early in spring and can be planted early.

If these soils are protected from flooding, they are well suited to crops commonly grown in the county. Nearly all of the acreage is cultivated.

Representative profile of Robinsonville fine sandy loam in a moist, cultivated area in the SE1/4NE1/4SW1/4 sec. 8, T. 1 N., R. 5 E.

Ap—0 to 6 inches, dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; common fine roots; neutral; abrupt smooth boundary.

C1—6 to 16 inches, brown (10YR 5/3) fine sandy loam; massive; friable; common fine roots; neutral; clear smooth boundary.

C2—16 to 29 inches, brown (10YR 5/3) fine sandy loam; massive; friable; thin bedding planes; few fine roots; neutral; clear smooth boundary.

C3—29 to 42 inches, brown (10YR 5/3) loamy fine sand; single grain; friable; thin bedding planes; neutral; clear smooth boundary.

C4—42 to 58 inches, brown (10YR 4/3) silt loam; massive; friable; thin bedding planes; mildly alkaline; clear smooth boundary.

C5—58 to 74 inches, grayish brown (10YR 5/2) loamy sand; single grain with platy rock structure; many bedding planes; friable; mildly alkaline.

The A horizon is dark grayish brown, dark brown, or dark yellowish brown very fine sandy loam to loamy fine sand. The C horizon is dark brown, brown, or grayish brown silt loam to loamy fine sand that is stratified, but not in a regular sequence. Reaction ranges from slightly acid to moderately alkaline throughout the profile.

Robinsonville soils are chiefly associated with Bruno and Commerce soils. They are finer textured than the Bruno soils, having formed in predominantly loamy rather than sandy sediments. They are less gray and better drained than Commerce soils, and they lack the B horizon that those soils have.

Robinsonville fine sandy loam (Ro).—This soil is on the higher part of young natural levees. Individual areas range from 15 to 200 acres in size. Slope is less than 1 percent. The profile of this soil is the one described as representative of the series. Included in the mapping were small areas of an undulating soil and spots of Commerce and Bruno soils.

This soil is well suited to farming. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crops are cotton and soybeans. Corn, grain sorghum, peanuts, and winter small grain also are suited. Such truck crops as okra, green beans, potatoes, sweet corn, tomatoes, and melons are well suited. Adapted pasture plants are bermudagrass and white clover. Capability unit I-1; woodland group 1o4.

Robinsonville soils, frequently flooded (Rs).—This undifferentiated group consists of level and gently undulating soils on the higher part of natural levees. Individual areas range from 15 to 200 acres in size. Slope is less than 3 percent. The profile of these soils is similar to the one described as representative of the series, but the surface layer ranges from very fine sandy loam to loamy fine sand. These soils are between the Mississippi River and its levee. They are flooded for periods of 3 to 95 days, generally between January and June. Floods occur on an average of about once every 2 years. Included in mapping were spots of Commerce and Bruno soils.

These soils are suitable for farming, but flooding is a very severe hazard. Only warm season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crop is soybeans. Some cotton is grown, but the crop is sometimes lost because of flooding. Bermudagrass is a better suited pasture plant than are other plants. Capability unit IVw-3; woodland group 1o4.

Sharkey Series

The Sharkey series consists of poorly drained, predominantly level soils in slack water areas. These soils formed in thick beds of clayey sediments.

In a representative profile the surface layer is about 8 inches thick. Its upper part is very dark gray clay, and the lower part is very dark grayish brown, mottled clay. The subsoil is gray, mottled clay that extends to a depth of about 53 inches. The material beneath is gray mottled silty clay.

Sharkey soils are high in natural fertility. Content of organic matter is medium to high. Permeability is very slow, and the available water capacity is high. These soils respond well to fertilizer. Good tilth is difficult to maintain, and seedbeds are difficult to prepare because of the high content of clay. These soils clod if plowed when wet. They shrink and crack when they dry, and when wet, they expand and the cracks seal.

If these soils are drained and well managed, they are suited to most crops grown in the county. About 40 percent of the acreage is cultivated.

Representative profile of Sharkey clay in a moist, cultivated area in the NE1/4NE1/4NE1/4 sec. 15, T. 3 N., R. 4 E.

Ap—0 to 4 inches, very dark gray (10YR 3/1) clay; weak fine subangular blocky structure; firm, plastic; many fine roots; common fine dark concretions; slightly acid; abrupt, smooth boundary.

A12—4 to 8 inches, very dark grayish brown (10YR 3/2) clay; few common medium distinct dark yellowish brown (10YR 4/4) mottles;

moderate medium subangular blocky structure; firm, plastic; many fine roots; few fine dark concretions; slightly acid; clear smooth boundary.

B21g—8 to 24 inches, dark gray (10YR 4/1) clay; common medium coarse dark yellowish brown (10YR 4/4) mottles; moderate medium and fine subangular blocky structure; firm, plastic; few fine roots; few fine dark concretions; slightly acid; clear smooth boundary.

B22g—24 to 40 inches, dark gray (10YR 4/1) clay; common medium fine dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm, plastic; few slickensides that do not intersect; few medium roots; few fine dark concretions; neutral; clear smooth boundary.

B23—40 to 53 inches, dark gray (10YR 4/1) clay; common medium distinct dark yellowish brown (10YR 3/4) mottles; moderate medium subangular blocky structure; firm, plastic; few fine dark concretions; neutral; clear smooth boundary.

Cg—53 to 70 inches, gray (10YR 5/1) silty clay; common medium distinct yellowish brown (10YR 5/4) mottles; massive; firm, plastic; common fine dark concretions; neutral.

The A horizon is very dark gray, very dark grayish brown, dark brown, dark gray, or dark grayish brown silty clay loam to clay. The B and C horizons are dark gray or gray. Reaction ranges from slightly acid to moderately alkaline throughout the profile.

Sharkey soils are chiefly associated with Tunica, Newellton, and Alligator soils. They formed in thicker beds of clayey sediments than the Tunica and Newellton soils. They closely resemble the Alligator soils but are not so acid to a depth of 40 or more inches.

Sharkey clay (Sh).—This soil is on broad flats. Individual areas range up to several hundred acres in size. Slope is less than 1 percent. The profile of this soil is the one described as representative of the series. Included in the mapping were small areas of gently undulating soil and spots of Tunica and Newellton soils.

This soil is suited to farming, but wetness is a severe hazard. Fieldwork frequently is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are soybeans and cotton. Rice, alfalfa, grain sorghum, winter small grain, and okra are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-1; woodland group 2w6.

Sharkey soils, frequently flooded (Sk).—This undifferentiated group consists of soils on broad flats. Individual areas range to several hundred acres in size. Slope is less than 1 percent. The profile of these soils is similar to the one described as representative for the series, but the surface layer ranges from silty clay loam to clay. These soils are between the Mississippi River and its levee and within the St. Francis River Floodway. They are flooded for periods of 3 to 95 days, generally between January and June. Floods occur on an average of about once every 2 years. Included in mapping were spots of Tunica and Newellton soils.

These soils are suited to farming, but flooding is a very severe hazard (fig. 5). Only warm season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crops are soybeans and grain sorghum. Bermudagrass is a better suited pasture plant than are other plants. Capability unit IVw-1; woodland group 3w6.

Tunica Series

The Tunica series consists of poorly drained, level and gently undulating soils in broad slack water areas. These soils formed in thin beds of clayey sediments over coarser textured sediments.

In a representative profile the surface layer is dark grayish brown silty clay about 6 inches thick. The upper 19 inches of the subsoil is dark gray, mottled clay, and the lower 5 inches is dark gray, mottled silty clay loam. The material beneath is stratified, mottled fine sandy loam and silt loam.

Tunica soils are moderate to high in natural fertility. Content of organic matter is medium. Permeability is very slow, and the available water capacity is high. These soils respond well to fertilizer. Tilth is difficult to maintain, and seedbeds are difficult to prepare because of the high content of clay in the surface layer. These soils clod if plowed when wet. They shrink and crack when they dry, and when wet, they expand and the cracks seal.

If these soils are adequately drained and well managed, they are suited to most crops grown in the county. Most of the acreage is cultivated.

Representative profile of Tunica silty clay, gently undulating, in a moist, cultivated area in the NE1/4SE1/4NE1/4 sec. 36, T. 2 N., R. 4 E.

Ap—0 to 6 inches, dark grayish brown (10YR 3/2) silty clay; weak medium fine subangular blocky structure; firm, plastic; many fine roots; neutral; abrupt smooth boundary.

B2—6 to 25 inches, dark gray (10YR 4/1) clay; common medium fine dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm, plastic; few fine roots; common fine pores; few fine black concretions; neutral; clear smooth boundary.

B3g—25 to 30 inches, dark gray (10YR 4/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; weak coarse subangular blocky structure; firm; few fine roots; common fine pores; few dark concretions; neutral; abrupt smooth boundary.

IIC1—30 to 49 inches, dark grayish brown (10YR 4/2) fine sandy loam; common medium distinct light brownish gray mottles; massive; friable; few fine dark concretions; neutral; clear wavy boundary.

IIC2—49 to 65 inches, brown (10YR 5/3) fine sandy loam; common fine distinct light brownish gray mottles; massive; friable; neutral; diffuse boundary.

IIIC3g—65 to 80 inches, gray (10YR 5/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) mottles; massive; friable; thin bedding planes; neutral.

The A horizon is dark gray, dark grayish brown, very dark gray, or very dark grayish brown silty clay loam to clay. The B horizon is dark gray or gray. The IIC and IIIC horizons are brown, dark grayish brown, or gray loam to sand. The IIIC horizon is lacking in places. Reaction ranges from slightly acid to moderately alkaline throughout the profile.

Tunica soils are chiefly associated with Sharkey and Newellton soils. They formed in thinner beds of clayey sediments than the Sharkey soils and thicker beds of clayey sediments than the Newellton soils.

Tunica silty clay, 0 to 1 percent slopes (TnA).—This soil is at the higher elevations in slack water areas. In-

dividual areas range from 10 to 100 acres in size. Slope is less than 1 percent. The profile of this soil is similar to the one described as representative of the series. Included in mapping were a few small areas of gently undulating soil and spots of Newellton and Sharkey soils.

This soil is suited to farming, but wetness is a severe hazard. Fieldwork is commonly delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is adequately drained and good management is used.

The main crops are cotton and soybeans. Alfalfa, grain sorghum, and winter small grain also are suited. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-1; woodland group 2w6.

Tunica silty clay, gently undulating (TnB).—This soil is in broad slack water areas where long, narrow swales alternate with low ridges that rise 2 to 5 feet above the swales. Individual areas range from 10 to 150 acres in size. Slope is less than 3 percent. The profile of this soil is the one described as representative of the series. Included in the mapping were spots of Newellton and Sharkey soils.

This soil is suited to farming, but wetness is a severe hazard. Water accumulates in the swales of undulations, and fieldwork is delayed several days after a rain unless surface drains are installed. Clean-tilled crops that leave large amounts of residue can be safely grown year after year if this soil is drained and good management is used.

The main crops are cotton and soybeans. Alfalfa and grain sorghum also are suited. Winter small grain can be grown where surface drainage is adequate. Adapted pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-1; woodland group 2w6.

Tunica soils, frequently flooded (Tu).—This undifferentiated group consists of level and gently undulating soils in slack water areas. Individual areas range from about 20 to 400 acres in size. Slope is less than 3 percent. The profile of these soils is similar to the one described as representative of the series, but the surface layer ranges from silty clay loam to clay. These soils are between the Mississippi River and its levee and within the St. Francis River Floodway. They are flooded for periods of 3 to 95 days, generally between January and June. Floods occur on an average of about every 2 years. Included in mapping were spots of Newellton and Sharkey soils.

These soils are suited to farming, but flooding is a very severe hazard. Only warm season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used. The main crops are soybeans and grain sorghum. Bermudagrass is a better suited pasture plant than are other plants. Capability unit IVw-1; woodland group 2w6.

Zachary Series

The Zachary series consists of poorly drained, level soils in drainageways on uplands. These soils formed in sediments washed from loess.

In a representative profile the surface layer is grayish brown, mottled silt loam about 6 inches thick. The subsurface layer is gray, mottled silt loam about 20 inches thick. The subsoil is gray, mottled silty clay loam that extends to a depth of about 65 inches. The material beneath is gray, mottled silt loam.

Zachary soils are moderate in natural fertility. Content of organic matter is low. Permeability is slow, and the available water capacity is high. These soils respond well to fertilizer, and good tilth is easy to maintain. In places a plowpan has formed beneath the plow layer. This pan restricts root penetration and movement of water through the soil.

These soils are suited to most warm season crops commonly grown in the county. About 20 percent of the acreage is cultivated.

Representative profile of Zachary silt loam in an area of Zachary soils, frequently flooded, in a moist, wooded area in the NW1/4SW1/4NE1/4 sec. 23, T. 1 N., R. 3 E.

O1—1 inch to 0, partially decomposed hardwood leaves and grass.

A1—0 to 6 inches, grayish brown (10YR 5/2) silt loam; few faint fine dark brown mottles; weak fine granular structure; friable; many fine roots; slightly acid; clear smooth boundary.

A2g—6 to 26 inches, gray (10YR 6/1) silt loam; common medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; common fine roots; few fine pores; few fine dark concretions; strongly acid; abrupt smooth boundary.

B21tg—26 to 41 inches, gray (10YR 5/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; patchy clay films on faces of peds; few fine roots; few fine pores; few fine dark concretions; coatings of gray silt on some peds; strongly acid; gradual wavy boundary.

B22tg—41 to 51 inches, gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; patchy clay films on faces of peds; few fine roots; few fine pores; few fine dark concretions; coatings of gray silt on some peds; strongly acid; gradual smooth boundary.

B3—51 to 65 inches, gray (10YR 5/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) mottles; moderate medium subangular blocky structure; firm; few fine pores; strongly acid; clear smooth boundary.

Cg—65 to 72 inches, gray (5Y 5/1) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; massive; friable; many fine medium black concretions; slightly acid.

The A horizon ranges from 20 to 34 inches in thickness. The A1 or Ap horizon is dark grayish brown, gray, or grayish brown. The A2 horizon is gray, light gray, or light brownish gray. The B and C horizons are gray, light brownish gray, or light olive gray. The A1 horizon is strongly acid to slightly acid, the A2 and B horizons are strongly acid or very strongly acid, and the C horizon is very strongly acid to neutral.

Zachary soils are chiefly associated with Falaya soils. They have an abrupt textural change from the A horizon to the B horizon that is lacking in Falaya soils. Zachary soils have a B horizon of translocated clay accumulation that is lacking in Falaya soils.

Zachary soils, frequently flooded (Za).—This undifferentiated group consists of mainly Zachary silt loam

and as much as 20 percent of soils that are similar to Zachary silt loam but have a surface layer of silty clay loam. These soils are on flood plains of upland drainageways, mainly along Big Creek and the L'Anguille River. Individual areas range up to a few hundred acres in size. Slope is less than 1 percent. These soils are flooded for short periods, generally between January and June. Floods occur on an average of about once or twice each year. Included in mapping were spots of Falaya soils.

These soils are suited to farming, but flooding is a very severe hazard. Only warm season annual crops that require a short growing season can be safely grown. Clean-tilled crops that leave large amounts of residue can be grown year after year if good management is used.

The main crops are soybeans and grain sorghum. Bermudagrass is a better suited pasture plant than are other plants. Capability unit IVw-4; woodland group 2w6.

Planning the Use and Management of the Soils

The soil survey is a detailed analysis and evaluation of the most basic resource of the survey area—the soil. It may be used to fit the use of the land, including urbanization, to the limitations and potentials of the natural resources and the environment and to help avoid soil-related failures in uses of the land.

During a soil survey soil scientists, conservationists, engineers, and others keep extensive notes, not only about the nature of the soils but also about unique aspects of behavior of these soils in the field and at construction sites. These notes include observations of erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic systems, and other factors relating to the kinds of soil and their productivity, potentials, and limitations under various uses and management. In this way field experience incorporated with measured data on soil properties and performance is used as a basis for predicting soil behavior.

Information in this section will be useful in applying basic facts about the soils to plans and decisions for use and management of soils for crops and pasture, range, woodland, and many nonfarm uses, including building sites, highways and other transportation systems, sanitary facilities, parks and other recreational developments, and wildlife habitat. From the data presented, the potential of each soil for specified land uses may be determined, soil limitations to these land uses may be identified, and costly failures in homes and other structures because of unfavorable soil properties may be avoided. A site can be selected where the soil properties are favorable, or practices can be planned that will overcome the soil limitations.

Planners and others using the soil survey can evaluate the impact of specific land uses on the overall productivity of the survey area or other broad planning area, and on the environment. Both of these factors are closely related to the nature of the soil. Plans can be made to maintain or create a land use pattern in harmony with the natural soil.

Contractors can find information useful in locating sources of sand and gravel, road fill, and topsoil. Other information indicates the presence of bedrock, wetness, or very firm soil horizons that cause difficulty in excavation.

Health officials, highway officials, engineers, and many other specialists can find useful information in this soil survey. The safe disposal of wastes, for example, is closely related to properties of the soil. Pavements, sidewalks, campsites, playgrounds, lawns, trees and shrubs, and most other uses of land are influenced by the nature of the soil.

Crops

W. WILSON FERGUSON, conservation agronomist, Soil Conservation Service, assisted in preparing this section.

The major management concerns when using the soils for crops are described in this section. In addition, the crops best adapted to the soil, including some not commonly grown in the survey area, are discussed; the system of land capability classification used by the Soil Conservation Service is explained; and the predicted yields of the main crops are presented for each soil.

This section provides information about the overall agricultural potential and needed practices in the survey area for those in the agribusiness sector—equipment dealers, drainage contractors, fertilizer companies, processing companies, planners, conservationists, and others. For each kind of soil, information about management is presented in the section "Soil Maps for Detailed Planning." When making plans for management systems for individual fields or farms, check the detailed information given in the description of each soil.

More than 223,670 acres in the survey area was used for crops and pasture in 1969, according to the Census of Agriculture. Of this total 13,306 acres was used for improved pasture; 196,323 acres for row crops, mainly soybeans; 14,576 acres for close-grown crops, mainly rice and wheat; and 2,790 acres for rotation hay and pasture. The rest was idle cropland.

The potential of the soils in Lee County for increased production of food and fiber is good. Food and fiber production could be increased considerably by extending the latest crop production technology to all cropland in the county. This soil survey can greatly facilitate the application of such technology.

Contour cultivation, terraces, vegetated waterways, or combinations of these erosion control treatments are needed on sloping soils that are used for clean-tilled crops. Row arrangement and suitable surface drainage are needed for dependable growth on wet areas. Many tracts that are subject to frequent flooding are unsuited, or only marginally suited, to most crops commonly grown in the county.

Annual cover crops or grasses and legumes should be grown regularly in the cropping system if the erosion hazard is severe or if the crops grown leave only small amounts of residue. Crop residue should be shredded and spread evenly to provide protective cover and active organic matter to the soils.

A plowpan commonly develops in loamy soils that are improperly tilled or are tilled frequently with heavy equipment. Keeping tillage to a minimum, varying the depth of tillage, and tilling when soil moisture content is favorable will help prevent formation of a plowpan. Growing deep-rooted grasses and legumes in the cropping system will help break up plowpans.

If left bare, many soils tend to puddle, crust, and pack during periods of heavy rainfall. Growing cover crops and managing crop residue help preserve or improve tilth.

Perennial grasses or legumes, or mixtures of these, are grown for pasture and hay. The mixtures generally consist of either a summer or a winter perennial grass and a suitable legume.

