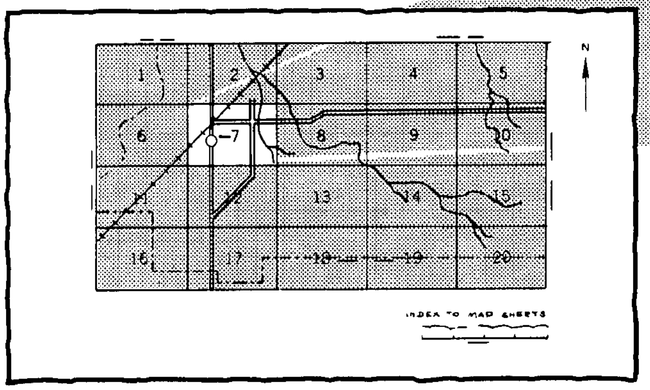
SOIL SURVEY OF

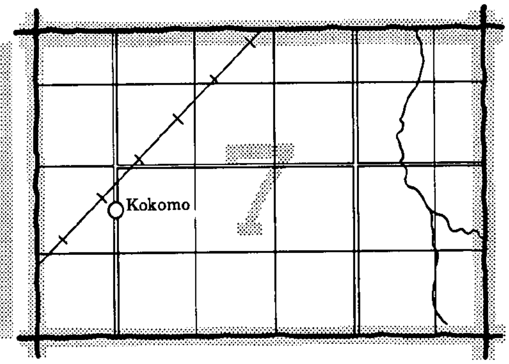
Jefferson and Lincoln Counties, Arkansas

United States Department of Agriculture
Soil Conservation Service
In cooperation with
Arkansas Agricultural Experiment Station

HOW TO USE

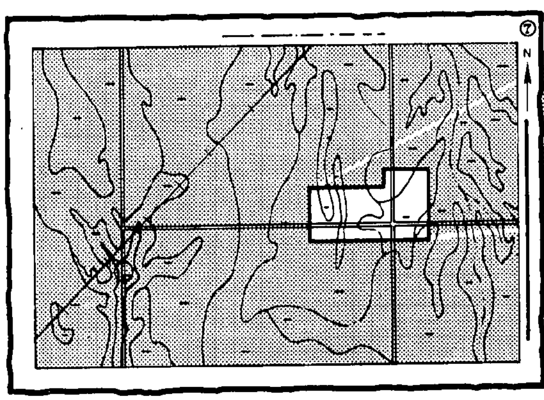
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

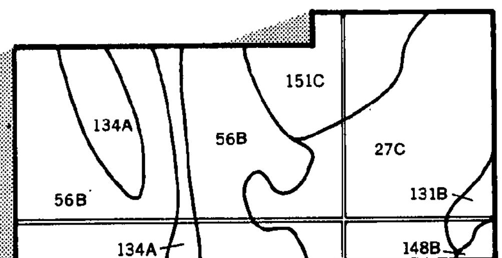




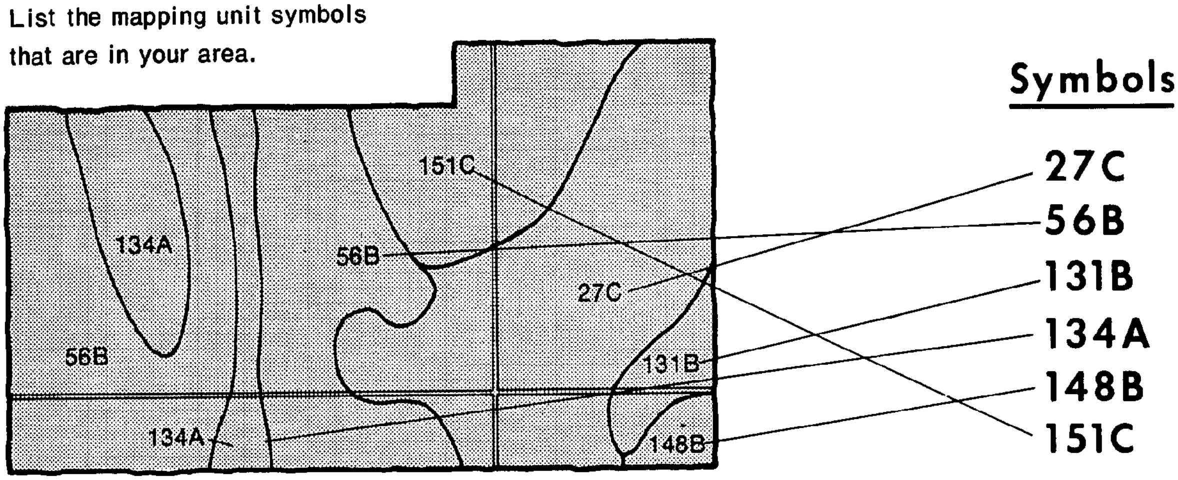
2. Note the number of the map sheet and turn to that sheet.