Coastal bermudagrass, common bermudagrass, improved bermudagrass, dallisgrass, and Pensacola bahiagrass are the summer perennials most commonly grown. Coastal bermudagrass and Pensacola bahiagrass are fairly new to this county, but both are highly satisfactory in production of good-quality forage. Tall fescue, the chief winter perennial grass now grown in the county, grows well only on soils that have a favorable soil-moisture relationship. All of these grasses respond well to fertilizer, particularly to nitrogen. White clover, crimson clover, annual lespedeza, and sericea lespedeza are the most commonly grown legumes.

Proper grazing is essential for the production of high-quality forage, stand survival, and erosion control. Other treatments and management practices, such as brush and weed control, fertilization, and renovation of the pasture, are also important.

Yields Per Acre

The per acre average yields that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in table 5 because of seasonal variations in rainfall and other climatic factors. Absence of a yield estimate indicates that the crop is not suited to or not commonly grown on the soil or that irrigation of a given crop is not commonly practiced on the soil.

The predicted yields are based mainly on the experience and records of farmers, conservationists, and other agricultural workers. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The latest soil and crop management practices used by many farmers in the county are assumed in predicting the yields. Pasture yields are predicted for varieties of grasses suited to the soil. A few farmers may be using more advanced practices and are obtaining average yields higher than those shown in table 5.

The management needed to achieve the indicated yields of the various crops depends upon the kind of soil and the crop. Such management provides drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate tillage practices, including time of tillage and seedbed preparation and tilling when soil moisture is favorable; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residues and green-manure crops; harvest of crops with the smallest possible loss; and timeliness of all fieldwork.

For yields of irrigated crops it is assumed that the irrigation system is adapted to the soils and to the crop grown; that good quality irrigation water is uniformly applied in proper amounts as needed; and that tillage is kept to a minimum. The only irrigated crop in this county is rice. Other crops may receive supplemental irrigation where they are rotated with rice and an irrigation system is available.

The predicted yields reflect the relative productive capacity of the soils for each of the principal crops. Yields are likely to increase in the future as new production technology is developed.

Crops other than those shown in table 5 are grown in the survey area, but because their acreage is small, predicted yields for these crops are not included. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the productivity and management concerns of the soils for these crops.

Capability Classes and Subclasses

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when they are used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops that require special management. This classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for forest trees or for engineerng purposes.

In the capability system, all kinds of soil are grouped at three levels: capability class, subclass, and unit. These levels are defined in the following paragraphs.

CAPABILITY CLASSES, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use.

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w*, *s*, or *c*, because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use to pasture, range, woodland, wildlife habitat, or recreation.

CAPABILITY UNITS are identified in the description of each soil mapping unit. Capability units are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-1 or IIIw-2.

Farmers and others who may find it practical to use and manage different kinds of soil in the same manner can make good use of the capability grouping.

Following is a descriptive outline of the capability grouping in Lee County.

Class I soils have few limitations that restrict their use.

Unit I-1.—Level, well drained, loamy soils on bottom lands and uplands.

Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.

Unit IIe-1.—Gently undulating, well drained, loamy soils on bottom lands.

Unit IIe-2.—Nearly level, somewhat poorly drained to well drained, loamy soils on uplands.

Unit IIw-1.—Level, somewhat poorly drained, loamy soils on uplands.

Unit IIw-2.—Level, somewhat poorly drained, loamy soils on bottom lands.

Unit IIw-3.—Level and gently undulating, somewhat poorly drained, clayey soils on bottom lands.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Unit IIIe-1.—Gently sloping, eroded, moderately well drained and well drained, loamy soils on uplands.

Unit IIIw-1.—Level and gently undulating, poorly drained clayey soils on bottom lands.

Unit IIIw-2.—Level, poorly drained, loamy soils on uplands.

Unit IIIw-4.—Level, poorly drained, loamy soils on uplands.

Unit IIIs-1.—Undulating, excessively drained, loamy and sandy soils on bottom lands.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Unit IVe-1.—Moderately sloping, eroded, moderately well drained and well drained, loamy soils on uplands.

Unit IVw-1.—Level and gently undulating, poorly drained and somewhat poorly drained, predominantly clayey soils on bottom lands subject to frequent flooding.

Unit IVw-2.—Level and gently undulating, excessively drained, sandy soils on bottom lands subject to frequent flooding.

Unit IVw-3.—Level and gently undulating, somewhat poorly drained and well drained, loamy soils on bottom lands subject to frequent flooding.

Unit IVw-4.—Level, poorly drained, loamy soils on bottom lands subject to frequent flooding.

Unit IVs-1.—Level, poorly drained, loamy soils having a high content of sodium throughout the subsoil; on uplands.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and landforms have limitations that nearly preclude their use for commercial crop production.

Woodland Management and Productivity

MAX D. BOLAR, woodland conservationist, Soil Conservation Service, assisted in preparing this section.

When the first settlers arrived in Lee County, virgin forest covered all but the river sandbars and scattered patches where the Indians grew such crops as corn, beans, and squash.

In the lowlands the principal tree species were sweetgum, water tupelo, baldcypress, bottom land oaks, ash, sycamore, cottonwood, and hickory. On the uplands of Crowley Ridge and the associated lower ridges were beech, black walnut, butternut, cucumbertree, black cherry, red oak, black oak, yellow-poplar, white oak, hickory, ash, sycamore, and cottonwood.

Woodland now makes up only about 87,400 acres, or 22 percent of the land area of the county (*12*). About 11,354 acres of the woodland is in the St. Francis National Forest. The rest is privately owned. In recent years, there has been a trend to convert several thousand acres each year from woodland to cropland. It is expected that this trend will continue, but at a gradually reduced rate.

Table 6 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for those soils suitable for wood crops are listed alphabetically by soil name, and the or-

dination symbol for each soil is given. All soils bearing the same ordination symbol require the same general kinds of woodland management and have about the same potential productivity.

The first part of the symbol, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil; *s*, sandy texture; and *r*, steep slopes. The letter *o* indicates no significant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the order in which the letters are listed above—w, s, and r.

The third element in the symbol indicates the degree of management problems and the general suitability of the soils for certain kinds of trees.

The *numeral 1* indicates that the soils have no significant limitation and are best suited to needleleaf trees (pines or redcedar).

The *numeral 2* indicates that the soils have a slight to moderate limitation and are best suited to needleleaf trees.

The *numeral 3* indicates that the soils have a moderate to severe limitation and are best suited to needleleaf trees.

The *numeral 4* indicates that the soils have no significant limitation and are best suited to broadleaf trees.

The *numeral 5* indicates that the soils have a slight to moderate limitation and are best suited to broadleaf trees.

The *numeral 6* indicates that the soils have a moderate to severe limitation and are best suited to broadleaf trees.

The *numeral 7* indicates suitability for both needleleaf and broadleaf trees and no significant limitation.

The *numeral 8* indicates suitability for both needleleaf and broadleaf trees and a slight to moderate limitation.

The *numeral 9* indicates suitability for both needleleaf and broadleaf trees and a moderate to severe limitation.

The *numeral 0* indicates that the soils are not suitable for the production of commercial wood crops.

In table 6 the soils are also rated for a number of factors to be considered in management. The ratings of slight, moderate, and severe are used to indicate the degree of major soil limitations.

Ratings of the hazard of erosion indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small; *moderate* if some measures are needed to control erosion during logging and road construction; and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of equipment limitation reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or equipment; *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree that the soil affects expected mortality of planted tree seedlings when plant competition is not a limiting factor. The ratings are for seedlings from good planting stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality of the planted seedlings is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

The potential productivity of merchantable trees on a soil is expressed as a site index. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands.

Trees to plant are those that are suitable for commercial wood production and that are suited to the soils.

Wildlife Habitat

ROY A. GRIZZELL, JR., biologist, Soil Conservation Service, assisted in preparing this section.

Soils are related to the kinds and abundance of wildlife through the vegetation they support and the habitat the vegetation provides. Desirable habitat depends on the nearness of vegetation to water. The kind and amount of vegetation is closely related to soil characteristics and land use.

All wildlife and fish respond to the basic characteristics of soils. This response is affected in many ways by fertility, slope, wetness, and other characteristics of soils. The permeability rate determines whether or not the soil can be used to impound water in ponds and lakes.

Extensive wooded areas, such as those in the St. Francis National Forest, and a few areas along the Mississippi River, are well suited as habitat for deer, wild turkey, squirrel, and other woodland wildlife. These areas provide suitable food, cover, and drinking water, and wildlife is not unduly disturbed.

Soils directly affect the kind and amount of vegetation that is available to wildlife as food and cover, and they affect the development of water impoundments. The kind and abundance of wildlife that populate an area depend largely on the amount and distribution of food, cover, and water. If any one of these elements is missing, inadequate, or inaccessible, wildlife will either be scarce or will not inhabit the area.

If the soils have the potential, wildlife habitat can be created or improved by planting appropriate vegetation, by properly managing the existing plant cover, and by fostering the natural establishment of desirable plants.

In table 7 the soils in the survey area are rated according to their potential to support the main kinds of wildlife habitat in the area. This information can be used in—

1. Planning the use of parks, wildlife refuges, nature study areas, and other developments for wildlife.
2. Selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat.
3. Determining the intensity of management needed for each element of the habitat.
4. Determining areas that are suitable for acquisition to manage for wildlife.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* means that the element of wildlife habitat or the kind of habitat is easily created, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected if the soil is used for the designated purpose. A rating of *fair* means that the element of wildlife habitat or kind of habitat can be created, improved, or maintained in most places. Moderate intensity of management and fairly frequent attention are required for satisfactory results. A rating of *poor* means that limitations are severe for the designated element or kind of wildlife habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and requires intensive effort. A rating of *very poor* means that restrictions for the element of wildlife habitat or kind of wildlife are very severe, and that unsatisfactory results can be expected. Wildlife habitat is impractical or even impossible to create, improve, or maintain on soils having such a rating.

The elements of wildlife habitat are briefly described in the following paragraphs.

Grain and seed crops are seed-producing annuals used by wildlife. Examples are soybeans, rice, corn, sorghum, wheat, oats, barley, millet, cowpeas, and sunflowers. The major soil properties that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations.

Grasses and legumes are domestic perennial grasses and herbaceous legumes that are planted for wildlife food and cover. Examples are fescue, lovegrass, switchgrass, bristlegrasses, bermudagrass, bahiagrass, panicgrasses, clover, alfalfa, and lespedeza. Major soil properties that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations.

Wild herbaceous plants are native or naturally established herbaceous grasses and forbs, including weeds, that provide food and cover for wildlife. Examples are bluestem, indiangrass, goldenrod, croton, beggarweed, greenbrier, honeysuckle, pokeweed, partridgepea, fescue, paspalum grasses, switch cane, wild beans, wild peas, and strawberries. Major soil properties that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations.

Hardwood trees and the associated woody understory provide cover for wildlife and produce nuts or other fruit, buds, catkins, twigs, bark, or foliage that wildlife eat. Examples of native plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, persimmon, sassafras, sumac, hickory, black walnut, blackberry, grape, blackhaw, viburnum, and pecan. Examples of fruit-producing shrubs that are commercially available and suitable for planting on soils rated good are autumn-olive and crabapple. Major soil properties that affect growth of hardwood trees and shrubs are depth of the root zone, available water capacity, and wetness.

Coniferous plants are cone-bearing trees, shrubs, or ground cover that furnishes habitat or supplies food in the form of browse, seeds, or fruitlike cones. Examples are pine and cedar. Major soil properties that affect the growth of coniferous plants are depth of the root zone, available water capacity, and wetness.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites, exclusive of submerged or floating aquatics. They produce food or cover for wildlife that use wetland as habitat. Examples of wetland plants are smartweed, wild millet, rushes, sedges, reeds, sesbania, rice cutgrass, chufa, delta duckpotato, naiads, pondweeds, and water lilies. Major soil properties affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness.

Shallow water areas are bodies of surface water that have an average depth of less than 5 feet and are useful to wildlife. They can be naturally wet areas, or they can be created by dams or levees or by water-control devices in marshes or streams. Examples are muskrat marshes, waterfowl feeding areas, wildlife watering developments, beaver ponds, and other wildlife ponds. Major soil properties affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. The availability of a dependable water supply is important if water areas are to be developed.

The kinds of wildlife habitat are briefly described in the following paragraphs.

Openland habitat consists of croplands, pastures, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The kinds of wildlife attracted to these areas include bobwhite quail, doves, meadowlark, field sparrow, and cottontail rabbit.

Woodland habitat consists of hardwoods or conifers or a mixture of both, with associated grasses, legumes, and wild herbaceous plants. Examples of wildlife attracted to this habitat are wild turkey, woodcock, thrushes, vireos, woodpeckers, tree squirrels, raccoon, and deer.

Wetland habitat consists of water-tolerant plants in open, marshy, or swampy shallow water areas. Examples of wildlife attracted to this habitat are ducks, geese, herons, shore birds, rails, kingfishers, muskrat, mink, and beaver.

Local representatives of the Soil Conservation Service may be consulted for help in planning and establishing food supply and habitat for a specific area.

Engineering

JAMES L. JANSKI, civil engineer, Soil Conservation Service, assisted in preparing this section.

This section provides information about the use of soils for building sites, sanitary facilities, construction materials, and water management. Among those who can benefit from this section are engineers, landowners, community decision makers and planners, town and city managers, land developers, builders, contractors, and farmers and ranchers.

The ratings in tables in this section are based on test data and estimated data in the "Soil Properties" section. The ratings were determined jointly by soil scientists and engineers of the Soil Conservation Service using known relationships between the soil properties and the behavior of soils in various engineering uses.

Among the soil properties and site conditions identified by the soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to and hardness of bedrock within 5 or 6 feet of the surface, soil wetness characteristics, depth to a seasonal water table, slope, likelihood of flooding, natural soil structure or aggregation, in-place soil density, and geologic origin of the soil material. Where pertinent, data about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of absorbed cations were also considered.

Based on the information assembled about soil properties, ranges of values may be estimated for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, shear strength, compressibility, slope stability, and other factors of expected soil behavior in engineering uses. As appropriate, these values may be applied to each major horizon of each soil or to the entire profile.

These factors of soil behavior affect construction and maintenance of roads, airport runways, pipelines, foundations for small buildings, ponds and small dams, irrigation projects, drainage systems, sewage and refuse disposal systems, and other engineering works. The ranges of values can be used to—(1) select potential residential, commercial, industrial, and recreational areas; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternate routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternate sites for location of sanitary landfills, onsite sewage disposal systems, and other waste disposal facilities; (5) plan detailed onsite investigations of soils and geology; (6) find sources of gravel, sand, clay, and topsoil; (7) plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; (8) relate performance of structures already built to the properties of the kinds of soil on which they are built so that performance of similar structures on the same or a similar soil in other locations can be predicted; and (9) predict the trafficability of soils for cross-country movement of vehicles and construction equipment.

Data presented in this section are useful for land-use planning and for choosing alternative practices or general designs that will overcome unfavorable soil properties and minimize soil-related failures. Limitations to the use of these data, however, should be well understood. First, the data are generally not presented for soil material below a depth of 5 or 6 feet. Also, because of the scale of the detailed map in this soil survey, small areas of soils that differ from the dominant soil may be included in mapping. Thus, these data do not eliminate the need for onsite investigations and testing.

The information is presented mainly in tables. Table 8 shows, for each kind of soil, ratings of the degree and kind of limitations for building site development; table 9, for sanitary facilities; and table 11, for water management. Table 10 shows the suitability of each kind of soil as a source of construction materials.

The information in the tables, along with the soil map, the soil descriptions, and other data provided in this survey can be used to make additional interpretations and to construct interpretive maps for specific uses of land.

Some of the terms used in this soil survey have different meanings in soil science and in engineering; the Glossary defines many of these terms.

Building Site Development

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 8. A *slight* limitation indicates that soil properties are favorable for the specified use; any limitation is minor and easily overcome. A *moderate* limitation indicates that soil properties and site features are unfavorable for the specified use, but the limitations can be overcome or minimized by special planning and design. A *severe* limitation indicates one or more soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design, or intensive maintenance is required. For some soils rated severe, such costly measures may not be feasible.

Shallow excavations are used for pipelines, sewerlines, telephone and power transmission lines, basements, open ditches, and cemeteries. Such digging or trenching is influenced by the soil wetness of a high seasonal water table, the texture and consistence of soils, the tendency of soils to cave in or slough, and the presence of very firm, dense soil layers. In addition, excavations are affected by slope of the soil and the probability of flooding. Ratings do not apply to soil horizons below a depth of 6 feet unless otherwise noted.

In the soil series descriptions, the consistence of each soil horizon is defined, and the presence of very firm or extremely firm horizons, usually difficult to excavate, is indicated.

Dwellings and small commercial buildings referred to in table 8 are built on undisturbed soil and have foundation loads of a dwelling no more than three stories high. Separate ratings are made for small commercial buildings without basements and for dwellings with and without basements. For such structures, soils should be sufficiently stable that cracking or subsidence from settling or shear failure of the foundation do not occur. These ratings were determined from estimates of the shear strength, compressibility, and shrink-swell potential of the soil. Soil texture, plasticity and in-place density, soil wetness, and depth to a seasonal high water table were also considered. Soil wetness and depth to a seasonal high water table indicate potential difficulty in providing adequate drainage for basements, lawns, and gardens. Slope is also an important consideration in the choice of sites for these structures and was considered in determining the ratings. Susceptibility to flooding is a serious limitation.

Local roads and streets referred to in table 8 have an all-weather surface that can carry light to medium traffic all year. They consist of subgrade of the underlying soil material; a base of gravel, crushed rock fragments, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. The roads are graded with soil material at hand, and most cuts and fills are less than 6 feet deep.

The load supporting capacity and the stability of the soil as well as the quantity and workability of fill material available are important in design and construction of roads and streets. The AASHTO (*1*) and Unified classifications (*2*) of the soil and the soil texture, density, and shrink-swell potential are indicators of the traffic supporting capacity used in making the ratings. Soil wetness, flooding, slope, depth to hard rock or very compact layers, and content of large stones, all of which affect stability and ease of excavation, were also considered.

Sanitary Facilities

Favorable soil properties and site features are needed for proper functioning of septic tank absorption fields, sewage lagoons, and sanitary landfills. The nature of the soil is important in selecting sites for these facilities and in identifying limiting soil properties and site features to be considered in design and installation. Also, those soil properties that deal with the ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 9 shows the degree and kind of limitations of each soil for these uses and for use of the soil as daily cover for landfills.

If the degree of soil limitation is indicated by the rating *slight*, soils are favorable for the specified use and limitations are minor and easily overcome; if *moderate*, soil properties or site features are unfavorable for the specified use, but limitations can be overcome by special planning and design; and if *severe*, soil properties or site features are so unfavorable or difficult to overcome that major soil reclamation, special designs, or intensive maintenance is required.

Septic tank absorption fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into the natural soil. Only the soil horizons between depths of 18 and 72 inches are evaluated for this use. The soil properties and site features considered are those that affect the absorption of the effluent and those that affect the construction of the system.

Properties and features that affect the absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Excessive slope may cause lateral seepage and surfacing of the effluent in downslope areas. Also, soil erosion and soil slippage are hazards where absorption fields are installed in sloping soils.

Some soils are underlain by loose sand and gravel at a depth less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and as a result ground water supplies in the area may be contaminated.

Percolation tests are performed to determine the absorptive capacity of the soil and its suitability for septic tank absorption fields. These tests should be performed during the season when the water table is highest and the soil is at minimum absorptive capacity.

In many of the soils that have moderate or severe limitations for septic tank absorption fields, it may be possible to install special systems that lower the seasonal water table or to increase the size of the absorption field so that satisfactory performance is achieved.

Sewage lagoons are shallow ponds constructed to hold sewage while bacteria decompose the solid and liquid wastes. Lagoons have a nearly level flow area surrounded by cut slopes or embankments of compacted, nearly impervious soil material. They generally are designed so that depth of the sewage is 2 to 5 feet. Impervious soil for the lagoon floor and sides is required to minimize seepage and contamination of local ground water. Unless the soil has very slow permeability, contamination of local ground water is a hazard in areas where the seasonal high water table is above the level of the lagoon floor. In soils where the water table is seasonally high, seepage of ground water into the lagoon can seriously reduce its capacity for liquid waste. Slope and susceptibility to flooding also affect the location of sites for sewage lagoons or the cost of construction. Shear strength and permeability of compacted soils affect the performance of embankments.

Sanitary landfill is a method of disposing of solid waste, either in excavated trenches or on the surface of the soil. The waste is spread, compacted in layers, and covered with thin layers of soil. Landfill areas are subject to heavy vehicular traffic. Ease of excavation, risk of pol-

luting ground water, and trafficability affect the suitability of a soil for this purpose. The best soils have a loamy or silty texture, have moderate or slow permeability, are deep to a seasonal water table, and are not subject to flooding. In areas where the seasonal water table is high, water seeps into the trenches and causes problems in excavating and filling the trenches. Also, seepage into the refuse increases the risk of pollution of ground water. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability that might allow noxious liquids to contaminate local ground water.

Unless otherwise stated, the ratings in table 9 apply only to soil properties and features within a depth of about 6 feet. If the trench is deeper, ratings of slight or moderate may not be valid. Site investigation is needed before a site is selected.

In the area type of sanitary landfill, refuse is placed on the surface of the soil in successive layers. The limitations caused by soil texture do not apply to this type of landfill. Soil wetness, however, may be a limitation because of difficulty in operating equipment.

Daily cover for sanitary landfills should be soil that is easy to excavate and spread over the compacted fill during both wet and dry periods. Soils that are loamy are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

In addition to these features, the soils selected for final cover of landfills should be suitable for growing plants. In comparison with other horizons, the A horizon in most soils has the best workability, more organic matter, and the best potential for growing plants. Thus, for either the area- or trench-type landfill, stockpiling material from the A horizon for use as the surface layer of the final cover is desirable.

Where it is necessary to bring in soil material for daily or final cover, thickness of suitable soil material available and depth to a seasonal high water table in soils surrounding the sites should be evaluated. Other factors to be evaluated are those that affect reclamation of the borrow areas, such as slope, erodibility, and potential for plant growth.

Construction Materials

The suitability of each soil as a source of road fill, sand, gravel, and topsoil is indicated in table 10 by ratings of good, fair, or poor. The texture, thickness, and organic-matter content of each soil horizon are important factors in rating soils for use as construction materials. Each soil is evaluated to the depth observed and described as the survey is made, generally about 6 feet.

Road fill is soil material used in embankments for roads. The ratings reflect the ease of excavating and working the material and the expected performance of the material after it has been compacted and adequately drained. The performance of soil after it is stabilized with lime or cement is not considered in the ratings, but information about soil properties that determine such performance is given in the descriptions of soil series.

The ratings apply to the soil profile between the A horizon and a depth of 5 to 6 feet. It is assumed that soil horizons will be mixed during excavation and spreading. Many soils have horizons of contrasting suitability within the profile. The estimated engineering properties in table 13 provide more specific information about the nature of each horizon that can help determine its suitability for road fill.

According to the Unified soil classification system, soils rated *good* have low shrink-swell potential. They are at least moderately well drained and have slopes of 15 percent or less. Soils rated *fair* have a plasticity index of less than 15 and have other limiting features, such as high shrink-swell potential, steep slopes, or wetness. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*, regardless of the quality of the suitable material.

Sand and gravel are used in great quantities in many kinds of construction. The ratings in table 10 provide guidance as to where to look for probable sources and are based on the probability that soils in a given area contain sizable quantities of sand or gravel. A soil rated *good* or *fair* has a layer of suitable material at least 3 feet thick, the top of which is within a depth of 6 feet. Coarse fragments of soft bedrock material, such as shale and siltstone, are not considered to be sand and gravel. Fine-grained soils are not suitable sources of sand and gravel.

The ratings do not take into account depth to the water table or other factors that affect excavation of the material. Descriptions of grain size, kinds of minerals, reaction, and stratification are given in the soil series descriptions and in table 13.

Topsoil is used in areas where vegetation is to be established and maintained. Suitability is affected mainly by the ease of working and spreading the soil material in preparing a seedbed and by the ability of the soil material to sustain the growth of plants. Also considered is the damage that would result to the area from which the topsoil is taken.

Soils rated *good* have at least 16 inches of friable loamy material at their surface. They are low in content of gravel and other coarse fragments and have gentle slopes. They are low in soluble salts, which can limit plant growth. They are naturally fertile or respond well to fertilization. They are not so wet that excavation is difficult during most of the year.

Soils rated *fair* are loose sandy or firm loamy or clayey soils in which the suitable material is only 8 to 16 inches thick or soils that have appreciable amounts of gravel or soluble salt.

Soils rated *poor* are very sandy soils, very firm clayey soils, soils with suitable layers less than 8 inches thick, soils having large amounts of gravel or soluble salt, steep soils, and poorly drained soils.

Although a rating of *good* is not based entirely on high content of organic matter, a surface horizon is much preferred for topsoil because of its organic-matter content. This horizon is designated as A1 or Ap in the soil series descriptions. The absorption and retention of moisture and nutrients for plant growth are greatly increased by organic matter. Consequently, careful preservation and use of material from these horizons is desirable.

Water Management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 11 the degree of soil limitation and soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water control structures.

Soil and site limitations are expressed as slight, moderate, and severe. *Slight* means that the soil properties and site features are generally favorable for the specified use and that any limitation is minor and easily overcome. *Moderate* means that some soil properties or site features are unfavorable for the rated use but can be overcome or modified by special planning and design. *Severe* means that the soil properties and site features are so unfavorable and so difficult to correct or overcome that major soil reclamation, special design, or intensive maintenance is required.

Pond reservoir areas hold water behind a dam or embankment. Soils suitable for this use have low seepage potential, which is determined by the permeability and depth over fractured or permeable bedrock or other permeable material.

Embankments, dikes, and levees require soil material that is resistant to seepage, erosion, and piping and is of favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Organic matter in a soil downgrades the suitability of a soil for use in embankments, dikes, and levees.

An *aquifer-fed excavated pond* is a body of water created by excavating a pit or dugout into a ground-water aquifer. Excluded are ponds that are fed by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Ratings in table 11 are for ponds that are properly designed, located, and constructed. Soil properties and site features that affect aquifer-fed ponds are depth to a permanent water table, permeability of the aquifer, quality of the water, and ease of excavation.

Drainage of soil is affected by such soil properties as permeability, texture, structure, depth to claypan or other layers that influence rate of water movement, depth to the water table, slope, stability of ditchbanks, susceptibility to flooding, salinity and alkalinity, and availability of outlets for drainage.

Irrigation is affected by such features as slope, susceptibility to flooding, hazards of water erosion and soil blowing, texture, presence of salts and alkali, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, available water capacity, need for drainage, and depth to the water table.

Terraces and diversions are embankments, or a combination of channels and ridges, constructed across a slope to intercept runoff and allow the water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity of slope and steepness, depth to bedrock or other unfavorable material, permeability, ease of establishing vegetation, and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff at nonerosive velocities to outlets. Features that affect the use of soils for waterways are slope, permeability, erodibility, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 12 according to limitations that affect their suitability for camp areas, picnic areas, playgrounds, and paths and trails. The ratings are based on such restrictive soil features as flooding, wetness, slope, and texture of the surface layer. Not considered in these ratings, but important in evaluating a site, are location and accessibility of the area, size and shape of the area and its scenic quality, the ability of the soil to support vegetation, access to water, potential water impoundment sites available, and either access to public sewerlines or capacity of the soil to absorb septic tank effluent. Soils subject to flooding are limited, in varying degree, for recreational use by the duration of flooding and the season when it occurs. Onsite assessment of height, duration, and frequency of flooding is essential in planning recreational facilities.

In table 12 the limitations of soils are rated as slight, moderate, or severe. *Slight* means that the soil properties are generally favorable and that the limitations are minor and easily overcome. *Moderate* means that the limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 12 can be supplemented by additional information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 9, and interpretations for dwellings without basements and for local roads and streets, given in table 8.

Camp areas require such site preparation as shaping and leveling tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils for this use have mild slopes and are not wet or subject to flood-

ing during the period of use. The surface absorbs rainfall readily, but remains firm and is not dusty when dry. Strong slopes can greatly increase the cost of constructing camping sites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for use as picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes that will increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is firm after rains and is not dusty when dry.

The design and layout of paths and trails for walking, horseback riding, and bicycling should require little or no cutting and filling. The best soils for this use are those that are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once during the period of use. They should have moderate slopes.

Soil Properties

Extensive data about soil properties collected during the soil survey are summarized on the following pages. The two main sources of these data are the many thousands of soil borings made during the course of the survey and the laboratory analyses of samples selected from representative pedons in the field.

When he makes soil borings during field mapping, the soil scientist can identify several important soil properties. He notes the seasonal soil moisture condition, or the presence of free water and its depth in the profile. For each horizon, he notes the thickness of the soil and its color; the texture, or the amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or natural pattern of cracks and pores in the undisturbed soil; and the consistence of soil in place under the existing soil moisture conditions. He records the root depth of existing plants, determines soil pH or reaction, and identifies any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to characterize key soils, especially properties that cannot be estimated accurately by field observation. Laboratory analyses are not conducted for all soil series in the survey area, but laboratory data for many of the soil series are available from nearby areas.

Based on summaries of available field and laboratory data, and listed in tables in this section, are estimated ranges in engineering properties and classifications and in physical and chemical properties for each major horizon of each soil in the survey area. Also, pertinent soil and water features and data obtained from laboratory analyses, both physical and chemical, are presented.

Engineering Properties and Classifications

Table 13 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area. These estimates are presented as ranges in values most likely to exist in areas where the soil is mapped.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Information is presented for each of these contrasting horizons. Depth to the upper and lower boundaries of each horizon in a typical profile of each soil is indicated. More information about the range in depth and in properties of each horizon is given for each soil series in the section "Soil Maps for Detailed Planning."

Texture is described in table 13 in standard terms used by the United States Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. "Loam," for example, is soil material that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains gravel or other particles coarser than sand, an appropriate modifier is added, for example, "gravelly loam." Other texture terms used by USDA are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (USCS) and the American Association of State Highway and Transportation Officials Soil Classification System (AASHTO). In table 13 soils in the survey area are classified according to both systems.

The USCS classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter, plasticity index, liquid limit, and organic-matter content. Soils are grouped into 15 classes—eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes have a dual classification symbol, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect their use in highway construction and maintenance. In this system a mineral soil is classified as one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines. At the other extreme, in group A-7, are fine-grained soils. Highly organic soils are classified as A-8 on the basis of visual inspection.

When laboratory data are available, the A-1, A-2, and A-7 groups are further classified as follows: A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As an additional refinement, the desirability of soils as subgrade material can be indicated by a group index number. These numbers range from 0 for the best subgrade material to 20 or more for the poorest. The estimated AASHTO clas-

sification, without group index numbers, is given in table 13. Also in table 13 the percentage, by weight, of cobbles or the rock fragments more than 3 inches in diameter are estimated for each major horizon. These estimates are determined largely by observing volume percentage in the field and then converting it, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four standard sieves is estimated for each major horizon. The estimates are based on tests of soils that were sampled in the survey area and in nearby areas and on field estimates from many borings made during the survey.

Liquid limit and plasticity index indicate the effect of water on the strength and consistency of soil. These indexes are used in both the USCS and the AASHTO soil classification system. They are also used as indicators in making general predictions of soil behavior.

Range in liquid limit and plasticity index is estimated on the basis of test data from nearby areas and on observations of the many soil borings made during the survey.

Physical and Chemical Properties

Table 14 shows estimated values for several soil characteristics and features that affect behavior of soils in engineering uses. These estimates are given for each major horizon, at the depths indicated, in the representative profile of each soil. The estimates are based on field observations and on test data for these and similar soils.

Permeability is estimated on the basis of known relationships among the soil characteristics observed in the field—particularly soil structure, porosity, and gradation or texture—that influence the downward movement of water in the soil. The estimates are for water movement in a vertical direction when the soil is saturated. Not considered in the estimates is lateral seepage or such transient soil features as plowpans and surface crusts. Permeability of the soil is an important factor to be considered in the planning and design of drainage systems, in evaluating the potential of soils for septic tank systems and other waste disposal systems, and in many other aspects of land use and management.

Available water capacity is rated on the basis of soil characteristics that influence the ability of the soil to hold water and make it available to plants. Important characteristics are content of organic matter, soil texture, and soil structure. Shallow-rooted plants are not likely to use the available water from the deeper soil horizons. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design of irrigation systems.

Soil reaction is expressed as range in pH values. The range in pH of each major horizon is based on many field checks. For many soils, the values have been verified by laboratory analyses. Soil reaction is important in selecting the crops and ornamental or other plants to be grown, in evaluating soil amendments for fertility and stabilization, and in evaluating the corrosivity of soils.

Shrink-swell potential depends mainly on the amount and kind of clay in the soil. Laboratory measurements of the swelling of undisturbed clods were made for many soils. For others it was estimated on the basis of the kind of clay and on measurements of similar soils. Size of imposed loadings and the magnitude of changes in soil moisture content are also important factors that influence the swelling of soils. Shrinking and swelling of some soils can cause damage to building foundations, basement walls, roads, and other structures unless special designs are used. A *high* shrink-swell potential indicates that special design and added expense may be required if the planned use of the soil will not tolerate large volume changes.

Risk of corrosion, as used in table 14, pertains to potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to soil moisture, particle-size distribution, total acidity, and electrical conductivity of the soil material. The rating of soils for corrosivity to concrete is based mainly on the sulfate content, soil texture, and acidity. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Installations of steel that intersect soil boundaries or soil horizons are more susceptible to corrosion than installations entirely within one kind of soil or within one soil horizon.

The soil erodibility factor K is a measure of the rate at which soil will erode. Soil properties that influence erodibility by water are those that affect infiltration rate, movement of water through the soil, water storage capacity, and resistance to dispersion, splashing, abrasion, and transporting forces from rainfall and runoff. Soil-loss tolerance T, sometimes called permissible soil loss, is the maximum rate of soil erosion that will permit a high level of crop productivity to be sustained economically and indefinitely. These rates are expressed in terms of soil loss per acre per year. Rates of 1 to 5 tons are used, depending upon soil properties, soil depth, and prior erosion.

Soil and Water Features

Features that relate to runoff or infiltration of water, to flooding, and to grading and excavation of each soil are indicated in table 15. This information is helpful in planning land uses and engineering projects that are likely to be affected by the amount of runoff from watersheds, by flooding and a seasonal high water table, and by the presence of bedrock or a cemented pan in the upper 5 or 6 feet of the soil.

Hydrologic groups are used to estimate runoff after rainfall. Soil properties that influence the minimum rate of infiltration into the bare soil are depth to a water table after prolonged wetting, water intake rate and permeability after prolonged wetting, and depth to layers of slowly or very slowly permeable soil.

Flooding is rated in general terms that describe the frequency, duration, and period of the year when flooding

is most likely. The ratings are based on evidences in the soil profile of the effects of flooding, namely thin strata of gravel, sand, silt, or, in places, clay deposited by floodwater; irregular decrease in organic-matter content with increasing depth; absence of distinctive soil horizons that form in soils of the area that are not subject to flooding; local information about floodwater heights and the extent of flooding; and local knowledge that relates the unique landscape position of each soil to historic floods. Most soils in low positions on the landscape where flooding is likely to occur are classified as fluvents at the suborder level or as fluventic subgroups. See the section "Classification of the Soils."

The generalized description of flood hazards is of value in land use planning and provides a valid basis for land use restrictions. The soil data are less specific, however, than those provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

A seasonal high water table is the highest level of a saturated zone more than 6 inches thick in soils for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed during the course of the soil survey. Indicated are the depth to the seasonal high water table, the kind of water table, and the months of the year that the high water commonly is present. Only those saturated zones above a depth of 5 or 6 feet are indicated.

Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not to construct basements and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Physical and Chemical Analyses of Selected Soils

Physical and chemical data resulting from laboratory analyses can be useful to the soil scientist in classifying soils. These data are helpful in estimating available water capacity, acidity, cation exchange capacity, mineralogical composition, organic matter content, and other soil characteristics that affect management needs. The data are also helpful in developing concepts of soil formation. More recently, laboratory data have proved helpful in rating soils for nonfarm uses, that is, for residential, industrial, recreational, or transportational use.

Several factors are involved in selecting soils for laboratory analyses. Soils that are extensive and most important in the survey area are considered first. A review of available laboratory data is made to determine the need for additional information on these particular soils. Generally, priority is given to soils for which little or no laboratory data are available.

In Lee County, soils representing 16 soil series were selected for laboratory analyses. Profiles of these soils are described in the section "Descriptions of the Soils." The analyses were made by the University of Arkansas in Fayetteville. Tables 16 and 17 show the results.

Silt and clay particle-size distribution was determined by the hydrometer method (*3*). Sands were measured by sieving (*11*).

Organic matter was determined by a modified Walkley-Black method (*5*). The organic matter is digested with potassium dichromatesulfuric acid, and the quantity of chromic acid reduced is measured colorimetrically.

Soil pH was determined on 1:1 soil to water mixture. Available phosphorus was extracted with the Bray No. 1 solution (0.03 N ammonium fluoride and 0.025 N hydrochloric acid) and measured colorimetrically.

The bases were extracted with 1 N, pH 7.0, ammonium acetate. Calcium, potassium, and sodium were determined with a flamephotometer and magnesium was measured by atomic absorption. The extractable acidity was determined by the barium chloridetriethanolamine method (*11*).

The total of extractable calcium, potassium, magnesium, sodium, and extractable acidity is an approximation of the cation exchange capacity of the soil. Except in soils that contain soluble salts, base saturation was determined by dividing this total into the sum of calcium, potassium, magnesium, and sodium and multiplying by 100.

Formation and Classification of the Soils

This section discusses the factors of soil formation, relates them to the formation of soils in the survey area, and explains the processes of soil formation. It also defines the current system of classifying soils and classifies the soils of the area according to that system.

Factors of Soil Formation

Soil is a natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

The interaction of five main factors results in differences among the soils. These factors are the physical and chemical composition of the parent material; the climate during and after the accumulation of the parent material; the kind of plants and organisms living in the soil; the relief of the land and its effect on runoff; and the length of time it took the soil to form.

The effect of a factor can differ from place to place, but the interaction of all the factors determines the kind of soil that forms. In the following paragraphs the factors

of soil formation are discussed as they relate to the soils in the survey area.

Climate

The climate of Lee County is characterized by mild winters, warm or hot summers, and generally abundant rainfall. The generally warm temperatures and high precipitation probably are similar to the climate under which the soils in the county formed. The average daily maximum temperature at Marianna in July is about 92 degrees F., and the average in January is about 51 degrees. The total annual rainfall is about 49 inches and is well distributed throughout the year. For additional information about the climate, refer to the section "General Nature of the County."

The warm, moist climate promotes rapid soil formation, and the warm temperature encourages rapid chemical reactions. The large amount of water that moves through the soil is instrumental in removing dissolved or suspended material. Because remains of plants decompose rapidly, the organic acids thus formed hasten the formation of clay minerals and removal of carbonates. Because the soil is frozen only to shallow depths and for short periods, soil formation continues almost the year round. The climate throughout the county is uniform, though its effect is modified locally by runoff. Climate alone does not account for differences in the soils of the county.