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



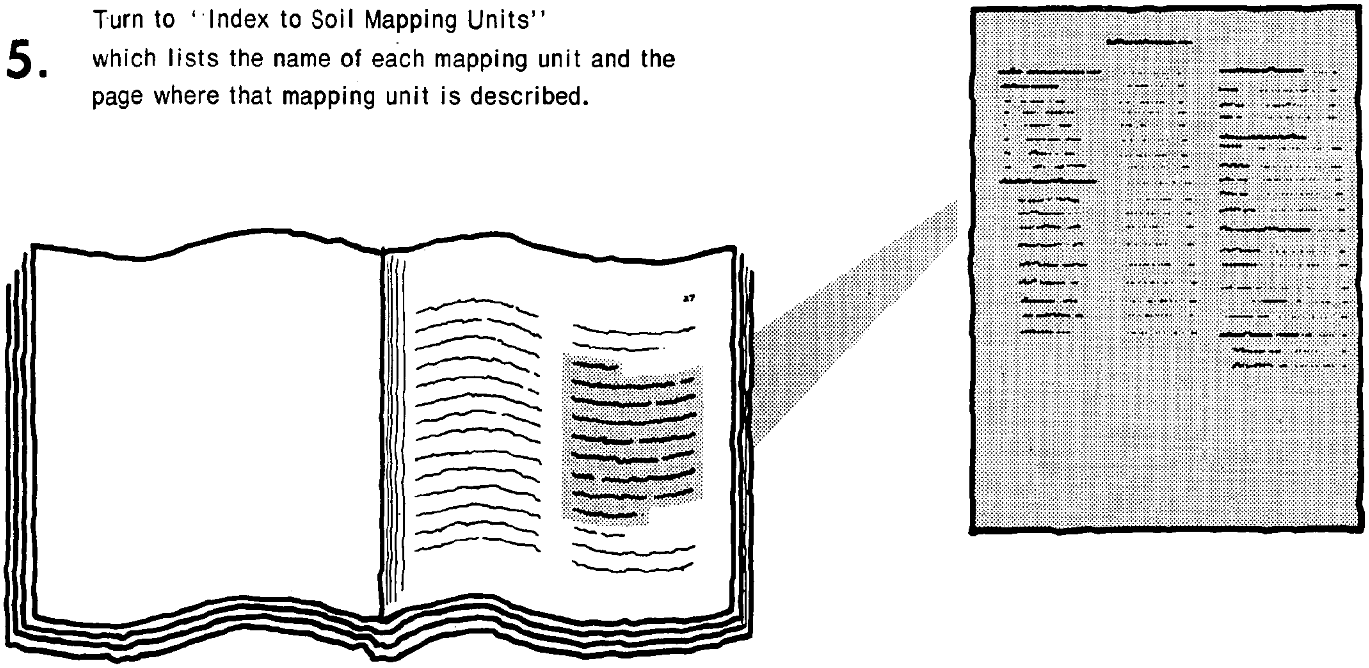


4. List the mapping unit symbols that are in your area.

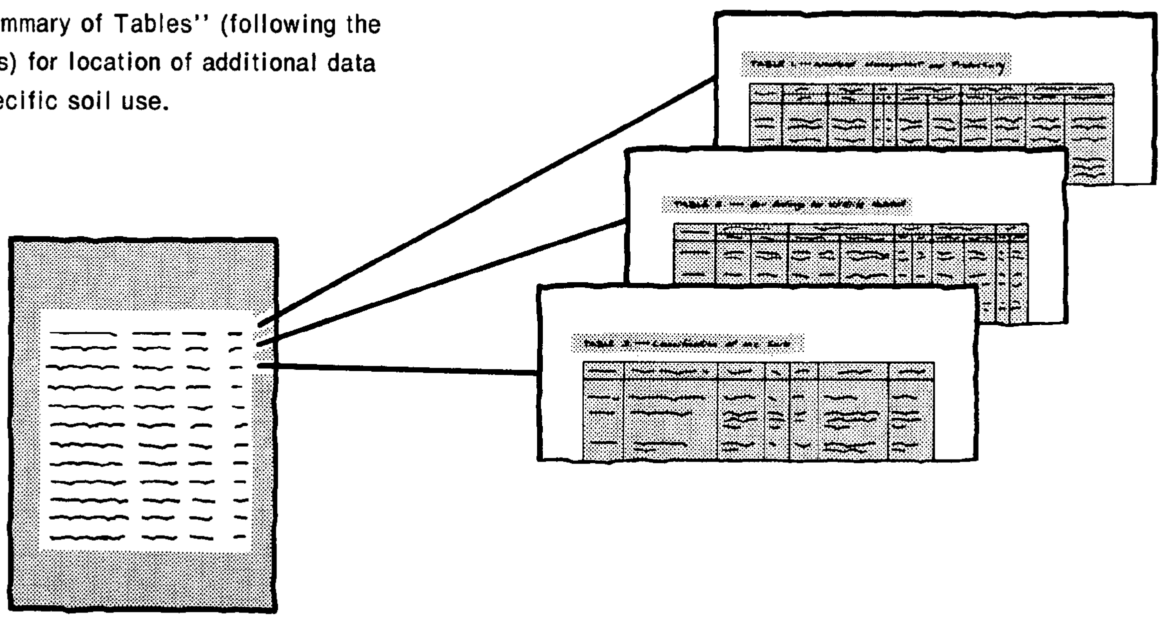


THIS SOIL SURVEY

5. Turn to "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 1968-74. Soil names and descriptions were approved in 1975. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1975. This survey was made cooperatively by the Soil Conservation Service and the Arkansas Agricultural Experiment Station. It is part of the technical assistance furnished to the Jefferson County and Lincoln County Conservation Districts.

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.

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Issued December 1980

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Foreword

The Soil Survey of Jefferson and Lincoln Counties, Arkansas, contains much information useful in any land-planning program. Of prime importance are the predictions of soil behavior for selected land uses. Also highlighted are limitations or hazards to land uses that are inherent in the soil, improvements needed to overcome these limitations, and the impact that selected land uses will have on the environment.