Living Organisms

The higher plants and animals, as well as insects, bacteria, and fungi, are important in the formation of soils. Among the changes they cause are gains and losses in organic matter and nitrogen in the soils, gains or losses in plant nutrients, and changes in structure and porosity.

Before Lee County was settled, the native vegetation probably had more influence on soil formation than did animal activity. Hardwood forests, broken by swamps, sandbars, and a few canebrakes, covered the county. Differences in native vegetation seem to have been related mainly to variations in drainage and to a lesser degree, parent material. Because the type of vegetation was relatively uniform over the county, differences among the soils cannot be directly related to vegetation.

Man is important to the future rate and direction of soil formation. He clears the forest, cultivates the soils, and introduces new kinds of plants. He adds fertilizer and lime and chemicals for insect, disease, and weed control. Building levees for flood control, improving drainage, and grading the soil surface also affect the future development of soils. Results of these changes may not be evident for many centuries. Nevertheless, the complex of living organisms affecting soil formation in this county has been drastically changed by man.

Parent Material

The soils of Lee County formed in water-deposited alluvium and wind-transported loess.

The alluvium was deposited by the Mississippi and Ohio Rivers (*4*) and in part reworked by the St. Francis River and other major tributaries of the Mississippi River. The alluvium in the eastern part of the county consists of a mixture of minerals washed from the many kinds of soil, rocks, and unconsolidated sediments in about 24 States (*14*). In this great basin, which extends from Montana to Pennsylvania, sedimentary rocks of various kinds are widespread. Other kinds of rocks also are exposed in many places and serve as sediment sources. Large areas of the upper basin are mantled by glacial drift and loess. Consequently, the alluvium consists of many kinds of minerals, most of which are but slightly weathered.

The wide range in texture of alluvium in the county results from differences in the site of deposition. When a river overflows and spreads over its flood plain, the coarse sediments are deposited in bands roughly parallel to the channel. Thus, low ridges known as natural levees are formed (*14*). On these ridges Bruno, Dubbs, and Robinsonville soils formed. Finer sediments, high in silt, are deposited as the floodwaters spread and lose velocity. These sediments contain some sand and clay. Here, soils such as Commerce and Dundee formed. When the flood recedes and water is left standing as shallow lakes or swamps, the clay and finer silt settle. In these sediments the Alligator, Newellton, Sharkey, and Tunica soils formed.

This simple pattern of sediment distribution is not now common along the Mississippi River, because through the centuries the river channel has meandered back and forth across the flood plain. Sometimes the channel has cut out all or parts of natural levees. At other times it has deposited sandy or loamy sediments over slack-water clays, or slack-water clays over sandy or loamy sediments. The natural pattern of sediment distribution from a single channel has been truncated in many places, and more recent beds of alluvium have been superimposed. Newellton and Tunica soils, which formed in thin beds of clayey over coarser sediments, are examples of soils formed in these kinds of materials.

The soils on the uplands of the county formed in loess deposited during the Pleistocene epoch. This mantle of wind-transported material was deposited over older alluvium. The mantle is thick enough that the sola of the soils formed entirely in loess.

On Crowley Ridge the loess is 5 to more than 40 feet thick over a sandy and gravelly substratum. This substratum is exposed in gravel pits on the east face of the Ridge. It is a remnant of a broad outwash plain that once filled the Mississippi River Valley at this latitude but was mostly removed before or during late Pliocene or early Pleistocene epochs. During much of the Pleistocene epoch, the Mississippi River flood plain was west of Crowley Ridge, and the Ohio River flowed on the east side of the ridge (*4*).

Thousands of years ago the wide trough carved west of Crowley Ridge was partially refilled with sediments by the Mississippi River in much the same manner as the

river deposits of recent time were laid down. Finally, the vast complex of alluvial terraces west of the ridge was abandoned by the Mississippi River in favor of the Ohio River channel on the east side of the ridge. The broad, abandoned flood plain was subsequently drained by smaller, more localized streams that occupied former braided channels of the Mississippi River. These smaller streams were inadequate to maintain the entire area as an active flood plain. Those parts of the plain above overflow were progressively mantled with loess during the same general period that the loess on Crowley Ridge was laid down. Generally the loess has the same range in thickness on the plain as on the ridge. On the level parts of the plain, poorly drained soils, such as Henry and Calhoun, formed. In the nearly level to gently sloping areas, moderately well drained soils, such as Grenada and Loring, formed. The somewhat poorly drained Calloway and Loring formed at intermediate positions.

The mantle of loess is unstratified and is mainly of silt-size particles.

The loess in Lee County is typical of the loess on the Southern Mississippi Valley Silty Uplands. Most soils formed in the loess are acid, though the content of bases is moderately high. An exception is the Natchez soils. They formed either in the youngest loess or on surfaces where erosion has more nearly kept pace with soil formation. These soils are predominantly neutral to moderately alkaline, being less leached than other soils formed in the loess.

Relief

Relief is the inequalities in elevation of a land surface. The other soil-forming factors are affected by relief through its effect on drainage, runoff, erosion, and percolation of water through the soil. Some of the greatest differences among the soils are mainly the result of differences in relief.

The bottom land area of Lee County has relief ranging from broad flats to undulating areas of alternating swales and low ridges. Dubbs soils formed on the low ridges, whereas Dundee soils formed in similar parent material but on lower, wetter positions in the landscape. Local differences in elevation are predominantly less than 1 foot, but range up to 4 or 5 feet in the areas of swales and low ridges. Differences in a few areas along streambanks are as much as 15 to 20 feet, but the total area of this greater relief is negligible. The highest elevation in the bottom land area, about 200 feet above sea level, is in the northeastern part near Kokomo. The lowest elevation, about 170 feet above sea level, is in the southeastern part, along the Mississippi River. Crowley Ridge is in the upland area and is located in the central part of the county. It is about 3 miles wide and crosses the county in a north-south direction. The relief is characterized by short slopes between ridges and streams. Gradient ranges from 12 to 40 percent. The highest point above sea level is about 340 feet and the lowest about 250 feet. The well drained Memphis and Natchez soils formed on these moderately steep and steep slopes.

That part of the uplands west of Crowley Ridge is level to moderately sloping. Most of it is level or nearly level. This area is poorly drained level tracts where Henry and Calhoun soils formed, broken by low ridges where mainly Calloway, Grenada, and Loring soils formed. The highest elevation above sea level is about 240 feet, adjacent to Crowley Ridge, and the lowest is about 170 feet, along Big Creek.

Time

The length of time required for formation of a soil depends largely upon other factors of soil formation. Less time generally is required if the climate is warm and humid and the vegetation is luxuriant. If other factors are equal, less time also is required where the parent material is sandy or loamy than where it is clayey. It seems probable that the sediments now forming most of the land surface in Lee County were deposited during and after the advance of the continental glaciers. The last of these glaciers retreated from the North-Central States about 11,000 years ago (*6*, *7*). Thus, in terms of geologic time, the soils in Lee County are young. In terms of soil formation, the age of the soils in the county varies widely. On the smoother parts of the uplands, the soils are more mature, but on the stronger slopes where geologic erosion has more nearly kept pace with soil formation, the soils have less thick, less strongly developed horizons. On young natural levees and in areas of local alluvium, the soil material has been in place so short a time that the soils show relatively little evidence of development. Many such areas receive fresh deposits of sediments at frequent intervals. In these areas are such soils as Mhoon, Falaya, Bruno, Commerce, and Robinsonville.

Processes of Soil Formation

In this subsection a brief definition of the horizon nomenclature and processes responsible for soil formation are given.

The marks that the soil-forming factors leave on the soil are recorded in the soil profile, which is a succession of layers, or horizons, from the surface to the parent material that has been altered but little by soil-forming processes. The horizons differ in one or more properties, such as color, texture, structure, consistence, porosity, and reaction.

Most soil profiles contain three major horizons, called A, B, and C. Very young soils do not have a B horizon.

The A horizon can be the horizon of maximum accumulation of organic matter, called the A1 horizon or the surface layer, or it can be the horizon of maximum leaching of dissolved or suspended materials, called the A2 horizon or the subsurface layer.

The B horizon lies immediately beneath the A horizon and is sometimes called the subsoil. It is a horizon of maximum accumulation of dissolved or suspended materi-

als, such as iron and clay. Commonly, the B horizon has blocky structure (*13*) and is firmer than the horizons immediately above and below it.

Beneath the B is the C horizon, which has been affected but little by the soil-forming processes. The C horizon can be materially modified by weathering. In some young soils, the C horizon immediately underlies the A horizon and has been slightly modified by living organisms, as well as by weathering.

Several processes have been active in the formation of soil horizons in the soils of Lee County. Among these processes are (1) the accumulation of organic matter, (2) the leaching of calcium carbonates and bases, (3) the reduction and transfer of iron, and (4) formation and translocation of silicate clay minerals. In most of the soils of the county, more than one of these processes has been active in soil formation.

Accumulation of organic matter in the upper part of the profile to form an A1 horizon has been an important process of soil formation. The soils of Lee County range from high to low in content of organic matter.

Leaching of carbonates and bases has occurred to some degree in nearly all the soils of Lee County. Among soil scientists, it is generally accepted that bases are leached downward in soils before silicate clay minerals begin to move. Some of the soils, such as Mhoon and Natchez soils, are only slightly leached, but most of the soils in the county are moderately leached, an important factor in horizon development.

Reduction and transfer of iron has occurred to a significant degree in the somewhat poorly drained and poorly drained soils of the county. In the naturally wet soils, this process is called gleying. Gray colors in the layers below the surface layer indicate the reduction and loss of iron. Some horizons contain reddish or yellowish mottles and concretions derived from segregated iron. Gleying is pronounced in many of the soils. Among the strongly gleyed soils are the Alligator, Sharkey, Tunica, Henry, Calhoun, Mhoon, and Zachary soils.

In several soils of Lee County the translocation of clay minerals has contributed to the formation of horizons. In most places the eluviated A2 horizon has been destroyed by cultivation, but in areas where an A2 horizon occurs, its structure is blocky to platy; clay content is less than in the lower horizons; and the soil is lighter in color. Generally, clay films have accumulated in pores and on surfaces of peds in the B horizon. The soils were probably leached of carbonates and soluble salts to a great extent before translocation of silicate clay occurred, even though the content of bases is still high in all soils of the county.

Leaching of bases and translocation of silicate clay are among the most important processes in horizon differentiation in the soils of Lee County.

Classification of the Soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to the latest literature available (*8, 10*).

The system of classification has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. In this system the bases for classification are the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table 18 the soils of the survey area are classified according to the system. Classes of the system are briefly discussed in the following paragraphs.

ORDER. Ten soil orders are recognized. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in *sol*. An example is Alfisols.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that were selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Udalfs (*Ud*, meaning humid, plus *alf*, from Alfisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. The name of a great group ends with the name of a suborder. A prefix added to the name suggests something about the properties of the soil. An example is Hapludalfs (*Hapl*, meaning simple horizons, plus *udalfs*, the suborder of Alfisols that have a udic moisture regime).

SUBGROUP. Each great group is divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades that have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. The names of subgroups are derived by placing one or more adjectives before the name of the great group. The adjective *Typic* is used for the subgroup that is thought to typify the great group. An example is Typic Hapludalfs.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family dif-

ferentiae. An example is fine-silty, mixed, thermic Typic Hapludalfs.

SERIES. The series consists of a group of soils that are formed from a particular kind of parent material and have horizons that, except for texture of the surface soil, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

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Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is 40 or 80 inches (1 or 2 meters).

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

O horizon.—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

A horizon.—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is

mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

A2 horizon.—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three single variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are *very slow* (less than 0.06 inch), *slow* (0.06 to 0.20 inch), *moderately slow* (0.2 to 0.6 inch), *moderate* (0.6 to 2.0 inches), *moderately rapid* (2.0 to 6.0 inches), *rapid* (6.0 to 20 inches), and *very rapid* (more than 20 inches).

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea. A stream terrace is frequently called a second bottom, in contrast with a flood plain, and is seldom subject to overflow. A marine terrace, generally wide, was deposited by the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt*, *silt loam*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Figure 1.—Rice on Calloway silt loam, 0 to 1 percent slopes. Contour levees are required to control the depth of the water table.

Figure 2.—Spring flooding on Commerce soils, frequently flooded.

Figure 3.—Soybeans on Henry silt loam.

Figure 4.—Rice on Hillemann silt loam.

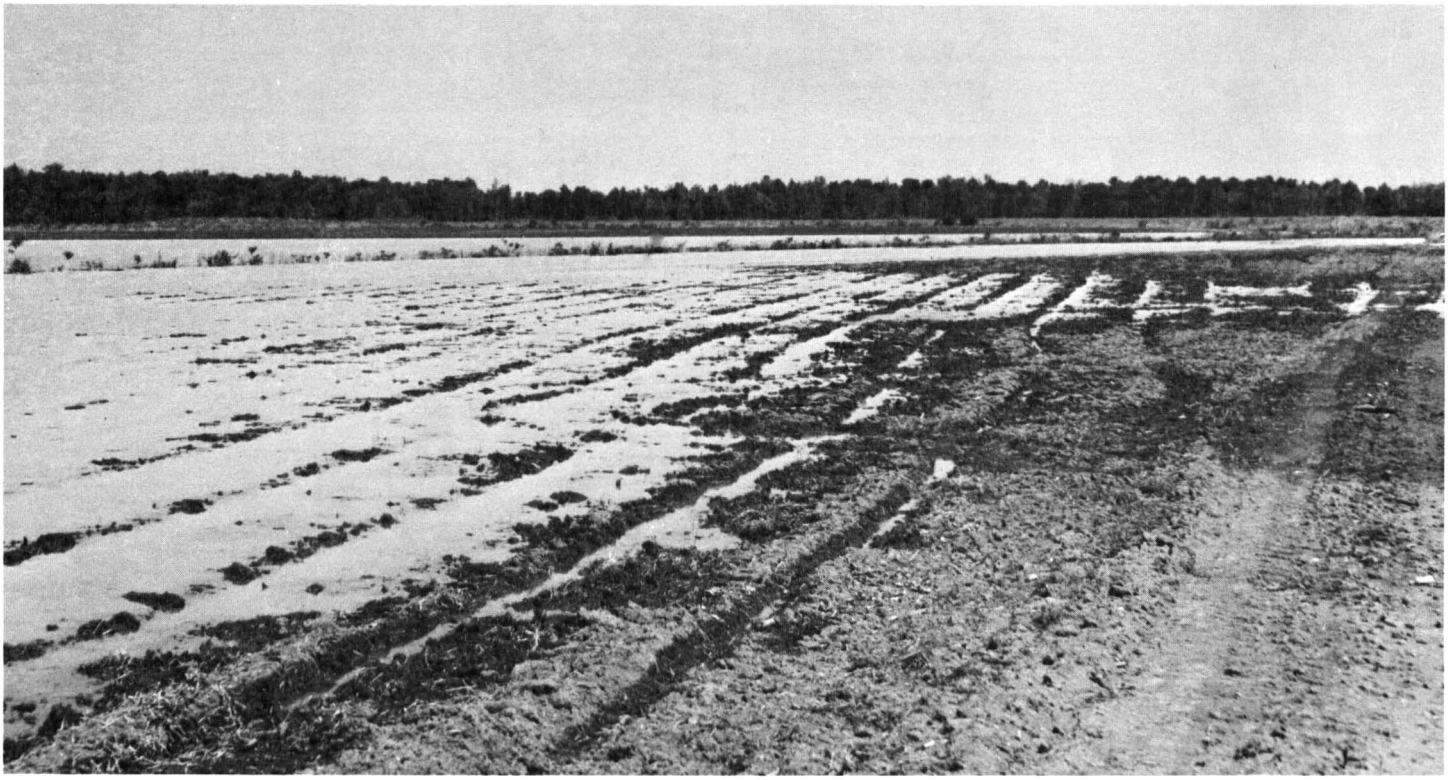

Figure 5.—Floodwater on a cultivated field of Sharkey soils, frequently flooded.

A P P E N D I X

(Tables)

TABLE 1.--ACREAGE OF PRINCIPAL CROPS FOR STATED YEARS

Crops	Acres in 1969	Acres in 1964
Soybeans for beans	147,986	110,695
Cotton	47,552	57,193
Wheat for grain	4,787	7,876
Other small grains for grain (includes rice)	9,789	9,920
Corn for grain	785	3,274
Hay, excluding sorghum	2,790	4,047
Improved pasture	13,306	12,469

TABLE 2.--NUMBER OF LIVESTOCK IN STATED YEARS

Livestock	Number in 1969	Number in 1964
All cattle and calves (on farms and sold)	19,118	19,981
Milk cows (on farms)	274	650
Hogs and pigs (on farms and sold)	7,868	8,324
Chickens[1]	25,641	71,171

[1]Three months old or older (on farms and sold).

TABLE 3.--TEMPERATURE AND PRECIPITATION

[Data from Marianna, Arkansas; period of record, 1950-1972]

Month	Average daily temperature	Average monthly precipitation total
	°F	Inches
January	41.0	4.6
February	44.4	4.5
March	51.0	4.7
April	59.6	5.5
May	70.9	4.7
June	80.4	2.9
July	80.4	3.9
August	78.9	3.1
September	73.1	3.7
October	60.4	2.9
November	48.9	3.9
December	43.1	4.9
Year	61.0	49.3

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Ac	Alligator clay	10,582	2.7
Ag	Alligator clay, frequently flooded	8,419	2.2
BrB	Bruno fine sandy loam, gently undulating	422	0.1
Bs	Bruno soils, frequently flooded	1,663	0.4
Ca	Calhoun silt loam	7,400	1.9
CbA	Calloway silt loam, 0 to 1 percent slopes	33,205	8.5
CbB	Calloway silt loam, 1 to 3 percent slopes	8,425	2.2
Cm	Commerce silt loam	7,309	1.9
Cs	Commerce soils, frequently flooded	4,123	1.1
Cv	Convent silt loam, occasionally flooded	4,511	1.1
DsB	Dubbs loam, gently undulating	4,169	1.1
Du	Dundee silt loam	4,280	1.1
EaB	Earle silty clay, gently undulating	10,377	2.7
Fa	Falaya silt loam, occasionally flooded	8,090	2.1
Ff	Fluvaquents, frequently flooded	5,636	1.4
Fo	Foley-Bonn complex	8,884	2.3
GrB	Grenada silt loam, 1 to 3 percent slopes	13,110	3.4
He	Henry silt loam	64,036	16.5
Hn	Hillemann silt loam	8,041	2.1
Je	Jeanerette silt loam	1,345	0.3
La	Lagrange fine sandy loam	1,664	0.4
LoB	Loring silt loam, 1 to 3 percent slopes	26,082	6.7
LoC2	Loring silt loam, 3 to 8 percent slopes, eroded	10,015	2.6
LoD2	Loring silt loam, 8 to 12 percent slopes, eroded	2,334	0.6
Ma	Marvell fine sandy loam	8,965	2.3
MeB	Memphis silt loam, 1 to 3 percent slopes	5,597	1.4
MeC2	Memphis silt loam, 3 to 8 percent slopes, eroded	1,804	0.5
MeD2	Memphis silt loam, 8 to 12 percent slopes, eroded	1,005	0.2
MeF	Memphis silt loam, 15 to 40 percent slopes	9,700	2.5
Mh	Mhoon soils, frequently flooded	5,285	1.4
NaF	Natchez silt loam, 20 to 40 percent slopes	3,098	0.8
NeA	Newellton silty clay loam, 0 to 1 percent slopes	1,258	0.3
NeB	Newellton silty clay loam, gently undulating	16,232	4.2
Nf	Newellton soils, frequently flooded	3,555	0.9
Ro	Robinsonville fine sandy loam	5,035	1.3
Rs	Robinsonville soils, frequently flooded	2,391	0.6
Sh	Sharkey clay	25,333	6.5
Sk	Sharkey soils, frequently flooded	14,573	3.7
TnA	Tunica silty clay, 0 to 1 percent slopes	1,425	0.4
TnB	Tunica silty clay, gently undulating	3,859	1.0
Tu	Tunica soils, frequently flooded	9,214	2.4
Za	Zachary soils, frequently flooded	12,573	3.2
	Water	3,968	1.0
	Total	388,992	100.0

TABLE 5.--ESTIMATED ACRE YIELDS OF CROPS AND PASTURE PLANTS

[Yields in columns N are for nonirrigated soils; those in columns I are for irrigated soils. All yields were estimated for a high level of management in 1974. Absence of a yield figure indicates the crop is seldom grown or is not suited]

Soil name and map symbol	Cotton lint	Soybeans	Rice	Improved bermudagrass	Tall fescue
	N	N	I	N	N
	Lb	Bu	Bu	AUM[1]	AUM[1]
Alligator:					
[2]Ac	650	35	130	10.0	9.0
Ag	---	30	---	8.0	---
Bruno:					
BrB	400	20	---	4.0	---
Bs	---	20	---	4.0	---
Calhoun:					
Ca	600	30	120	6.5	7.0
Calloway:					
CbA	650	35	120	9.0	8.0
CbB	600	35	---	9.0	8.5
Commerce:					
Cm	900	40	---	12.0	10.0
[3]Cs	---	35	---	10.0	---
Convent:					
[2]Cv	875	40	---	12.0	9.0
Dubbs:					
DsB	850	40	---	12.0	10.0
Dundee:					
Du	800	40	---	12.0	10.0
Earle:					
EaB	650	35	---	10.0	9.0
Falaya:					
Fa	700	40	---	12.0	9.0
Fluvaquents:					
Ff	---	---	---	---	---
Foley:					
[3]Fo	550	25	100	6.5	7.0
Grenada:					
GrB	650	35	---	9.5	8.0
Henry:					
He	600	35	120	6.5	7.0
Hillemann:					
Hn	600	35	120	9.0	7.0
Jeanerette:					
Je	750	35	120	10.0	8.0
Lagrange:					
La	600	30	---	8.0	8.0
Loring:					
LoB	650	35	---	9.5	8.0
LoC2	600	25	---	9.0	7.5
LoD2	---	---	---	8.5	7.0

See footnotes at end of table.

TABLE 5.--ESTIMATED ACRE YIELDS OF CROPS AND PASTURE PLANTS--Continued

Soil name and map symbol	Cotton lint	Soybeans	Rice	Improved bermudagrass	Tall fescue
	N	N	I	N	N
	Lb	Bu	Bu	AUM[1]	AUM[1]
Marvell:					
Ma	650	35	---	100	8.0
Memphis:					
MeB	750	35	---	10.0	8.5
MeC2	650	30	---	9.0	7.5
MeD2	---	---	---	8.0	7.0
MeF	---	---	---	6.0	---
Mhoon:					
Mh	---	25	---	8.5	---
Natchez:					
NaF	---	---	---	6.5	---
Newellton:					
NeA, NeB	800	35	---	12.0	10.0
3Nf	---	30	---	8.5	---
Robinsonville:					
2Ro	825	40	---	11.0	10.0
3Rs	---	35	---	8.0	---
Sharkey:					
2Sh	650	35	130	10.0	9.0
3Sk	---	30	---	8.0	7.0
Tunica:					
TnA, TnB	650	35	---	10.5	9.5
3Tu	---	30	---	8.5	---
Zachary:					
3Za	---	25	---	8.0	---

[1]Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for a period of 30 days.

[2]Yields are for areas protected from flooding.

[3]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed in this table. Absence of an entry in a column means the information was not available]

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Alligator:							
Ac	2w6	Slight	Severe	Moderate	Eastern cottonwood	95	Eastern cottonwood, green ash, sweetgum, American sycamore.
					Green ash	80	
					Water oak	90	
					Sweetgum	90	
Ag	3w6	Slight	Severe	Severe	Eastern cottonwood	90	Eastern cottonwood, green ash, sweetgum, American sycamore.
					Green ash	70	
					Sweetgum	80	
Bruno:							
BrB, Bs	2s5	Slight	Moderate	Moderate	Cherrybark oak	116	Cherrybark oak, Shumard oak, chestnut oak, willow oak, sweetgum, yellow-poplar.
					Water oak	105	
					Sweetgum	110	
					Willow oak	88	
					River birch	---	
Calhoun:							
Ca	3w9	Slight	Severe	Moderate	Loblolly pine	84	Loblolly pine.
					Shortleaf pine	---	
					Sweetgum	---	
Calloway:							
CbA, CbB	2w8	Slight	Moderate	Slight	Cherrybark oak	90	Cherrybark oak, Shumard oak, sweetgum, water oak, yellow-poplar.
					Loblolly pine	90	
					Shortleaf pine	80	
					Sweetgum	90	
					Water oak	90	
Commerce:							
Cm, [1]Cs	1w5	Slight	Moderate	Slight	Green ash	80	Eastern cottonwood, American sycamore.
					Eastern cottonwood	120	
					Nuttall oak	90	
					Water oak	110	
					Pecan	---	
					American sycamore	---	
Convent:							
Cv	1w5	Slight	Moderate	Slight	Green ash	80	Eastern cottonwood, American sycamore.
					Eastern cottonwood	120	
					Sweetgum	110	
					American sycamore	---	
Dubbs:							
DsB	2o4	Slight	Slight	Slight	Cherrybark oak	100	Eastern cottonwood, green ash, Nuttall oak, sweetgum, American sycamore, yellow-poplar.
					Eastern cottonwood	100	
					Green ash	80	
					Nuttall oak	95	
					Shumard oak	100	
					Sweetgum	95	
					Water oak	90	
					Willow oak	95	
Dundee:							
Du	2w5	Slight	Moderate	Slight	Cherrybark oak	105	Cherrybark oak, eastern cottonwood, sweetgum, water oak, yellow-poplar.
					Eastern cottonwood	100	
					Sweetgum	100	
					Water oak	95	

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Earle:							
EaB	2w6	Slight	Severe	Moderate	Green ash	75	Green ash, eastern cottonwood, sweetgum, American sycamore, cherrybark oak, Nuttall oak, Shumard oak, water oak.
					Eastern cottonwood	105	
					Cherrybark oak	90	
					Nuttall oak	90	
					Water oak	90	
					Willow oak	90	
					Sweetgum	95	
Falaya:							
Fa	1w8	Slight	Moderate	Slight	Green ash	92	Green ash, eastern cottonwood, cherrybark oak, Nuttall oak, sweetgum, yellow-poplar.
					Eastern cottonwood	100	
					Cherrybark oak	102	
					Nuttall oak	109	
					Water oak	102	
					Loblolly pine	104	
Fluvaquents:							
Ff	---	---	---	---	---	---	
Foley:							
[1]Fo	3w9	Slight	Severe	Moderate	Sweetgum	80	Sweetgum, American sycamore, loblolly pine.
					Cherrybark oak	80	
					Water oak	80	
					Loblolly pine	60	
Grenada:							
GrB	3o7	Slight	Slight	Slight	Cherrybark oak	85	Cherrybark oak, Shumard oak, water oak, loblolly pine, white oak shortleaf pine, sweetgum.
					Southern red oak	80	
					Loblolly pine	85	
					Shortleaf pine	75	
					Sweetgum	80	
Henry:							
He	3w9	Slight	Severe	Severe	Bottom land oaks	80	Shumard oak, water oak, loblolly pine, sweetgum.
					Sweetgum	80	
					Loblolly pine	80	
Hillemann:							
Hn	3w9	Slight	Moderate	Moderate	Sweetgum	85	Sweetgum, loblolly pine.
					Water oak	80	
Jeanerette:							
Je	2w6	Slight	Moderate	Slight	Green ash	80	Eastern cottonwood.
					Eastern cottonwood	120	
					Water oak	---	
					Pecan	---	
					American sycamore	---	
					Cherrybark oak	90	
Lagrange:							
La	2w9	Slight	Severe	Severe	Eastern cottonwood	105	Eastern cottonwood, green ash, loblolly pine, sweetgum, cherrybark oak, Nuttall oak, water oak, willow oak.
					Green ash	90	
					Cherrybark oak	90	
					Water oak	90	
					Sweetgum	95	
					Loblolly pine	90	

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Loring:							
LoB, LoC2, LoD2---	3o7	Slight	Slight	Slight	Cherrybark oak------	86	Loblolly pine, yellow-poplar, southern red oak.
					Sweetgum----------	90	
					Southern red oak----	74	
					Loblolly pine-------	85	
					Water oak----------	82	
Marvell:							
Ma----------	2o4	Slight	Slight	Slight	Eastern cottonwood--	110	Eastern cottonwood, sweetgum, American sycamore, green ash.
					Sweetgum----------	100	
					Pecan---------------	---	
					American sycamore---	---	
					Cherrybark oak------	---	
					Willow oak----------	---	
					Green ash----------	---	
Memphis:							
MeB, MeC2, MeD2---	2o7	Slight	Slight	Slight	Cherrybark oak------	90	Cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
					Loblolly pine-------	90	
					Sweetgum----------	90	
					Water oak----------	90	
MeF----------	2r8	Moderate	Moderate	Slight	Cherrybark oak------	90	Cherrybark oak, loblolly pine, sweetgum, yellow-poplar, black walnut.
					Water oak----------	90	
					Loblolly pine-------	90	
					Sweetgum----------	90	
					Yellow-poplar-------	---	
Mhoon:							
Mh----------	1w6	Slight	Severe	Moderate	Green ash----------	90	Eastern cottonwood, American sycamore.
					Eastern cottonwood--	110	
					Water oak----------	---	
					Cherrybark oak------	---	
					Sweetgum----------	100	
					American sycamore---	---	
Natchez:							
NaF----------	2r8	Moderate	Moderate	Slight	Eastern cottonwood--	105	Eastern cottonwood, green ash, loblolly pine, sweetgum, American sycamore, yellow-poplar.
					Loblolly pine-------	90	
					Sweetgum----------	105	
Newellton:							
NeA, NeB, [1]Nf-----	2w5	Slight	Moderate	Slight	Green ash----------	75	Eastern cottonwood, American sycamore.
					Eastern cottonwood--	100	
					Cherrybark oak------	90	
					Nuttall oak---------	85	
					Water oak----------	90	
					Sweetgum----------	95	
					Pecan---------------	---	
Robinsonville:							
Ro----------	1o4	Slight	Slight	Slight	Eastern cottonwood--	110	Eastern cottonwood, sweetgum, American sycamore.
					Green ash----------	85	
					Sweetgum----------	105	
					American sycamore---	115	
[1]Rs----------	1o4	Slight	Moderate	Moderate	Eastern cottonwood--	110	Eastern cottonwood, sweetgum, American sycamore.
					Green ash----------	85	
					Sweetgum----------	105	
					American sycamore---	115	

See footnotes at end of table.

TABLE 6.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Important trees	Site index	
Sharkey:							
Sh	2w6	Slight	Severe	Moderate	Green ash	85	Eastern cottonwood, American sycamore, sweetgum.
					Eastern cottonwood	100	
					Cherrybark oak	90	
					Sweetgum	90	
					Water oak	---	
					Pecan	---	
					American sycamore	---	
Sk	3w6	Slight	Severe	Severe	Green ash	80	Eastern cottonwood, sweetgum.
					Eastern cottonwood	80	
Tunica:							
TnA, TnB, [1]Tu	2w6	Slight	Severe	Moderate	Cherrybark oak	90	Cherrybark oak, eastern cottonwood, green ash, Nuttall oak, sweetgum, American sycamore.
					Eastern cottonwood	105	
					Green ash	100	
					Nuttall oak	105	
					Sweetgum	90	
Zachary:							
Za	2w6	Slight	Severe	Moderate	Sweetgum	---	Sweetgum, water oak.
					Water oak	---	

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 7.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Alligator:										
Ac, Ag	Fair	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.
Bruno:										
BrB, Bs	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
Calhoun:										
Ca	Fair	Fair	Fair	Good	---	Good	Good	Fair	Fair	Good.
Calloway:										
CbA	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
CbB	Fair	Good	Good	Good	---	Poor	Poor	Good	Good	Poor.
Commerce:										
Cm	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
[1]Cs	Poor	Fair	Fair	Good	---	Fair	Fair	Fair	Good	Fair.
Convent:										
Cv	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
Dubbs:										
DsB	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Dundee:										
Du	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
Earle:										
EaB	Fair	Fair	Fair	Good	---	Good	Fair	Fair	Good	Fair.
Falaya:										
Fa	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Fluvaquents:										
Ff	Very poor.	Fair	Fair	Fair	Fair	Good	Good	Good	Fair	Good.
Foley:										
[1]Fo:										
Foley part	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Bonn part	Poor	Poor	Poor	Poor	---	Poor	Good	Poor	Poor	Fair.
Grenada:										
GrB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Henry:										
He	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Hillemann:										
Hn	Fair	Good	Good	Good	Good	Good	Good	Good	Good	Good.
Jeanerette:										
Je	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
Lagrange:										
La	Fair	Fair	Fair	Good	Good	Good	Fair	Fair	Good	Fair.

See footnotes at end of table.

TABLE 7.--WILDLIFE HABITAT POTENTIALS--Continued

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Loring:										
LoB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
LoC2, LoD2	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Marvell:										
Ma	Good	Good	Good	Good	Fair	Poor	Very poor.	Good	Good	Very poor.
Memphis:										
MeB	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MeC2, MeD2	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MeF	Very poor.	Poor	Good	Good	Good	Very poor.	Very poor.	Poor	Good	Very poor.
Mhoon:										
Mh	Poor	Fair	Fair	Fair	---	Good	Good	Poor	Good	Good.
Natchez:										
NaF	Poor	Fair	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.
Newellton:										
NeA, NeB	Fair	Fair	Fair	Good	---	Fair	Fair	Fair	Fair	Fair.
[1]Nf	Fair	Fair	Fair	Good	---	Fair	Fair	Fair	Good	Fair.
Robinsonville:										
Ro	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
[1]Rs	Poor	Fair	Fair	Good	---	Poor	Very poor.	Fair	Good	Very poor.
Sharkey:										
Sh	Fair	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.
[1]Sk	Poor	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.
Tunica:										
TnA, TnB	Fair	Fair	Fair	Good	---	Good	Fair	Fair	Good	Fair.
[1]Tu	Poor	Fair	Fair	Good	---	Good	Fair	Fair	Good	Fair.
Zachary:										
[1]Za	Poor	Fair	Fair	Fair	---	Good	Good	Poor	Fair	Good.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 8.--BUILDING SITE DEVELOPMENT

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Alligator:					
Ac	Severe: too clayey, wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, corrosive.	Severe: shrink-swell, wetness.
Ag	Severe: floods, too clayey, wetness.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.
Bruno:					
BrB	Severe: too sandy.	Slight	Slight	Slight	Slight.
Bs	Severe: floods, too sandy.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Calhoun:					
Ca	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Calloway:					
CbA, CbB	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, corrosive.	Moderate: wetness, shrink-swell.
Commerce:					
Cm	Severe: wetness.	Moderate: wetness, low strength, shrink-swell.	Severe: wetness.	Moderate: wetness, low strength, shrink-swell.	Moderate: wetness, low strength, shrink-swell.
[1]Cs	Severe: wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: floods.	Severe: floods.
Convent:					
Cv	Severe: wetness, cutbanks cave.	Moderate: low strength, wetness.	Severe: wetness.	Moderate: low strength, wetness.	Moderate: low strength, wetness.
Dubbs:					
DsB	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.
Dundee:					
Du	Severe: wetness.	Moderate: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.
Earle:					
EaB	Severe: wetness, too clayey.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.
Falaya:					
Fa	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Fluvaquents:					
Ff	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.

See footnotes at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commerical buildings	Local roads and streets
Foley:					
[1]Fo:					
Foley part	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.	Severe: wetness, low strength.
Bonn part	Severe: wetness, cutbanks cave.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Grenada:					
GrB	Moderate: wetness.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: corrosive, wetness, low strength.	Moderate: low strength, wetness.
Henry:					
He	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness, low strength.
Hillemann:					
Hn	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.
Jeanerette:					
Je	Severe: wetness.	Moderate: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Moderate: wetness, shrink-swell, low strength.	Severe: low strength.
Lagrange:					
La	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Loring:					
LoB	Moderate: low strength, wetness.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
LoC2	Moderate: low strength, wetness.	Moderate: low strength.	Moderate: low strength.	Moderate: slope, low strength.	Moderate: low strength.
LoD2	Moderate: slope, wetness, low strength.	Moderate: slope, low strength.	Moderate: slope, low strength.	Severe: slope.	Moderate: slope, low strength.
Marvell:					
Ma	Slight	Slight	Slight	Slight	Moderate: low strength.
Memphis:					
MeB	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.	Moderate: low strength.
MeC2	Slight	Moderate: low strength.	Moderate: low strength.	Moderate: low strength, slope.	Moderate: low strength.
MeD2	Moderate: slope.	Moderate: low strength, slope.	Moderate: low strength, slope.	Severe: slope.	Moderate: low strength, slope.
MeF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnotes at end of table.

TABLE 8.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Mhoon:					
Mh	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, low strength, floods.
Natchez:					
NaF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Newellton:					
NeA, NeB	Severe: wetness.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: wetness, low strength.
Nf	Severe: wetness, floods.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.
Robinsonville:					
Ro	Slight	Slight	Slight	Slight	Slight.
[1]Rs	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Sharkey:					
Sh	Severe: wetness, too clayey.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.
[1]Sk	Severe: floods, wetness, too clayey.	Severe: floods, shrink-swell, wetness.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.
Tunica:					
TnA, TnB	Severe: wetness, too clayey.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell, corrosive.	Severe: shrink-swell, wetness.
Tu	Severe: floods, wetness, too clayey.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, shrink-swell, wetness.
Zachary:					
[1]Za	Severe: floods, wetness, cutbanks cave.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 9.--SANITARY FACILITIES

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms used to rate soils. Absence of an entry means soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Alligator:					
Ac	Severe: percs slowly, wetness.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
Ag	Severe: percs slowly, wetness, floods.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
Bruno:					
BrB	Slight	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: too sandy.
Bs	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage.	Severe: floods, seepage.	Poor: too sandy.
Calhoun:					
Ca	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Calloway:					
CbA	Severe: percs slowly, wetness.	Slight	Moderate: wetness, percs slowly.	Moderate: wetness.	Good.
CbB	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: wetness, percs slowly.	Moderate: wetness.	Good.
Commerce:					
Cm	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.	Fair: too clayey.
[1]Cs	Severe: floods, percs slowly, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Fair: floods, too clayey.	Fair: too clayey.
Convent:					
Cv	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.
Dubbs:					
DsB	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Fair: too clayey.
Dundee:					
Du	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Earle:					
EaB	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
Falaya:					
Fa	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.

See footnotes at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Fluvaquents:					
Ff	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Poor: wetness.
Foley:					
[1]Fo:					
Foley part	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Bonn part	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Grenada:					
GrB	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Good.
Henry:					
He	Severe: percs slowly, wetness.	Slight	Severe: percs slowly, wetness.	Severe: wetness.	Poor: wetness.
Hillemann:					
Hn	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Jeanerette:					
Je	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Lagrange:					
La	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Loring:					
LoB, LoC2	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
LoD2	Severe: percs slowly.	Severe: slope.	Slight	Moderate: slope.	Fair: slope.
Marvell:					
Ma	Severe: percs slowly.	Slight	Slight	Slight	Good.
Memphis:					
MeB, MeC2	Slight	Moderate: seepage, slope.	Slight	Slight	Fair: too clayey.
MeD2	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: too clayey, slope.
MeF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Mhoon:					
Mh	Severe: percs slowly, wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.