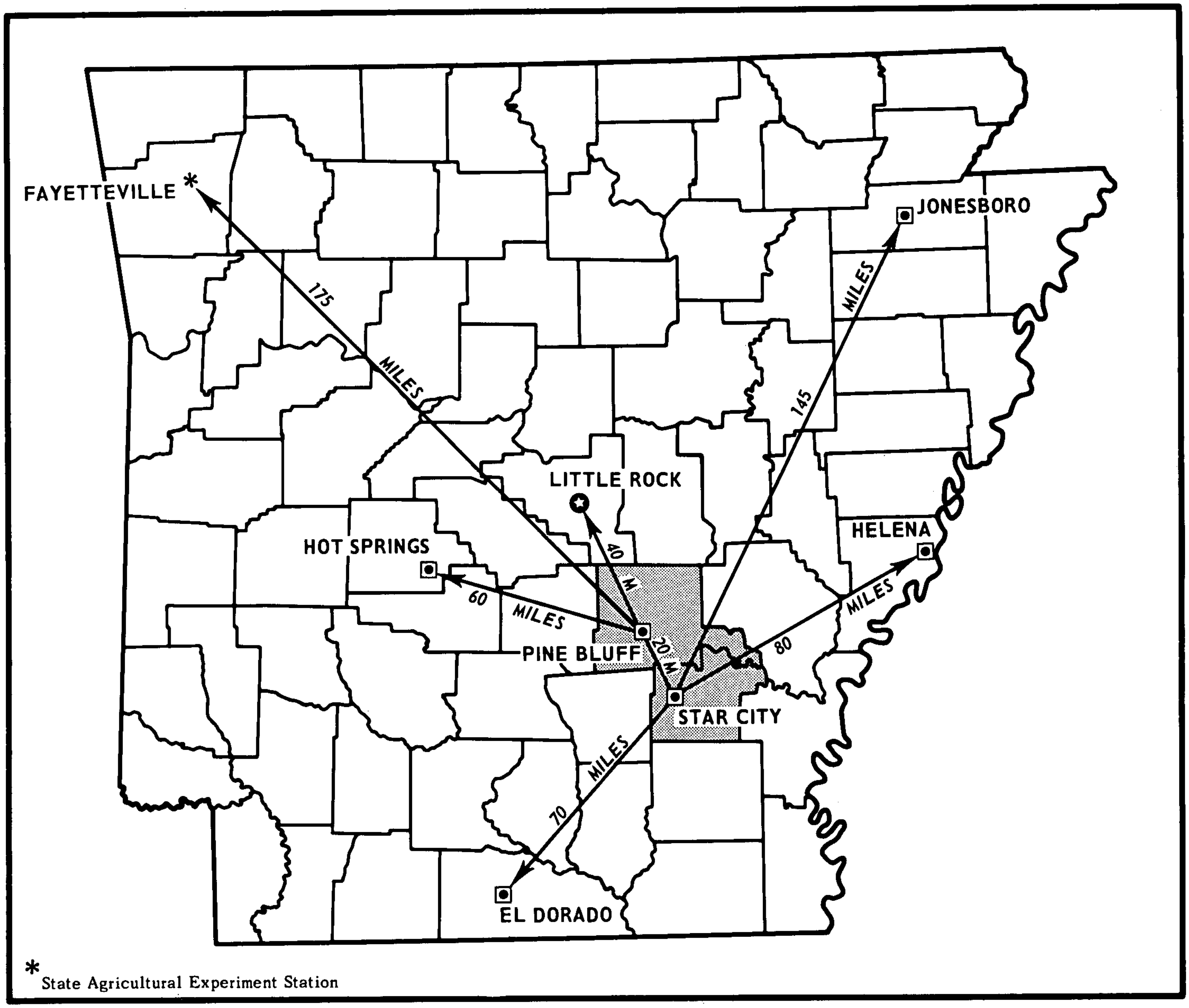
This soil survey has been prepared for many different users. Farmers, ranchers, foresters, and agronomists can use it to determine the potential of the soil and the management practices required for food and fiber production. Planners, community officials, engineers, developers, builders, and homebuyers can use it to plan land use, select sites for construction, develop soil resources, or identify any special practices that may be needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the soil survey to help them understand, protect, and enhance the environment.

Many people assume that soils are all more or less alike. They are unaware that great differences in soil properties can occur even within short distances. Soils may be seasonally wet or subject to flooding. They may be shallow to bedrock. They may be too unstable to be used as a foundation for buildings or roads. Very clayey or wet soils are poorly suited to septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map; the location of each kind of soil is shown on detailed soil maps. Each kind of soil in the survey area is described, and much information is given about each soil for specific uses. Additional information or assistance in using this publication can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

We believe that this soil survey can help bring us a better environment and a better life. Its widespread use can greatly assist us in the conservation, development, and productive use of our soil, water, and other resources.

M J Spears
State Conservationist
Soil Conservation Service



Location of Jefferson and Lincoln Counties in Arkansas.

SOIL SURVEY OF JEFFERSON AND LINCOLN COUNTIES, ARKANSAS

By Hiram V. Gill, Fred C. Larance, and Thomas W. Fortner, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service, in cooperation with the Arkansas Agricultural Experiment Station

JEFFERSON AND LINCOLN COUNTIES are in southeastern Arkansas (see map on facing page). They have a total area of 945,280 acres and a land area of 918,656 acres.

Jefferson County is approximately square with a narrow, irregular extension on its east side along the Arkansas River. The county is about 43 miles wide and 29 miles long. It is bounded on the south by Lincoln and Cleveland Counties, on the west by Grant County, on the north by Pulaski and Lonoke Counties, and the east by Arkansas County. The total area is 580,480 acres; the land area is 558,656 acres, or 873 square miles.

In 1970 the population was 85,329. Pine Bluff, the county seat and main trading center, had a population of 57,389. Altheimer, the next largest place, had a population of 1,037.

Farming is important in the eastern part of Jefferson County, and forestry is important in the western part. Manufacturing, construction, defense, transportation, merchandising, banking, and supporting businesses are the most important factors in the economy of the county. The Pine Bluff area is expanding rapidly.

Lincoln County, excluding the area along the Arkansas River, is approximately square. It is about 23 miles wide and 21 miles long. The county is bounded on the south by Drew County, on the west by Cleveland County, on the north by Jefferson County, and on the east by Desha and Arkansas Counties. The total area is 364,800 acres; the land area is 360,000 acres, or 563 square miles.

In 1970, the population was 12,913. Star City, the county seat and main trading center, had a population of 2,032. Gould, the next largest place, had a population of 1,638.

Farming is important in the eastern part of the Lincoln County, and forestry is important in the western part. The economy is based on production and processing of wood products and on general farming. Except for a few manufacturing plants, most businesses provide agricultural services.

General nature of the survey area

In this section the farming, physiography and drainage, and climate in Jefferson and Lincoln Counties are discussed. Statistics in the discussion of farming are from the 1969 Census of Agriculture.

The soils of the survey area formed in a variety of sediment. Along the east side on bottom lands are soils that formed in loamy and clayey sediment deposited mainly by the Arkansas River and its tributaries. These soils contain moderate to high amounts of plant nutrients. Except for tracts dedicated to wildlife habitat, nearly all of this area is cultivated. Excess water drains away slowly or is ponded and is a moderate to severe hazard over most of the area. In only a few places, erosion is insignificant.

Uplands and their associated local flood plains make up the rest of the survey area. Frequent flooding on the flood plains severely limits their use. Most of the flood plains are forested. In the southeastern part of the uplands area in Jefferson County and in the eastern part in Lincoln County, the soils formed mainly in loamy, windblown sediment. In the western part, the soils formed mainly in older, loamy and clayey sediment laid down in a former, shallow sea. Most of the upland area is forest. Generally, the soils in the southeastern part of the uplands contain moderate amounts of plant nutrients, and those in the remainder contain low amounts. With few exceptions this area is suitable for improved pasture and cultivated crops. Excess water is a moderate to very severe hazard on the level tracts, as is erosion on the more sloping parts.

Elevation in the western part of the survey area ranges from about 190 to 400 feet above mean sea level. Elevation decreases toward the east and west. The flood plain on the east side of the survey area has an elevation of about 155 to 230 feet.

Farming

Early settlers in Jefferson and Lincoln Counties located along the Arkansas River, which at that time afforded the only means of transportation. They cleared a few acres of land, using the timber for fuel and for the construction of cabins, and grew a small quantity of corn and vegetables for food. Game and fish were plentiful, and no attention was given to livestock.

After Arkansas was admitted to the Union in 1836, the low value for fertile land lured many settlers to Jefferson and Lincoln counties from Georgia, Tennessee, North Carolina, South Carolina, and Alabama. More and more acreage was farmed, and large plantations were cleared to grow cotton, corn, and small grains. The importance of agriculture has grown steadily. From 1900 to 1910, extensive drainage projects were completed and several thousand acres of land were reclaimed. Since 1950, soybeans and rice have become very important crops in Jefferson and Lincoln Counties.

According to the 1969 Census of Agriculture, about 54 percent of Jefferson County and about 60 percent of Lincoln County is in farms. The rest consisted of extensive wooded tracts, cities, towns, and transportation and utility facilities. Farming has become more general. Soybeans, cotton, cereal crops, livestock, and truck and special crops are all important in these counties. Table 1 shows the acreage of principal crops in the survey area in 1964 and 1969, and table 2 shows the kinds and number of livestock in the survey area in those years. Lumbering is also important to the economy of these counties.

Farms in Jefferson and Lincoln Counties, as in most of the state, are decreasing in number and increasing in size. Between 1964 and 1969, the number of farms decreased from 958 to 780 in Jefferson County and from 814 to 630 in Lincoln County. During the same period, the average farm increased from 316 to 372 acres in Jefferson County and from 268 acres to 336 acres in Lincoln County.

Most farms are of a size that the family can do most of the work, with outside labor hired only during peak seasons. On the larger farms, laborers are hired 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 sufficently modern equipment to farm efficiently. Most farmers fertilize according to the needs of the crop and use chemicals for weed control.

Physiography and drainage

The geological deposits at the surface of Jefferson and Lincoln Counties are unconsolidated sediment laid down by water and wind. Generally Southern Mississippi Valley alluvium makes up the eastern parts of the counties, Southern Mississippi Valley silty uplands make up the south-central part of Jefferson County and the central part of Lincoln County, and the Southern Coastal Plain makes up the western parts of both counties. The unconsolidated sediment is several hundred feet thick over bedrock.