See footnotes at end of table.

TABLE 9.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Natchez:					
NaF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Newellton:					
NeA, NeB	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Nf	Severe: wetness, percs slowly, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: too clayey.
Robinsonville:					
Ro	Slight	Severe: seepage.	Severe: wetness, seepage.	Severe: wetness, seepage.	Good.
[1]Rs	Severe: floods.	Severe: floods, seepage.	Severe: seepage, floods.	Severe: seepage, floods.	Good.
Sharkey:					
Sh	Severe: wetness, percs slowly.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, wetness.
[1]Sk	Severe: wetness, percs slowly, floods.	Severe: floods.	Severe: wetness, too clayey, floods.	Severe: wetness, floods.	Poor: too clayey, wetness.
Tunica:					
TnA, TnB	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: too clayey, wetness.
Tu	Severe: percs slowly, wetness, floods.	Severe: floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: too clayey, wetness.
Zachary:					
[1]Za	Severe: wetness, percs slowly, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Severe: wetness, floods.	Poor: wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 10.--CONSTRUCTION MATERIALS

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," and "unsuited." Absence of an entry means soil was not rated]

Soil name and map symbol	Road fill	Sand	Gravel	Topsoil
Alligator: Ac, Ag	Poor: shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Bruno: BrB, Bs	Good	Fair: excess fines.	Unsuited: excess fines.	Poor: too sandy.
Calhoun: Ca	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Calloway: CbA, CbB	Fair: wetness, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Commerce: Cm, [1]Cs	Fair: low strength, shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Convent: Cv	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Dubbs: DsB	Fair: shrink-swell, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer, too clayey.
Dundee: Du	Fair: wetness, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Earle: EaB	Poor: wetness, low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.
Falaya: Fa	Fair: low strength, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Fluvaquents: Ff	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Foley: [1]Fo:				
Foley part	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, area reclaim.
Bonn part	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, excess alkali.

See footnotes at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Road fill	Sand	Gravel	Topsoil
Grenada: GrB	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Henry: He	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Hillemann: Hn	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, area reclaim.
Jeanerette: Je	Poor: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Lagrange: La	Poor: wetness.	Poor: excess fines.	Unsuited: excess fines.	Poor: wetness.
Loring: LoB, LoC2, LoD2	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Marvell: Ma	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Memphis: MeB, MeC2	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
MeD2	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey, slope.
MeF	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Mhoon: Mh	Poor: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.
Natchez: NaF	Poor: slope.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: slope.
Newellton: NeA, NeB, [1]Nf	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Robinsonville: Ro, [1]Rs	Fair: low strength.	Poor: excess fines.	Unsuited: excess fines.	Good.
Sharkey: Sh, [1]Sk	Poor: too clayey, shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.
Tunica: TnA, TnB, [1]Tu	Poor: shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, wetness.

See footnotes at end of table.

TABLE 10.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Road fill	Sand	Gravel	Topsoil
Zachary: [1]Za	Poor: wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 11.--WATER MANAGEMENT

["Seepage" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means soil was not evaluated]

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Alligator:							
Ac	Slight	Moderate: shrink-swell, compressible, unstable fill.	Severe: no water.	Wetness, percs slowly.	Slow intake, wetness.	Not needed	Percs slowly, wetness.
Ag	Slight	Moderate: shrink-swell, compressible, unstable fill.	Severe: no water.	Floods, wetness, percs slowly.	Slow intake, floods, wetness.	Not needed	Percs slowly, wetness.
Bruno:							
BrB	Severe: seepage.	Moderate: piping, low strength.	Severe: no water.	Not needed	Droughty, seepage.	Not needed	Droughty.
Bs	Severe: seepage.	Moderate: piping, low strength.	Severe: no water.	Not needed	Droughty, seepage, floods.	Not needed	Droughty
Calhoun:							
Ca	Slight	Moderate: piping, erodes easily, low strength.	Severe: no water.	Percs slowly, cutbanks cave.	Wetness, percs slowly.	Not needed	Wetness.
Calloway:							
CbA, CbB	Slight	Moderate: piping, compressible, low strength.	Severe: deep to water.	Cutbanks cave, percs slowly, slope.	Percs slowly, erodes easily, slope.	Percs slowly, erodes easily, piping.	Percs slowly, erodes easily, slope.
Commerce:							
Cm	Moderate: seepage.	Slight	Severe: no water.	Favorable	Favorable	Not needed	Favorable.
Cs	Moderate: seepage.	Slight	Severe: no water.	Floods	Favorable	Not needed	Favorable.
Convent:							
Cv	Moderate: seepage.	Moderate: erodes easily, piping, low strength.	Severe: no water.	Cutbanks cave	Favorable	Not needed	Erodes easily.
Dubbs:							
DsB	Moderate: seepage.	Moderate: compressible, piping, unstable fill.	Severe: no water.	Not needed	Slow intake	Not needed	Favorable.
Dundee:							
Du	Moderate: seepage.	Moderate: seepage, compressible, piping.	Severe: deep to water.	Favorable	Wetness, slow intake.	Not needed	Wetness, percs slowly.

See footnotes at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbols	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Earle:							
EaB	Slight	Moderate: compressible, piping, unstable fill.	Severe: no water.	Cutbanks cave, complex slope, wetness.	Wetness, slow intake, complex slope.	Not needed	Wetness.
Falaya:							
Fa	Moderate: seepage.	Moderate: compressible, piping.	Severe: deep to water.	Floods, cutbanks cave.	Favorable	Not needed	Not needed.
Fluvaquents:							
Ff	Slight	Slight	Slight	Floods	Wetness, floods.	Not needed	Wetness, percs slowly.
Foley:							
[1]Fo:							
Foley part	Slight	Moderate: unstable fill, compressible, low strength.	Severe: no water.	Wetness, percs slowly.	Wetness, slow intake.	Not needed	Wetness.
Bonn part	Slight	Moderate: piping, erodes easily.	Severe: no water.	Cutbanks cave, excess alkali, percs slowly.	Droughty, excess alkali, wetness.	Not needed	Droughty, erodes easily, excess alkali.
Grenada:							
GrB	Slight	Moderate: piping, low strength.	Severe: deep to water.	Not needed	Slow intake, erodes easily.	Favorable	Favorable.
Henry:							
He	Slight	Moderate: piping.	Severe: no water.	Percs slowly, poor outlets.	Rooting depth	Not needed	Not needed.
Hillemann:							
Hn	Slight	Moderate: piping, compressible, low strength.	Severe: no water.	Percs slowly, wetness.	Wetness, slow intake.	Wetness	Wetness.
Jeanerette:							
Je	Moderate: seepage.	Slight	Severe: no water.	Favorable	Favorable	Not needed	Favorable.
Lagrange:							
La	Moderate: seepage.	Moderate: seepage, unstable fill, piping.	Severe: no water.	Wetness	Wetness	Wetness	Wetness.
Loring:							
LoB, LoC2, LoD2	Moderate: seepage.	Moderate: piping, low strength.	Severe: no water.	Not needed	Rooting depth, erodes easily, slope.	Erodes easily, slope.	Rooting depth, erodes easily, slope.

See footnotes at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting-			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Marvell:							
Ma	Moderate: seepage.	Moderate: unstable fill, piping, compressible.	Severe: no water.	Not needed	Favorable	Favorable	Favorable.
Memphis:							
MeB, MeC2, MeD2, MeF	Moderate: seepage.	Moderate: piping, compressible, erodes easily.	Severe: deep to water.	Not needed	Erodes easily, slope.	Erodes easily, slope, piping.	Erodes easily, slope.
Mhoon:							
Mh	Slight	Slight	Severe: no water.	Percs slowly, floods.	Floods, slow intake, wetness.	Not needed	Wetness.
Natchez:							
NaF	Severe: seepage.	Moderate: piping, compressible.	Severe: deep to water.	Slope	Erodes easily, slope.	Erodes easily, slope, piping.	Erodes easily, slope.
Newellton:							
NeA, NeB	Slight	Slight	Severe: no water.	Not needed	Percs slowly, slow intake.	Not needed	Favorable.
Nf	Slight	Slight	Severe: no water.	Floods, percs slowly.	Percs slowly, slow intake.	Not needed	Favorable
Robinsonville:							
Ro	Severe: seepage.	Moderate: piping, seepage, low strength.	Severe: deep to water.	Not needed	Fast intake	Not needed	Favorable.
[1]Rs	Severe: seepage.	Moderate: piping, seepage, low strength.	Severe: deep to water.	Floods	Fast intake, floods.	Not needed	Favorable.
Sharkey:							
Sh	Slight	Moderate: low strength, compressible, shrink-swell.	Severe: no water.	Percs slowly	Percs slowly, slow intake, wetness.	Not needed	Wetness.
[1]Sk	Slight	Moderate: low strength, compressible, shrink-swell.	Severe: no water.	Floods	Percs slowly, slow intake, wetness.	Not needed	Wetness.

See footnotes at end of table.

TABLE 11.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Tunica:							
TnA, TnB	Moderate: seepage.	Moderate: shrink-swell, compressible.	Severe: deep to water.	Wetness, percs slowly.	Slow intake, wetness.	Not needed	Percs slowly, wetness.
Tu	Moderate: seepage.	Moderate: shrink-swell, compressible.	Severe: deep to water.	Floods, wetness, percs slowly.	Slow intake, floods, wetness.	Not needed	Percs slowly, wetness.
Zachary:							
[1]Za	Slight	Moderate: piping, low strength, erodes easily.	Severe: no water.	Floods, cutbanks cave, percs slowly.	Floods, percs slowly, wetness.	Not needed	Erodes easily, wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 12.--RECREATIONAL DEVELOPMENT

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Alligator: Ac	Severe: wetness, too clayey, percs slowly.	Severe: wetness, too clayey.	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.
Ag	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.
Bruno: BrB	Slight.	Moderate: too sandy.	Slight.	Slight.
Bs	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Calhoun: Ca	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Calloway: CbA, CbB	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Commerce: Cm	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
[1]Cs	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Convent: Cv	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
Dubbs: DsB	Slight.	Slight.	Moderate: slope.	Slight.
Dundee: Du	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Earle: EaB	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.
Falaya: Fa	Severe: floods, wetness.	Moderate: floods, wetness.	Severe: floods, wetness.	Moderate: floods, wetness.
Fluvaquents: Ff	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.

See footnotes at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Foley:				
[1]Fo:				
Foley part	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Bonn part	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, percs slowly.	Severe: wetness.
Grenada:				
GrB	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: percs slowly, wetness.	Slight.
Henry:				
He	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Hillemann:				
Hn	Severe: percs slowly.	Moderate: wetness.	Severe: percs slowly.	Moderate: wetness.
Jeanerette:				
Je	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Lagrange:				
La	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Loring:				
LoB, LoC2	Slight.	Slight.	Moderate: slope.	Slight.
LoD2	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Marvell:				
Ma	Moderate: percs slowly.	Slight.	Moderate: percs slowly.	Slight.
Memphis:				
MeB, MeC2	Slight.	Slight.	Moderate: slope.	Slight.
MeD2	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
MeF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Mhoon:				
Mh	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Natchez:				
NaF	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Newellton:				
NeA, NeB	Moderate: wetness, too clayey.	Moderate: wetness, too clayey.	Moderate: wetness, too clayey.	Moderate: wetness, too clayey.
[1]Nf	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.

See footnotes at end of table.

TABLE 12.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Robinsonville:				
Ro	Slight.	Slight.	Slight.	Slight.
[1]Rs	Severe: floods.	Severe: floods.	Severe: floods.	Slight.
Sharkey:				
Sh	Severe: too clayey, percs slowly, wetness.	Severe: too clayey, wetness.	Severe: too clayey, percs slowly, wetness.	Severe: too clayey, wetness.
[1]Sk	Severe: floods, too clayey, percs slowly.	Severe: floods, too clayey, wetness.	Severe: floods, too clayey, percs slowly.	Severe: floods, too clayey, wetness.
Tunica:				
TnA, TnB	Severe: wetness, too clayey, percs slowly.	Severe: wetness, too clayey.	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.
[1]Tu	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.
Zachary:				
[1]Za	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 13.--ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means greater than. Absence of an entry means data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Alligator:											
Ac, Ag	0-4	Clay, silty clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	95-100	90-100	30-75	15-45
	4-48	Clay	CH	A-7	0	100	100	100	95-100	62-94	33-64
	48-78	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	95-100	55-94	30-64
Bruno:											
BrB, Bs	0-16	Loamy fine sand, fine sandy loam	SM, ML	A-2, A-4	0	100	100	60-85	30-60	<25	NP-3
	16-20	Silt loam	ML	A-4	0	100	100	75-95	65-90	---	NP
	20-70	Fine sand, sand-	SP-SM, SM	A-2, A-3	0	100	100	50-70	5-30	---	NP
Calhoun:											
Ca	0-18	Silt loam	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	18-30	Silty clay loam-	CL	A-6	0	100	100	100	95-100	32-40	12-18
	30-68	Silt loam	CL, CL-ML	A-6, A-4	0	100	100	100	95-100	26-35	5-15
Calloway:											
CbA, CbB	0-23	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	100	95-100	25-35	5-15
	23-57	Silt loam	CL	A-6	0	100	100	100	90-100	30-40	12-20
	57-74	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	100	95-100	25-35	5-15
Commerce:											
Cm, [1]Cs	0-10	Fine sandy loam, silt loam, silty clay loam	CL-ML, CL, ML	A-4, A-6	0	100	100	100	75-100	<40	NP-20
	10-28	Silty clay loam-	CL	A-6, A-7	0	100	100	100	85-100	32-45	11-23
	28-72	Stratified very fine sandy loam to silty clay loam.	CL-ML, CL, ML	A-4, A-6	0	100	100	100	75-100	23-40	3-20
Convent:											
Cv	0-14	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	85-100	<27	NP-7
	14-72	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	80-100	<27	NP-7
Dubbs:											
DsB	0-6	Loam	ML, CL-ML, CL	A-4	0	100	100	100	85-100	20-30	5-10
	6-37	Silty clay loam-	CL	A-6, A-7	0	100	100	100	90-100	30-45	15-25
	37-54	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	20-35	5-14
	54-72	Loamy fine sand-	SM, ML	A-2, A-4	0	100	100	60-85	25-55	<25	NP-3
Dundee:											
Du	0-12	Silt loam	CL, CL-ML, ML	A-4, A-6	0	100	100	95-100	85-100	20-35	4-11
	12-36	Silty clay loam-	CL	A-6, A-7	0	100	100	95-100	90-100	30-45	12-22
	36-46	Silt loam	CL, CL-ML, ML	A-4	0	100	100	90-100	90-100	20-35	3-10
	46-72	Silty clay, clay	CH	A-7	0	100	100	90-100	95-100	55-75	32-50

See footnotes at end of table.

TABLE 13.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Earle:											
EaB	0-5	Silty clay	CH	A-7	0	100	100	95-100	95-100	55-75	30-45
	5-27	Clay	CH	A-7	0	100	100	95-100	95-100	55-75	30-45
	27-80	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	100	90-100	85-95	<35	NP-15
Falaya:											
Fa	0-6	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	95-100	<30	NP-10
	6-68	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	100	95-100	25-35	7-12
Fluvaquents:											
Ff	0-60	---	---	---	---	---	---	---	---	---	---
Variable material											
Foley:											
[1]Fo:											
Foley part	0-10	Silt loam	CL, CL-ML	A-4, A-6, A-7	0	100	100	95-100	70-100	25-45	5-20
	10-17	Silt loam	CL	A-6, A-7	0	100	100	95-100	90-100	30-49	11-25
	17-44	Silty clay loam	CL, CH	A-6, A-7	0	100	100	95-100	90-100	40-60	18-32
	44-80	Silt loam	CL	A-6	0	100	100	95-100	85-100	30-40	11-20
Bonn part	0-8	Silt loam	ML, CL, CL-ML	A-4	0	100	100	95-100	75-100	20-30	2-7
	8-59	Silty clay loam	CL	A-6	0	95-100	90-100	85-100	65-100	30-40	12-22
	59-75	Silty clay	CL, CH	A-7	0	100	95-100	90-100	75-100	40-55	20-35
Grenada:											
GrB	0-4	Silt loam	ML	A-4	0	100	100	100	90-100	27-31	4-6
	4-19	Silt loam	CL	A-6	0	100	100	100	90-100	35-40	13-15
	19-21	Silt loam	CL-ML, CL	A-4	0	100	100	100	90-100	20-30	5-10
	21-60	Silt loam	CL	A-6	0	100	100	100	90-100	35-40	15-20
Henry:											
He	0-11	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	<35	NP-9
	11-32	Silt loam	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	25-40	3-15
	32-63	Silty clay loam	CL	A-4, A-6	0	100	100	95-100	90-100	30-40	9-16
	63-76	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	25-32	3-10
Hillemann:											
Hn	0-13	Silt loam	ML, CL, CL-ML	A-4	0	100	100	90-100	85-100	<30	NP-10
	13-21	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	90-100	90-100	20-30	5-11
	21-26	Silty clay loam	CL, CH	A-6, A-7	0	100	100	90-100	90-100	35-55	15-30
	26-34	Silty clay loam	CL, CH	A-6, A-7	0	100	100	90-100	90-100	35-55	15-30
	34-80	Silt loam	CL, CL-ML	A-4, A-6	0	100	100	90-100	90-100	25-40	5-20

See footnotes at end of table.

TABLE 13.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Jeanerette:											
Je	0-14	Silt loam	CL-ML, CL, ML	A-4	0	100	100	95-100	90-100	23-31	4-10
	14-46	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	90-100	32-48	11-24
	46-78	Silt loam	CL, ML, CL-ML	A-6, A-4	0	100	100	95-100	90-100	23-40	4-17
Lagrange:											
La	0-35	Fine sandy loam	SM, ML	A-4, A-2	0	100	100	80-90	30-55	<20	NP-3
	35-77	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	100	90-100	85-95	<40	NP-20
Loring:											
LoB, LoC2, LoD2	0-5	Silt loam	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	20-35	4-15
	5-26	Silt loam	CL	A-6	0	100	100	95-100	90-100	30-40	15-25
	26-52	Silt loam	CL	A-4, A-6	0	100	100	95-100	90-100	30-40	8-18
	52-80	Silt loam	CL, CL-ML, ML	A-4, A-6	0	100	100	95-100	90-100	25-40	6-15
Marvell:											
Ma	0-33	Fine sandy loam	SM, ML	A-4	0	100	100	80-95	36-60	---	NP
	33-72	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	100	90-100	90-100	25-40	5-15
Memphis:											
MeB, MeC2, MeD2, MeF	0-10	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	90-100	<30	NP-10
	10-46	Silty clay loam	CL	A-6, A-7	0	100	100	100	90-100	35-48	15-25
	46-80	Silt loam	ML, CL	A-4, A-6	0	100	100	100	90-100	30-40	6-15
Mhoon:											
Mh	0-23	Silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	100	95-100	22-35	3-15
	23-59	Silty clay loam, silt loam.	CL, CH	A-6, A-7	0	100	100	100	95-100	30-55	11-28
	59-78	Silty clay	CH	A-7	0	100	100	100	95-100	51-65	30-40
Natchez:											
NaF	0-28	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	85-100	<35	NP-10
	28-80	Silt loam	ML, CL, CL-ML	A-4	0	100	100	100	85-100	<30	NP-7
Newellton:											
NeA, NeB, [1]Nf	0-6	Silty clay loam	CL	A-6, A-7	0	100	100	100	95-100	32-45	11-21
	6-15	Silty clay	CH	A-7	0	100	100	100	95-100	51-65	25-35
	15-70	Stratified very fine sandy loam to silty clay loam.	CL, CL-ML	A-4, A-6	0	100	100	95-100	85-100	25-35	5-15
Robinsonville:											
Ro	0-29	Fine sandy loam	SM, ML	A-4	0	100	100	85-95	36-80	<25	NP-3
	29-74	Stratified fine sandy loam to silt loam.	SM, ML	A-4	0	100	100	75-95	36-65	<25	NP-3

See footnotes at end of table.