The topography of these counties can be divided into three main divisions: the rolling uplands, the flatwoods uplands, and the stream flood plains.

The rolling upland belt forms the divide between the eastern and western drainage systems. This belt crosses the survey area in a general north-south direction. Slopes are mainly 1 to 8 percent, but range from 0 to 12 percent.

The flatwoods uplands lie mainly east of the rolling uplands. Slopes are mainly less than 1 percent, but low ridges within the area have slopes as steep as 8 percent.

The largest areas of flood plains are along the Arkansas River and Bayou Bartholomew. Major flooding is rare along these streams, but there are occasional local floods in low areas. Slopes in this area are generally less than 1 percent, but some small tracts are undulating and have short slopes as steep as 3 percent. Smaller areas of flood plains are along the small tributary streams. Most of these areas have slopes of less than 1 percent and are subject to frequent flooding.

The small streams east of the divide flow in a southeasterly direction into the Arkansas River and Bayou Bartholomew. Those west of the divide flow southwesterly to the Saline River.

The major tributary streams to the main drainageways in Jefferson County are Bayou Meto and Plum Bayou in the east and Derrieusseaux Creek in the west. In Lincoln County the main tributaries are Ables Creek and Cane Creek in the east and Hudgin Creek in the west. These streams in turn have numerous small tributaries that spread throughout the uplands.

Climate

Jefferson and Lincoln Counties have long, hot summers because of the moist tropical air from the Gulf of Mexico that persistently covers the area. Winters are cool and fairly short, with only a rare cold wave that moderates in 1 or 2 days. Precipitation is fairly heavy throughout the year. Prolonged droughts are rare. Summer precipitation, mainly afternoon thundershowers, is adequate for all crops.

Table 3 gives data on temperature and precipitation for the survey area, as recorded at Pine Bluff, Arkansas, for the period 1951 to 1974. Table 4 shows probable dates of the first freeze in fall and the last freeze in spring. Table 5 provides data on length of the growing season. Data for this section were obtained from the National Climatic Center, Asheville, North Carolina.

In winter the average temperature is 46 degrees F, and the average daily minimum is 36 degrees. The lowest temperature on record, -1 degree, occurred at Pine Bluff on January 30, 1966. In summer the average temperature is 81 degrees, and the average daily maximum is 92 degrees. The highest temperature, 110 degrees, was recorded on July 18, 1954.

Growing degree days, shown in table 3, are equivalent to "heat units." Beginning in spring, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 25 inches, or 50 percent, usually falls during the period April through September, which includes the growing season for most crops. Two years in 10, the April-September rainfall is less than 19 inches. The heaviest 1-day rainfall during the period of record was 7.83 inches at Pine Bluff on August 17, 1969. Thunderstorms number about 57 each year, 22 in summer.

Average seasonal snowfall is 4 inches. The greatest snow depth at any one time during the period of record was 12 inches.

The average relative humidity in midafternoon is less than 60 percent. Humidity is higher at night in all seasons, and the average at dawn is about 85 percent. The percentage of possible sunshine is 72 percent in summer and 58 percent in winter. Prevailing winds are southwesterly. Average windspeed is highest, 10 miles per hour, in March.

Severe local storms, including tornadoes, strike occasionally in or near the county. They are short and cause variable and spotty damage. Every few years in summer or autumn, a tropical depression or remnant of a hurricane which has moved inland causes extremely heavy rains for 1 to 3 days.

Rainfall is normally adequate for all crops in most of the county, but the lower available water capacity of the sandy soils results in brief droughts nearly every year.

How this survey was made

Soil scientists made this survey to learn what kinds of soil are in the survey area, where they are, 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, which has been changed very little by leaching or by the action of plant roots.

The soil scientists recorded the characteristics of the profiles they studied, and they compared those profiles with others in counties nearby and in places more distant. Thus, through correlation, they classified and named the soils according to nationwide, uniform procedures.

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

The areas shown on a soil map are called soil mapping units. Some mapping units are made up of one kind of soil, others are made up of two or more kinds of soil, and a few have little or no soil material at all. Mapping units are discussed in the section "Soil maps for detailed planning."

While a soil survey is in progress, samples of soils are taken as needed for laboratory measurements and for engineering tests. The soils are field tested, and interpretations of their behavior are modified as necessary during the course of the survey. New interpretations are added to meet local needs, mainly through field observations of different kinds of soil in different uses under different levels of management. Also, data are assembled from other sources, such as test results, records, field experience, and information available from state and local specialists. For example, data on crop yields 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 that it is 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.

Soil map for general planning

The general soil map at the back of this publication shows, in color, the soil associations described in this survey. Each soil association is a unique natural landscape unit that has a distinct pattern of soils and of relief and drainage features. An association typically consists of one or more soils of major extent and some soils of minor extent. It is named for the major soils. The kinds of soil in one association can occur in other soil associations, but in a different pattern.

The map provides a broad perspective of the soils and landscapes in the survey area. It provides a basis for comparing the potential of large areas for general kinds of land use. Areas that are generally suitable for certain kinds of farming or other land uses can be identified on the map. Likewise, areas of soils having properties that are distinctly unfavorable for certain land uses can be located.

Because of its small scale, the map does not show the kind of soil at a specific site. Thus, it is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure; the kinds of soils in any one soil association ordinarily differ from place to place in slope, depth, stoniness, drainage, or other characteristics that affect their management.

The soil associations in the survey area vary widely in their potential for major land uses. Adverse soil properties that pose limitations to the use are indicated. The ratings of soil potential are based on the assumption that practices in common use in the county are used to overcome soil limitations. These ratings reflect the ease of overcoming such soil limitations and the probability of soil problems persisting after such practices are used. The location of existing transportation systems or other kinds of facilities is not considered.

Each association is rated for cultivated farm crops, specialty crops, woodland, and urban uses. Cultivated farm crops are those grown extensively by farmers in the survey area. Specialty crops include vegetables, fruits, and nursery crops grown on limited acreage and generally requiring intensive management. Woodland refers to land that is producing either trees native to the area or introduced species. Urban uses include residential, commercial, and industrial developments. The soil associations in each county are described in the following sections.

Jefferson County

Soils that formed on uplands in sediment deposited in an old coastal embayment and in local sediment washed from these uplands

These soils make up about 31 percent of Jefferson County. They are in the western part of the county, which is in the Southern Coastal Plain. They are moderately well drained to poorly drained, loamy soils that formed in stratified sediment deposited on the bottom of the shallow coastal embayment that covered all of Jefferson County many thousands of years ago, and in recent alluvium washed from this material.

The soils in this group are used mainly for the production of wood crops. Scattered throughout the area are general farms that produce beef cattle, field crops, and truck crops.

1. Pheba-Savannah-Amy association

Poorly drained to moderately well drained, level to gently sloping, loamy soils on uplands and stream terraces

This association is in the western part of Jefferson County. The soils are on broad flats that are broken by ridges. They formed in thick beds of loamy sediment. Natural drainageways are mainly slow-flowing, intermittent streams.

This association makes up about 21 percent of the county. About 45 percent of the association is Pheba soils, 20 percent is Savannah soils, 15 percent is Amy soils, and the remaining 20 percent is soils of minor extent and urban lands.

Pheba soils are somewhat poorly drained and are on the flats and lower parts of ridges. Savannah soils are moderately well drained and are on the ridges. Amy soils are poorly drained and are on broad flats and the flood plains of local drainageways.

The minor soils in this association are the well drained Ouachita, Smithdale, and Ruston soils and the moderately well drained Sawyer and Sacul soils.

This soil association is mainly wooded, but a few small farms are on the better drained soils. Wetness and erosion are the main limitations to the use of these soils.

This association has medium potential for row crops except in areas of Amy soils, where it has low potential. On most of this association, farming operations are commonly delayed several days after a rain because of wetness. The Amy and Pheba soils in this association have high potential for woodland, and Savannah soils have medium potential. Harvesting of timber on the poorly drained soils is usually limited to the drier seasons. Because of wetness, the seasonal high water table, and low bearing strength, the Amy and Pheba soils in this association have low potential for residential and urban uses and the moderately well drained Savannah soils have medium potential.

2. Sacul-Sawyer-Savannah association

Moderately well drained, nearly level to gently sloping, loamy soils on uplands

This association is in the western part of Jefferson County. It consists of broken ridges and narrow swales. Natural drainageways are slow-flowing, intermittent streams.

This association makes up about 10 percent of the county. About 35 percent of the association is Sacul soils, 25 percent is Sawyer soils, 20 percent is Savannah soils, and the remaining 20 percent is soils of minor extent and urban lands.

Sacul soils are moderately well drained and are on ridges. Sawyer soils are moderately well drained and are on the lower parts of side slopes. Savannah soils are moderately well drained and are on ridges and side slopes.

The minor soils in this association are the well drained Ouachita, Smithdale, and Ruston soils; the somewhat poorly drained Pheba soils; and the poorly drained Amy soils.

This association is used mainly as woodland, but some small tracts are used for cultivated crops. Erosion is a moderate to severe hazard on these soils.

This association has medium potential for cultivated crops except in areas of the gently sloping Sacul soils, where it has low potential. Sacul and Savannah soils have medium potential for woodland, and Sawyer soils have high potential. Because of the high shrink-swell rating, low strength, and slow percolation, the Sacul and Sawyer soils have low potential for residential and urban uses. The Savannah soils have medium potential for urban uses.

Soils that formed in predominantly wind-laid sediment

These soils make up about 4 percent of Jefferson County. They are in the central part of the county, which is in the Southern Mississippi Valley Silty Uplands. They are moderately well drained to poorly drained, loamy soils that formed chiefly in material sorted from ancient flood plains by wind and laid down in thick to thin deposits over older loamy and clayey sediment.

Large tracts of soils in this group are used for the production of wood products, and many areas are in general farms that produce beef cattle and field crops.

3. Calloway-Grenada-Henry association

Moderately well drained to poorly drained, level to gently sloping, loamy soils on uplands

This association is in the south-central part of Jefferson County. It consists of broad flats that are broken by low ridges that rise 1 to 10 feet higher than the flats. The natural drainageways are mainly slow-flowing, intermittent streams.

This association makes up about 4 percent of the county. About 40 percent of the association is Calloway soils, 30 percent is Grenada soils, 15 percent is Henry soils, and the remaining 15 percent is soils of minor extent and urban lands.

Calloway soils are somewhat poorly drained and are on flats and the lower parts of ridges. Grenada soils are moderately well drained and are on ridges. Henry soils are poorly drained and are on broad flats.

The minor soils in this association are the well drained Ouachita soils, the moderately well drained Savannah soils, and the poorly drained Amy soils.

This soil association is mainly wooded, but a few small farms are on the better drained soils. Wetness and erosion are the main limitations to the use of these soils.