TABLE 13.--ENGINEERING PROPERTIES AND CLASSIFICATIONS--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Robinsonville:											
[1]Rs	0-29	Loamy fine sand, very fine sandy loam.	SM, ML	A-4, A-2	0	100	100	85-95	25-80	<25	NP-3
	29-74	Stratified silt loam to loamy sand.	SM, ML	A-4	0	100	100	75-95	36-65	<25	NP-3
Sharkey:											
Sh, [1]Sk	0-8	Clay, silty clay, silty clay loam.	CH, CL	A-7, A-6	0	100	100	100	95-100	30-85	15-50
	8-53	Clay	CH	A-7	0	100	100	100	95-100	56-85	30-50
	53-70	Silty clay	CH	A-7	0	100	100	100	95-100	51-85	25-50
Tunica:											
TnA, TnB	0-6	Silty clay	CH	A-7	0	100	100	95-100	95-100	51-70	25-40
	6-25	Clay	CH	A-7	0	100	100	95-100	95-100	55-75	30-45
	25-30	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	95-100	30-48	15-30
	30-80	Stratified fine sandy loam and silt loam.	ML	A-4	0	100	100	80-95	60-95	<35	NP-10
[1]Tu	0-6	Silty clay loam	CL	A-6, A-7	0	100	100	95-100	95-100	30-48	15-30
	6-25	Clay	CH	A-7	0	100	100	95-100	95-100	55-75	30-45
	25-30	Silty clay loam	CL	A-4, A-6	0	100	100	95-100	95-100	30-48	15-30
	30-80	Stratified fine sandy loam and silt loam.	ML	A-4	0	100	100	80-95	60-95	<35	NP-10
Zachary:											
[1]Za	0-26	Silt loam	ML, CL-ML	A-4	0	100	100	100	90-100	<30	NP-7
	26-65	Silty clay loam	CL	A-6, A-7	0	100	100	100	90-100	30-45	11-23
	65-72	Silt loam	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	20-40	5-20

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[Dashes indicate data were not available. The symbol < means less than; > means greater than. The erosion tolerance factor (T) is for the entire profile. Absence of an entry means data were not estimated]

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T
	In	In/hr	In/in	pH					
Alligator:									
Ac, Ag	0-4	0.2-0.6	0.12-0.24	5.1-6.5	High	High	Moderate	---	---
	4-48	<0.06	0.12-0.18	4.5-5.5	High	High	Moderate		
	48-78	<0.06	0.12-0.24	6.1-7.3	High	High	Low		
Bruno:									
BrB, Bs	0-16	6.0-20	0.10-0.15	5.1-7.8	Low	Low	Low	---	---
	16-20	6.0-20	0.05-0.10	5.1-7.8	Low	Low	Low	---	
	20-70	6.0-20	0.02-0.05	5.1-7.8	Very low	Low	Low	---	
Calhoun:									
Ca	0-18	0.2-0.6	0.21-0.23	4.5-6.0	Low	High	Moderate	---	---
	18-30	0.06-0.2	0.20-0.22	4.5-5.5	Low	High	Moderate	---	
	30-68	0.2-0.6	0.21-0.23	4.5-7.8	Low	High	Moderate	---	
Calloway:									
CbA, CbB	0-23	0.6-2.0	0.20-0.23	4.5-6.0	Low	High	Moderate	0.43	3
	23-57	0.06-0.2	0.09-0.12	4.5-6.0	Moderate	High	Moderate	0.43	
	57-74	0.06-0.2	0.09-0.12	5.1-7.8	Low	High	Moderate	0.43	
Commerce:									
Cm, [1]Cs	0-10	0.6-2.0	0.21-0.23	5.6-7.8	Low	High	Low	0.37	5
	10-28	0.2-0.6	0.20-0.22	6.1-8.4	Moderate	High	Low	0.32	
	28-72	0.2-2.0	0.20-0.23	6.6-8.4	Low	High	Low	0.37	
Convent:									
Cv	0-14	0.6-2.0	0.18-0.23	5.6-8.4	Low	Moderate	Low	0.37	5
	14-72	0.6-2.0	0.12-0.23	6.1-8.4	Low	Moderate	Low	0.37	
Dubbs:									
DsB	0-6	0.6-2.0	0.20-0.22	4.5-6.0	Low	Moderate	Moderate	0.37	5
	6-37	0.6-2.0	0.18-0.22	4.5-6.0	Moderate	Moderate	Moderate	0.37	
	37-54	0.6-2.0	0.20-0.22	4.5-6.0	Low	Moderate	Moderate	0.37	
	54-72	2.0-6.0	0.07-0.11	5.6-6.5	Low	Low	Low	0.17	
Dundee:									
Du	0-12	0.6-2.0	0.15-0.20	4.5-6.0	Low	High	Moderate	0.37	---
	12-36	0.2-0.6	0.15-0.20	4.5-6.0	Moderate	High	Moderate	0.37	
	36-46	0.6-2.0	0.15-0.20	4.5-7.3	Low	High	Moderate	0.37	
	46-72	<0.06	0.14-0.18	4.5-7.3	High	High	Moderate	---	
Earle:									
EaB	0-5	0.06-0.2	0.12-0.18	5.1-6.5	High	High	Moderate	---	---
	5-27	<0.2	0.12-0.18	4.5-5.5	High	High	Moderate	---	
	27-80	0.6-2.0	0.13-0.24	5.1-6.5	Low	High	Moderate	---	
Falaya:									
Fa	0-6	0.6-2.0	0.20-0.22	4.5-7.3	Low	High	Moderate	---	---
	6-68	0.06-2.0	0.14-0.22	4.5-5.5	Low	High	Moderate	---	
Fluvaquents:									
Ff	0-60								
Variable material									
Foley:									
[1]Fo:									
Foley part	0-10	0.6-2.0	0.13-0.24	4.5-7.3	Low	High	Low	---	---
	10-17	0.2-0.6	0.18-0.24	5.1-7.3	Moderate	High	Low	---	
	17-44	<0.06	0.10-0.14	5.1-9.0	Moderate	High	Low	---	
	44-80	<0.06	0.10-0.14	6.6-9.0	Low	High	Low	---	
Bonn part	0-8	0.2-0.6	0.15-0.23	4.5-7.3	Low	High	Low	0.49	3
	8-59	<0.06	0.08-0.14	5.6-9.0	Low	High	Low	0.49	
	59-75	<0.2	0.08-0.14	6.6-9.0	Low	High	Low	0.49	

See footnotes at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Grenada:									
GrB	0-4	0.6-2.0	0.20-0.23	4.5-6.0	Low	Moderate	Moderate	0.43	3
	4-19	0.6-2.0	0.20-0.23	4.5-6.0	Low	Moderate	Moderate	0.43	
	19-21	0.6-2.0	0.20-0.23	4.5-6.0	Low	Moderate	Moderate	0.43	
	21-60	0.06-0.2	0.10-0.12	4.5-6.0	Low	Moderate	Moderate	0.43	
Henry:									
He	0-11	0.6-2.0	0.20-0.23	4.5-5.5	Low	High	Moderate	---	---
	11-32	0.6-2.0	0.20-0.23	4.5-5.5	Low	High	Moderate	---	
	32-63	0.06-0.2	0.14-0.17	4.5-5.5	Low	High	Moderate	---	
	63-76	0.2-0.6	0.20-0.23	5.1-7.8	Low	High	Moderate	---	
Hillemann:									
Hn	0-13	0.2-0.6	0.22-0.30	5.1-6.0	Low	High	Moderate	---	---
	13-21	0.2-0.6	0.18-0.24	5.1-6.0	Low	High	Moderate	---	
	21-26	<0.06	0.14-0.22	5.1-6.0	Moderate	High	Moderate	---	
	26-34	<0.06	0.10-0.14	5.1-6.0	Moderate	High	Moderate	---	
	34-80	<0.06	0.10-0.14	5.6-6.5	Low	High	Moderate	---	
Jeanerette:									
Je	0-14	0.6-2.0	0.21-0.23	5.6-7.8	Low	High	Low	0.37	3
	14-46	0.2-0.6	0.20-0.22	6.6-8.4	Moderate	High	Low	0.32	
	46-78	0.2-0.6	0.20-0.23	6.6-8.4	Moderate	High	Low	0.32	
Lagrange:									
La	0-35	2.0-6.0	0.10-0.15	4.5-5.5	Low	High	Moderate	---	---
	35-77	0.2-0.6	0.16-0.24	4.5-5.5	Low	High	Moderate	---	
Loring:									
LoB, LoC2, LoD2	0-5	0.6-2.0	0.20-0.23	5.1-6.0	Low	Moderate	Moderate	0.37	4
	5-26	0.6-2.0	0.20-0.22	5.1-6.0	Low	Moderate	Moderate	0.32	
	26-52	0.2-0.6	0.06-0.13	5.1-6.0	Low	Moderate	Moderate	0.28	
	52-80	0.6-2.0	0.06-0.13	5.1-6.5	Low	Moderate	Low	0.32	
Marvell:									
Ma	0-33	0.6-2.0	0.10-0.15	5.1-6.0	Low	Low	Moderate	---	---
	33-72	0.2-0.6	0.16-0.24	5.1-6.0	Low	Low	Moderate	---	
Memphis:									
MeB, MeC2, MeD2, MeF	0-10	0.6-2.0	0.20-0.23	4.5-6.0	Low	Low	Moderate	0.37	5
	10-46	0.6-2.0	0.20-0.22	4.5-6.0	Low	Moderate	Moderate	0.37	
	46-80	0.6-2.0	0.20-0.23	4.5-6.0	Low	Low	Moderate	0.37	
Mhoon:									
Mh	0-23	0.6-2.0	0.21-0.23	6.1-7.8	Low	High	Low	0.43	5
	23-59	0.06-0.2	0.18-0.22	6.1-8.4	Moderate	High	Low	0.37	
	59-78	0.06-0.2	0.15-0.20	6.1-8.4	High	High	Low	0.32	
Natchez:									
NaF	0-28	0.6-2.0	0.20-0.24	5.1-7.3	Low	Low	Low	0.37	5
	28-80	0.6-2.0	0.20-0.24	6.6-8.4	Low	Low	Low	0.37	
Newellton:									
NeA, NeB, [1]Nf	0-6	0.2-0.6	0.20-0.22	5.6-7.3	Moderate	High	Low	0.37	5
	6-15	0.06-0.2	0.18-0.20	5.6-7.3	High	High	Low	0.32	
	15-70	0.2-2.0	0.20-0.22	6.1-8.4	Low	High	Low	0.37	
Robinsonville:									
Ro, [1]Rs	0-29	2.0-6.0	0.15-0.22	6.1-8.4	Low	Low	Low	---	---
	29-74	0.6-6.0	0.14-0.18	6.1-8.4	Low	Low	Low	---	
Sharkey:									
Sh, [1]Sk	0-8	<0.06	0.18-0.20	5.1-8.4	High	High	Low	---	---
	8-53	<0.06	0.18-0.20	5.6-8.4	High	High	Low	---	
	53-70	0.06-0.2	0.18-0.22	6.6-8.4	High	High	Low	---	

See footnotes at end of table.

TABLE 14.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Risk of corrosion		Erosion factors	
						Uncoated steel	Concrete	K	T
	In	In/hr	In/in	pH					
Tunica:									
TnA, TnB, [1]Tu-----	0-6	0.06-0.2	0.14-0.22	5.6-7.8	Moderate--	High----------	Low----------	---	---
	6-25	<0.06	0.15-0.20	5.6-7.8	High------	High----------	Low----------	---	
	25-30	0.06-2.0	0.10-0.22	5.6-7.8	Low-------	High----------	Low----------	---	
	30-80	0.60-2.0	0.10-0.22	6.1-7.8	Low-------	High----------	Low----------	---	
Zachary:									
[1]Za----------	0-26	0.6-2.0	0.21-0.23	4.5-6.0	Low-------	High----------	Moderate-----	0.49	5
	26-65	0.06-0.2	0.20-0.22	4.5-6.0	Moderate--	High----------	Moderate-----	0.43	
	65-72	0.06-0.6	0.20-0.23	4.5-6.0	Low-------	High----------	Moderate-----	0.43	

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 15.--SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. See text for descriptions of symbols. The symbol < means less than; > means greater than]

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
Alligator: Ac, Ag	D	Rare to frequent.	Brief to long	Jan-Apr	0.5-2.0	Apparent	Jan-Apr
Bruno: BrB, Bs	A	None to frequent.	Brief	Dec-Jun	4.0-6.0	Apparent	Dec-Apr
Calhoun: Ca	D	None	---	---	0-2.0	Apparent	Dec-Apr
Calloway: CbA, CbB	C	None	---	---	1.0-2.0	Perched	Dec-Apr
Commerce: Cm, [1]Cs	C	None to frequent.	Brief to long	Jan-Jun	1.5-4.0	Apparent	Dec-Apr
Convent: Cv	C	None to common	Brief to long	Dec-Jun	1.5-4.0	Apparent	Dec-Apr
Dubbs: DsB	B	None	---	---	>6.0	---	---
Dundee: Du	C	None	---	---	1.5-3.5	Apparent	Dec-Apr
Earle: EaB	D	None to common	Long to very long.	Dec-May	0-1.0	Perched	Dec-Apr
Falaya: Fa	D	Common	Very brief to long.	Jan-Apr	1.0-2.0	Apparent	Jan-Apr
Fluvaquents: Ff	A	Frequent	Long	Nov-Jun	0-1.0	Apparent	Nov-Jun
Foley: [1]Fo:							
Foley part	D	None	---	---	0-1.0	Perched	Dec-Apr
Bonn part	D	None	---	---	0-2.0	Perched	Dec-Apr
Grenada: GrB	C	None	---	---	2.0-2.5	Perched	Jan-Apr
Henry: He	D	None to rare	---	---	1.0-1.5	Perched	Dec-Apr
Hillemann: Hn	C	None	---	---	0.5-1.0	Perched	Dec-Apr
Jeanerette: Je	D	None	---	---	1.0-2.5	Apparent	Dec-Apr
Lagrange: La	D	None	---	---	1.0-1.5	Perched	Dec-Apr
Loring: LoB, LoC2, LoD2	C	None	---	---	2.0-3.0	Perched	Jan-Apr
Marvell: Ma	B	None	---	---	>6.0	---	---
Memphis: MeB, MeC2, MeD2, MeF	B	None	---	---	>6.0	---	---

See footnotes at end of table.

TABLE 15.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
Mhoon: Mh	D	Rare to frequent.	Brief to long	Jan-Jun	0-3.0	Apparent	Dec-Apr
Natchez: NaF	B	None	---	---	>6.0	---	---
Newellton: NeA, NeB, [1]Nf	D	None to frequent.	Brief to long	Dec-Jun	1.0-3.0	Apparent	Dec-Apr
Robinsonville: Ro, [1]Rs	B	None to frequent.	Brief	Jan-Apr	4.0-6.0	Apparent	Jan-Apr
Sharkey: Sh, [1]Sk	D	None to frequent.	Brief to very long.	Jan-Jun	0-2.0	Apparent	Dec-Apr
Tunica: TnA, TnB, [1]Tu	D	Rare to frequent.	Brief to long	Jan-Apr	1.5-3.0	Apparent	Jan-Apr
Zachary: [1]Za	D	None to frequent.	Brief to long	Jan-Dec	0.5-1.5	Apparent	Dec-Apr

[1]This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 16.—PHYSICAL ANALYSES OF SELECTED SOILS

[Analyses made by the University of Arkansas, Fayetteville. Zeros indicate that analysis was not made or data resulting from the analysis were not significant]

Soil and sample number	Depth	Horizon	Particle-size distribution					
			Very coarse sand through medium sand (2.0-0.25 mm.)	Fine sand (0.25-0.10 mm.)	Very fine sand (0.10-0.05 mm.)	Total sand (2.0-0.05 mm.)	Silt (0.05-0.002 mm.)	Clay (<0.002 mm.)
	Inches							
Alligator clay	0-4	Ap	1	1	1	2	39	59
S-71-Ark-39-12	4-10	B21g	0	1	1	2	31	67
	10-20	B22g	0	0	1	2	28	71
	20-36	B23g	0	0	1	1	17	83
	36-48	B24g	0	0	1	2	27	71
	48-63	C1g	0	1	5	6	50	45
	63-78	C2g	0	0	9	9	59	32
Bonn silt loam	0-4	Ap	6	1	1	8	76	15
S-71-Ark-39-4	4-8	A2g	1	0	0	2	70	28
	8-14	B21tg & A2	1	0	0	2	65	34
	14-27	B22tg & A2	1	1	1	2	60	38
	27-42	B23tg	2	1	1	3	63	34
	42-59	B24tg	2	1	1	3	62	36
	59-75	Cg	2	1	1	3	46	51
Bruno soils	0-6	Ap	26	57	10	93	5	3
S-72-Ark-39-12	6-16	C1	1	75	18	94	5	1
	16-20	C2	0	20	38	58	33	9
	20-29	C3	5	78	14	97	2	1
	29-52	C4	6	77	12	95	3	2
	52-70	C5	50	43	4	96	2	1
Calhoun silt loam	0-5	Ap	1	0	0	1	84	15
S-72-Ark-39-4	5-18	A2g	1	0	0	2	81	18
	18-30	B2tg	1	0	0	1	66	33
	30-48	B3g	1	0	0	1	79	19
	48-68	Cg	0	0	0	1	82	17

TABLE 16.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil and sample number	Depth	Horizon	Particle-size distribution					
			Very coarse sand through medium sand (2.0-0.25 mm.)	Fine sand (0.25-0.10 mm.)	Very fine sand (0.10-0.05 mm.)	Total sand (2.0-0.05 mm.)	Silt (0.05-0.002 mm.)	Clay (<0.002 mm.)
	Inches							
Calloway silt loam-----	0-4	Ap1	4	1	1	5	84	11
S-70-Ark-39-1	4-8	Ap2	2	1	1	4	84	12
	8-19	B	2	0	0	3	76	21
	19-23	A'2	4	1	1	6	78	17
	23-30	B'x1	1	1	1	2	72	26
	30-47	B'x2	1	1	1	2	72	25
	47-57	B'x3	0	0	1	1	78	22
	57-74	C	0	0	1	1	82	18
Commerce silt loam-----	0-5	Ap1	0	1	7	8	76	15
S-72-Ark-39-10	5-10	Ap2	0	1	7	8	79	13
	10-28	B2	0	0	2	2	64	33
	28-42	C1	0	0	6	6	77	17
	42-60	C2	0	0	3	3	76	21
	60-72	C3	0	0	8	8	78	14
Dubbs loam-----------	0-6	Ap	0	9	36	45	40	14
S-72-Ark-39-8	6-15	B21t	0	2	31	34	41	26
	15-26	B22t	0	1	25	25	52	23
	26-37	B23t	0	1	8	9	68	24
	37-54	B3	1	6	6	12	72	16
	54-72	C	1	27	47	75	22	4
Dundee silt loam-------	0-6	Ap	1	2	18	21	64	15
S-71-Ark-39-14-4	6-12	A1	1	2	17	19	63	18
	12-29	B21tg	1	1	8	9	56	35
	29-36	B22tg	0	2	20	22	48	31
	36-46	B3tg	0	9	32	41	38	21
	46-59	C1g	0	1	7	9	52	40
	59-72	C2g	0	0	1	2	46	52
Hillemann silt loam----	0-3	Ap	0	0	0	1	85	14
S-71-Ark-39-5	3-13	A2	1	0	1	2	81	17
	13-21	B1	2	1	1	3	77	20
	21-26	B21t	0	1	1	1	62	37
	26-34	B22t	1	1	1	2	69	29
	34-49	B3	0	1	1	2	74	25
	49-64	C1	0	0	0	1	79	20
	64-80	C2	0	0	0	0	84	15

TABLE 16.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil and sample number	Depth	Horizon	Particle-size distribution					
			Very coarse sand through medium sand (2.0-0.25 mm.)	Fine sand (0.25-0.10 mm.)	Very fine sand (0.10-0.05 mm.)	Total sand (2.0-0.05 mm.)	Silt (0.05-0.002 mm.)	Clay (<0.002 mm.)
	Inches							
Jeanerette silt loam---	0-4	Ap	1	1	1	2	82	16
S-71-Ark-39-6	4-14	A1	0	0	0	1	76	23
	14-19	B1tg	0	0	0	1	73	27
	19-33	B21tg	0	0	0	0	74	26
	33-46	B22tg	0	0	0	1	75	25
	46-60	B3g	0	0	1	1	83	16
	60-78	Cg	0	0	0	1	88	12
Loring silt loam-------	0-5	Ap	0	0	1	1	82	17
S-71-Ark-39-3	5-15	B21t	0	0	0	1	73	26
	15-26	B22t	0	0	1	1	76	23
	26-34	Bx1	0	0	0	1	79	20
	34-52	Bx2	0	0	1	1	81	18
	52-67	C1	0	0	0	1	83	16
	67-80	C2	0	0	1	1	83	16
Natchez silt loam------	0-3	A1	0	0	1	1	85	14
S-71-Ark-39-11	3-8	B1	0	0	2	2	86	12
	8-28	B2	0	0	1	1	85	14
	28-46	C1	0	0	2	2	91	7
	46-63	C2	0	0	2	2	91	7
	63-80	C3	0	0	2	2	89	9
Newellton silty clay loam----------	0-6	Ap	0	2	2	4	58	37
S-72-Ark-39-3	6-15	B	1	3	4	8	45	47
	15-19	C1	2	18	32	51	30	18
	19-36	C2	1	34	34	69	19	12
	36-54	C3	2	54	24	80	14	6
	54-70	C4	1	36	36	74	21	6
Robinsville fine sandy loam----------	0-6	Ap	0	22	35	57	26	16
S-72-Ark-39-9	6-16	C1	0	13	51	64	28	7
	16-29	C2	0	10	52	62	31	7
	29-42	C3	0	23	46	70	23	7
	42-58	C4	0	1	24	25	64	12
	58-74	C5	0	45	42	86	11	3

TABLE 16.--PHYSICAL ANALYSES OF SELECTED SOILS--Continued

Soil and sample number	Depth	Horizon	Particle-size distribution					
			Very coarse sand through medium sand (2.0-0.25 mm.)	Fine sand (0.25-0.10 mm.)	Very fine sand (0.10-0.05 mm.)	Total sand (2.0-0.05 mm.)	Silt (0.05-0.002 mm.)	Clay (<0.002 mm.)
	Inches							
Sharkey clay----------	0-4	Ap	0	0	0	1	43	56
S-71-Ark-39-13	4-8	A12	0	0	0	1	40	60
	8-24	B21g	0	0	1	1	37	62
	24-40	B22g	0	0	1	1	41	58
	53-70	Cg	0	0	0	1	46	53
Tunica silty clay-----	0-6	Ap	0	2	7	8	59	32
S-72-Ark-39-1	6-25	B2g	0	1	2	3	50	47
	25-30	B3g	0	5	16	21	52	27
	30-49	IIC1	0	16	43	60	29	12
	49-65	IIC2	0	15	42	58	32	11
	65-80	IIIC3g	0	2	22	24	60	16

TABLE 17.--CHEMICAL ANALYSES OF SELECTED SOILS

[Analyses made by the University of Arkansas, Fayetteville. Dashes indicate that analysis was not made or data resulting from the analysis were not significant]

Soil and sample number	Depth	Horizon	Extractable bases				Extractable acidity	Base saturation	Reaction (1:1 soil-water)	Organic matter	Available phosphorus
			Calcium	Magnesium	Sodium	Potassium					
	Inches		milliequivalents per 100 grams of soil					Percent	pH	Percent	Parts per million
Alligator clay	0-4	Ap	13.2	6.6	0.3	0.6	16.3	56	5.5	3.1	25
S-71-Ark-39-12	4-10	B21g	13.2	7.6	0.4	0.5	21.5	50	5.1	1.8	18
	10-20	B22g	13.4	9.0	0.5	0.4	18.9	55	4.9	1.4	1
	20-36	B23g	14.7	12.2	1.0	0.5	21.2	57	4.6	1.0	3
	36-48	B24g	13.3	13.1	1.3	0.4	16.5	63	4.7	0.6	7
	48-63	C1g	11.7	8.1	1.4	0.3	6.6	77	5.8	0.5	19
	63-78	C2g	10.6	7.2	0.8	0.2	3.1	86	6.8	0.4	17
Bonn silt loam	0-4	Ap	2.0	3.2	1.0	0.2	6.0	52	6.2	1.5	9
S-71-Ark-39-4	4-8	A2g	2.3	7.0	3.4	0.3	3.3	80	7.2	1.0	6
	8-14	B21tg & A2	2.2	8.3	6.3	0.4	2.0	90	8.4	0.5	52
	14-27	B22tg & A2	2.9	12.6	8.2	0.5	1.5	94	8.6	0.3	78
	27-42	B23tg	1.9	12.6	7.4	0.5	1.1	95	8.6	0.3	59
	42-59	B24tg	1.9	13.5	6.9	0.6	1.7	93	8.7	0.2	36
	59-75	Cg	3.2	16.5	7.1	0.7	2.5	92	8.6	0.3	31
Bruno soils	0-6	Ap	2.3	1.2	0.2	0.1	0.9	81	7.2	0.7	14
S-72-Ark-39-12	6-16	C1	2.7	1.2	0.2	0.2	—	—	7.3	0.3	—
	16-20	C2	6.3	2.6	0.2	0.2	--	--	7.9	0.9	--
	20-29	C3	2.2	0.7	0.2	0.1	—	—	7.3	0.3	—
	29-52	C4	2.4	0.6	0.2	0.1	--	--	7.5	0.2	--
	52-70	C5	1.8	0.5	0.2	0.1	0.7	79	7.1	0.2	4
Calhoun silt loam	0-5	Ap	6.1	1.3	0.2	0.3	4.4	64	6.0	1.3	43
S-72-Ark-39-4	5-18	A2g	2.9	1.2	0.2	0.2	8.7	34	4.8	0.4	22
	18-30	B2tg	4.6	2.2	0.8	0.3	15.9	33	5.1	0.3	34
	30-48	B3g	6.9	2.2	1.1	0.3	5.8	64	5.9	0.3	27
	48-68	Cg	6.3	2.1	0.9	0.3	3.7	72	6.8	0.3	16

TABLE 17.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil and sample number	Depth	Horizon	Extractable bases				Extractable acidity	Base saturation	Reaction (1:1 soil-water)	Organic matter	Available phosphorus
			Calcium	Magnesium	Sodium	Potassium					
	Inches		milliequivalents per 100 grams of soil					Percent	pH	Percent	Parts per million
Calloway silt loam-----	0-4	Ap1	3.5	0.7	0.2	0.2	5.0	48	5.7	1.3	26
S-70-Ark-39-1	4-8	Ap2	3.7	0.6	0.1	0.2	4.4	51	6.0	1.4	22
	8-19	B	1.9	0.5	0.2	0.2	11.8	19	4.5	0.8	19
	19-23	A'2	1.8	0.8	0.3	0.2	10.5	23	4.6	0.5	12
	23-30	B'x1	3.2	1.7	0.7	0.3	12.6	32	4.9	0.5	14
	30-47	B'x2	4.4	3.0	0.8	0.3	10.6	45	5.3	0.5	16
	47-57	B'x3	5.8	3.6	1.1	0.3	6.4	63	5.7	0.3	27
	57-74	C	6.8	4.8	1.1	0.3	4.6	74	6.5	0.3	23
Commerce silt loam-----	0-5	Ap1	7.7	2.1	0.3	0.6	3.6	75	6.0	1.4	70
S-72-Ark-39-10	5-10	Ap2	6.7	1.9	0.3	0.5	3.6	72	6.2	1.7	68
	10-28	B2	10.7	3.8	0.3	0.6	8.4	65	5.5	1.6	51
	28-42	C1	8.7	3.1	0.2	0.3	3.4	78	6.0	0.7	29
	42-60	C2	9.6	3.7	2.2	0.4	5.2	73	6.1	0.6	26
	60-72	C3	6.9	3.0	0.2	0.3	1.9	85	6.1	0.5	32
Dubbs loam----------	0-6	Ap	7.0	2.0	0.2	0.4	4.1	70	5.4	1.6	32
S-72-Ark-39-8	6-15	B21t	10.5	2.9	0.3	0.3	7.1	66	5.5	1.1	14
	15-26	B22t	9.3	2.7	0.3	0.3	6.1	67	5.8	0.7	30
	26-37	B23t	10.9	3.2	0.3	0.3	6.1	71	5.9	0.6	33
	37-54	B3	8.6	2.5	0.3	0.2	6.3	65	6.0	0.5	38
	54-72	C	4.8	1.3	0.2	0.1	0.7	90	6.3	0.3	27
Dundee silt loam-------	0-6	Ap	7.4	2.1	0.2	0.4	5.3	66	5.8	2.0	37
S-71-Ark-39-14-4	6-12	A1	9.1	2.4	0.2	0.3	7.6	61	5.8	1.3	23
	12-29	B21tg	17.2	5.0	0.4	0.6	9.7	71	5.5	0.9	35
	29-36	B22tg	14.3	4.7	0.4	0.6	8.3	71	5.6	0.6	41
	36-46	B3tg	10.5	3.8	0.3	0.4	6.5	70	5.7	0.5	46
	46-59	C1g	17.1	6.6	0.5	0.7	8.8	74	5.7	0.6	39
	59-72	C2g	20.8	8.4	0.6	0.9	9.2	77	6.0	0.7	30
Hillemann silt loam----	0-3	Ap	4.9	2.1	0.3	0.2	5.5	58	5.6	12.4	16
S-71-Ark-39-5	3-13	A2	3.4	1.6	0.3	0.1	6.0	48	5.7	1.3	4
	13-21	B1	1.4	0.9	0.6	0.1	9.3	24	5.5	0.6	2
	21-26	B21t	2.7	2.8	2.4	0.2	15.4	34	5.6	0.8	1
	26-34	B22t	3.1	3.9	3.0	0.2	9.7	51	5.8	0.5	1
	34-49	B3	3.9	4.7	3.2	0.3	6.2	66	6.1	0.4	1
	49-64	C1	4.5	4.6	3.0	0.2	2.8	81	7.7	0.2	7
	64-80	C2	4.4	4.2	2.9	0.2	2.4	83	8.0	0.2	8

TABLE 17.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil and sample number	Depth	Horizon	Extractable bases				Extractable acidity	Base saturation	Reaction (1:1 soil-water)	Organic matter	Available phosphorus
			Calcium	Magnesium	Sodium	Potassium					
	Inches		milliequivalents per 100 grams of soil					Percent	pH	Percent	Parts per million
Jeanerette silt loam---	0-4	Ap	8.5	2.8	0.3	0.5	5.3	70	6.5	2.7	100
S-71-Ark-39-6	4-14	A1	10.0	4.7	0.3	0.3	4.7	77	6.7	1.8	17
	14-19	B1tg	10.0	6.4	0.4	0.2	2.1	89	7.6	1.1	6
	19-33	B21tg	9.8	7.2	0.4	0.2	1.8	91	7.7	0.6	4
	33-46	B22tg	8.9	7.9	0.4	0.2	1.8	91	7.8	0.4	3
	46-60	B3g	6.7	5.9	0.3	0.1	1.0	93	8.0	0.3	1
	60-78	Cg	8.6	5.1	0.3	0.1	0.6	96	8.2	0.3	1
Loring silt loam-------	0-5	Ap	7.0	1.8	0.1	0.6	1.9	83	7.4	1.1	53
S-71-Ark-39-3	5-15	B21t	4.1	2.1	0.3	0.3	8.8	44	5.3	0.6	23
	15-26	B22t	2.9	2.2	0.5	0.3	10.3	36	4.9	0.5	16
	26-34	Bx1	3.2	2.3	0.6	0.3	8.8	42	4.8	0.4	18
	34-52	Bx2	3.8	2.3	0.5	0.3	7.8	47	4.7	0.3	23
	52-67	C1	5.9	2.8	0.3	0.3	6.9	57	5.3	0.4	41
	67-80	C2	6.5	2.8	0.3	0.3	6.2	62	5.6	0.3	50
Natchez silt loam------	0-3	A1	6.0	3.4	0.2	0.2	6.2	61	6.2	2.5	8
S-71-Ark-39-11	3-8	B1	4.5	3.9	0.2	0.1	4.3	67	5.8	0.7	11
	8-28	B2	5.0	4.4	0.5	0.2	4.5	69	5.9	0.3	14
	28-46	C1	5.4	3.5	0.7	0.2	1.4	88	8.5	0.2	18
	46-63	C2	6.7	3.8	1.1	0.2	0.8	94	8.8	0.3	16
	63-80	C3	6.9	3.7	1.0	0.2	0.9	93	8.8	0.3	14
Newellton silty clay loam----------	0-6	Ap	13.4	5.3	0.2	0.8	6.9	74	6.4	2.4	54
S-72-Ark-39-3	6-15	B	22.6	2.2	0.2	0.6	7.5	77	6.8	1.6	31
	15-19	C1	9.3	3.1	0.1	0.3	4.5	74	6.2	0.8	49
	19-36	C2	8.1	2.6	0.2	0.3	3.7	75	6.3	0.6	54
	36-54	C3	5.0	1.7	0.1	0.2	2.4	74	6.5	0.4	41
	54-70	C4	6.1	1.5	0.1	0.2	2.1	79	6.7	0.3	40
Robinsonville fine sandy loam----------	0-6	Ap	7.1	2.4	0.2	0.3	2.7	79	6.2	1.0	26
S-72-Ark-39-9	6-16	C1	5.4	1.9	0.2	0.2	2.0	79	6.7	0.6	27
	16-29	C2	5.1	2.1	0.2	0.2	1.8	81	6.7	0.5	24
	29-42	C3	4.4	2.3	0.2	0.2	1.6	82	7.2	0.5	16
	42-58	C4	8.6	3.1	0.2	0.2	--	--	8.1	0.6	--
	58-74	C5	4.4	1.8	0.2	0.1	--	--	8.2	0.3	--

TABLE 17.--CHEMICAL ANALYSES OF SELECTED SOILS--Continued

Soil and sample number	Depth	Horizon	Extractable bases				Extractable acidity	Base saturation	Reaction (1:1 soil-water)	Organic matter	Available phosphorus
			Calcium	Magnesium	Sodium	Potassium					
	Inches		milliequivalents per 100 grams of soil					Percent	pH	Percent	Parts per million
Sharkey clay----------	0-4	Ap	14.9	6.0	0.2	0.8	17.0	56	5.5	3.1	53
S-71-Ark-39-13	4-8	A12	15.4	7.1	0.2	0.7	15.2	61	5.6	2.6	33
	8-24	B21g	15.7	9.7	0.3	0.5	12.1	68	6.0	1.4	26
	24-40	B22g	17.8	8.9	0.3	0.5	9.8	74	6.3	1.1	30
	40-53	B23g	18.6	10.9	0.3	0.5	8.2	79	6.2	1.0	34
	53-70	Cg	18.5	10.0	0.3	0.5	8.0	79	6.3	0.8	33
Tunica silty clay------	0-6	Ap	14.2	2.2	0.2	0.2	3.6	82	7.2	2.1	64
S-72-Ark-39-1	6-25	B2g	21.3	5.5	0.2	0.6	5.8	83	6.9	1.5	26
	25-30	B3g	13.3	4.0	0.2	0.4	3.9	82	6.9	0.9	20
	30-49	IIC1	8.4	2.3	0.2	0.2	2.6	81	7.0	0.5	29
	49-65	IIC2	7.0	2.2	2.2	0.2	2.3	81	6.8	0.4	30
	65-80	IIIC3g	9.5	3.2	0.2	0.3	3.2	80	6.8	0.5	24

TABLE 18.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates a taxadjunct to the series. See text for a description of those characteristics of this taxadjunct that are outside the range of the series]

Soil	Family	Subgroup	Order
Alligator	Very-fine, montmorillonitic, acid, thermic	Vertic Haplaquepts	Inceptisols.
Bonn	Fine-silty, mixed, thermic	Glossic Natraqualfs	Alfisols.
Bruno	Sandy, mixed, thermic	Typic Udifluvents	Entisols.
Calhoun	Fine-silty, mixed, thermic	Typic Glossaqualfs	Alfisols.
Calloway	Fine-silty, mixed, thermic	Glossaquic Fragiudalfs	Alfisols.
Commerce	Fine-silty, mixed, nonacid, thermic	Aeric Fluvaquents	Entisols.
Convent	Coarse-silty, mixed, nonacid, thermic	Aeric Fluvaquents	Entisols.
Dubbs	Fine-silty, mixed, thermic	Typic Hapludalfs	Alfisols.
Dundee	Fine-silty, mixed, thermic	Aeric Ochraqualfs	Alfisols.
Earle	Clayey over loamy, montmorillonitic, acid, thermic.	Vertic Haplaquepts	Inceptisols.
Falaya	Coarse-silty, mixed, acid, thermic	Aeric Fluvaquents	Entisols.
Foley	Fine-silty, mixed, thermic	Albic Glossic Natraqualfs	Alfisols.
Grenada	Fine-silty, mixed, thermic	Glossic Fragiudalfs	Alfisols.
Henry	Coarse-silty, mixed, thermic	Typic Fragiaqualfs	Alfisols.
Hillemann	Fine-silty, mixed, thermic	Albic Glossic Natraqualfs	Alfisols.
Jeanerette	Fine-silty, mixed, thermic	Typic Argiaquolls	Mollisols.
Lagrange	Coarse-loamy, mixed, thermic	Typic Ochraqualfs	Alfisols.
Loring	Fine-silty, mixed, thermic	Typic Fragiudalfs	Alfisols.
Marvell	Coarse-loamy, mixed, thermic	Typic Hapludalfs	Alfisols.
Memphis	Fine-silty, mixed, thermic	Typic Hapludalfs	Alfisols.
*Mhoon	Fine-silty, mixed, nonacid, thermic	Typic Fluvaquents	Entisols.
Natchez	Coarse-silty, mixed, thermic	Typic Eutrochrepts	Inceptisols.
Newellton	Clayey over loamy, montmorillonitic, nonacid, thermic.	Aeric Fluvaquents	Entisols.
Robinsonville	Coarse-loamy, mixed, nonacid, thermic	Typic Udifluvents	Entisols.
Sharkey	Very-fine, montmorillonitic, nonacid, thermic	Vertic Haplaquepts	Inceptisols.
Tunica	Clayey over loamy, montmorillonitic, nonacid, thermic.	Vertic Haplaquepts	Inceptisols.
Zachary	Fine-silty, mixed, thermic	Typic Albaqualfs	Alfisols.

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