This association has medium potential for row crops. On most of this association, farming operations are commonly delayed several days after a rain because of wetness. This association has medium potential for woodland; however, harvesting of lumber on the poorly drained soils is usually limited to the drier seasons. Because of wetness, the seasonal high water table, and low bearing strength, the Calloway and Henry soils in this association have low potential for residential and urban uses. Grenada soils have medium potential for most urban uses.

Soils that formed in alluvial sediment deposited by large rivers

These soils make up about 65 percent of Jefferson County. They are in the eastern part of the county, which is in the Southern Mississippi Valley Alluvium. They are excessively drained to poorly drained, loamy and clayey soils that formed on natural levees and in back swamps in sediment chiefly from the Arkansas River and its tributaries.

The soils in this group are used mainly for cultivated crops, but hardwood forests remain in areas subject to flooding.

4. Crevasse-Oklared association

Well drained and excessively drained, level to gently undulating, loamy and sandy soils on bottom lands

This association is in relatively small areas that extend diagonally across Jefferson County from northwest to southeast of Pine Bluff. The soils formed in loamy and sandy sediment deposited on young natural levees along the Arkansas River.

This association makes up about 4 percent of the county. About 45 percent of the association is Crevasse soils, 40 percent is on Oklared soil, and the remaining 15 percent is soils of minor extent.

The excessively drained Crevasse soils are at a slightly higher elevation than the well drained Oklared soil.

The minor soils in this association are the well drained Coushatta and Roxana soils, the somewhat poorly drained Desha and Latanier soils, and the moderately well drained Wabbaseka soils.

This soil association is mainly for pasture, but some small tracts are used for cultivated crops and other small areas are wooded. Flooding is a severe hazard on these soils.

This association has low potential for row crops. Crops are limited to the short-growing varieties because of the hazard of flooding. This association has high potential for woodland; however, harvesting of timber is usually limited to the drier seasons. This association has low potential for residential and urban uses because flooding is a severe limitation. Areas of Crevasse soils protected by the levee have high potential for residential uses, but they have low potential for sanitary facilities because of seepage.

5. Desha-Wabbaseka-Latanier association

Somewhat poorly drained and moderately well drained, level to gently undulating, clayey and clayey over loamy soils on bottom lands

This association is in the eastern part of Jefferson County. The soils formed in clayey and in clayey over loamy sediment. They are in slack water areas and on low natural levees along the Arkansas River and its former channels. Natural drainageways are mainly slow-flowing, intermittent streams.

This soil association makes up about 4 percent of the county. About 35 percent of the association is Desha soils, about 35 percent is Wabbaseka and Latanier soils, and the remaining 30 percent is soils of minor extent.

The Desha soils are in slack water areas and at a slightly lower elevation than Wabbaseka and Latanier soils. Desha and Latanier soils in the association are somewhat poorly drained, and Wabbaseka soils are moderately well drained.

The minor soils in this association are the well drained Rilla, Roxana, Oklared, Coushatta, and Caspiana soils; the somewhat poorly drained Portland, Hebert, and McGehee soils; and the poorly drained Perry soils.

This soil association is used mainly for cultivated crops. Wetness is the main limitation to the use of these soils.

This soil association has medium potential for row crops. Farming operations are commonly delayed several days after a rain because of excess water, and surface drains are needed. This association has high potential for woodlands, except in areas of Desha clay, occasionally flooded, which has medium potential. Harvesting of lumber is usually limited to the drier seasons. Wetness, shrink-swell potential, and low strength are severe limitations; therefore, these soils have low potential for most residential and urban uses. The moderately well drained Wabbaseka soils have medium or high potential for urban uses.

6. Perry-Portland association

Poorly drained and somewhat poorly drained, level, clayey soils on bottom lands

This association is in the eastern part of Jefferson County. The soils are on broad flats in slightly depressional, back swamp and slack water areas. Natural drainageways are mainly slow-flowing, intermittent streams.

This association makes up about 32 percent of the county. About 55 percent of the association is Perry soils, 35 percent is Portland soils, and the remaining 10 percent is soils of minor extent.

The poorly drained Perry soils are at slightly lower elevations than the somewhat poorly drained Portland soils. Both soils have a surface layer of clay and a seasonal high water table.

The minor soils in this assocation are the well drained Rilla and Caspiana soils; the moderately well drained Wabbaseka soils; the somewhat poorly drained Hebert, McGehee, Desha, and Latanier soils; and the very poorly drained Yorktown soil.

This soil association is used mainly for cultivated crops. Wetness is the main limitation; the water table is within 12 inches of the surface during winter and early spring.

This soil association has high potential for rice and low or medium potential for row crops. Farming operations are commonly delayed several days after a rain because of excess water, and surface drains are needed. This association has high potential for woodland; however, harvesting of timber is usually limited to the drier seasons. Wetness, shrink-swell potential, and low strength are severe limitations; therefore, these soils have low potential for residential and urban uses.

7. Rilla-Hebert-McGehee association

Well drained and somewhat poorly drained, level to undulating, loamy soils on bottom lands

This association is in the eastern part of Jefferson County. The soils formed in loamy sediment. They are on natural levees along former channels of the Arkansas River. Natural drainageways are mainly slow-flowing, intermittent streams and a few slow-flowing, perennial streams.

This soil association makes up about 19 percent of the county. About 50 percent of the association is Rilla soils, about 15 percent is a Hebert soil, about 15 percent is McGehee soils, and the remaining 20 percent is soils of minor extent.

The well drained Rilla soils are on higher parts of natural levees than the somewhat poorly drained Hebert and McGehee soils.

The minor soils in this association are the well drained Caspiana and Coushatta soils; the moderately well drained Wabbaseka soils; the somewhat poorly drained Portland, Desha, and Latanier soils; the poorly drained Perry soils; and the very poorly drained Yorktown soil.

This soil association is used mainly for cultivated crops. Wetness is the main limitation to the use of these soils.

This association has high potential for row crops. Farming operations are commonly delayed a few days after a rain if field drains are not installed. The soils in this association have high potential for woodland, but wetness is a limitation for managing and harvesting the tree crop. The Rilla soils in this association have medium potential for most residential and urban uses. The Hebert and McGehee soils have low potential for most residential and urban uses because of wetness, shrink-swell potential, and low strength.

8. Roxana-Coushatta association

Well drained, level, loamy soils on bottom lands

This association extends diagonally across Jefferson County from northwest to southeast of Pine Bluff. The soils formed in loamy sediment deposited on young natural levees along the Arkansas River.

This association makes up about 6 percent of the county. About 50 percent of the association is Roxana soils, 30 percent is Coushatta soils, and the remaining 20 percent is soils of minor extent.

The Roxana soils are at a slightly higher elevation than the Coushatta soils. Both of these soils are well drained.

The minor soils in this association are the excessively drained Crevasse soils; the well drained Oklared, Caspiana, and Rilla soils; the moderately well drained Wabbaseka soils; the somewhat poorly drained Hebert, McGehee, Desha, Latanier, and Portland soils; and the very poorly drained Yorktown soil.

This soil association is used mainly for cultivated crops. In areas not protected, flooding is the main limitation to the use of these soils.

This soil association has high potential for row crops where the soils are protected by levees and medium potential where they are not. In unprotected areas, crops are limited to the short-growing varieties. This soil association has high potential for woodland; however, in unprotected areas, harvesting of timber is usually limited to the drier seasons. This soil association has high or medium potential for most residential and urban uses where the soils are protected by levees and low potential where they are unprotected because of the severe limitation of flooding.

Lincoln County

Soils that formed on uplands in sediment deposited in an old coastal embayment and in local sediment washed from these uplands

These soils make up about 31 percent of Lincoln County. They are in the western part of the county, which is in the Southern Coastal Plain. They are well drained to poorly drained, loamy soils that formed in stratified sediment deposited on the bottom of the shallow coastal embayment that covered all of Lincoln County many thousands of years ago, and in recent alluvium washed from this material.

The soils in this group are used mainly for the production of wood crops. Scattered throughout the area are general farms that produce beef cattle, field crops, and truck crops.

1. Pheba-Savannah-Amy association

Poorly drained to moderately well drained, level to gently sloping, loamy soils on uplands and stream terraces

This association is in the western part of Lincoln County. The soils are on broad flats that are broken by ridges. They formed in thick beds of loamy sediment. Natural drainageways are mainly slow-flowing, intermittent streams.

This association makes up about 8 percent of the county. About 25 percent of the association is Pheba soils, 25 percent is Savannah soils, 20 percent is Amy soils, and the remaining 30 percent is soils of minor extent and urban lands.

Pheba soils are somewhat poorly drained and are on the flats and lower parts of ridges. Savannah soils are moderately well drained and are on the ridges. Amy soils are poorly drained and are on broad flats and the flood plains of local drainageways.

The minor soils in this association are the well drained Ouachita, Smithdale, and Ruston soils and the moderately well drained Sawyer and Sacul soils.

This soil association is mainly wooded, but a few small farms are on the better drained soils. Wetness and erosion are the main limitations to the use of these soils.

This association has medium potential for row crops except in areas of Amy soils, where it has low potential. On most of this association, farming operations are commonly delayed several days after a rain because of wetness. The Amy and Pheba soils in this association have high potential for woodland, and Savannah soils have medium potential. Harvesting of timber on the poorly drained soils is usually limited to the drier seasons. Because of wetness, the seasonal high water table, and low bearing strength, the Amy and Pheba soils in this association have low potential for residential and urban uses and the moderately well drained Savannah soils have medium potential.

2. Sacul-Sawyer-Savannah association

Moderately well drained, nearly level to gently sloping, loamy soils on uplands

This association is in the western part of Lincoln County. It consists of broken ridges and narrow swales. Natural drainageways are slow-flowing, intermittent streams.

This association makes up about 13 percent of the county. About 30 percent of the association is Sacul soils, 20 percent is Sawyer soils, 20 percent is Savannah soils, and the remaining 30 percent is soils of minor extent and urban lands.

Sacul soils are moderately well drained and are on ridges. Sawyer soils are moderately well drained and are on the lower parts of side slopes. Savannah soils are moderately well drained and are on ridges and side slopes.

The minor soils in this association are the well drained Ouachita, Smithdale, and Ruston soils; the somewhat poorly drained Pheba soils; and the poorly drained Amy soils.

This association is used mainly as woodland, but some small tracts are used for cultivated crops. Erosion is a moderate to severe hazard on these soils.

This association has medium potential for cultivated crops except in areas of the gently sloping Sacul soils, where it has low potential. Sacul and Savannah soils have medium potential for woodland, and Sawyer soils have high potential. Because of the high shrink-swell rating, low strength, and slow percolation, the Sacul and Sawyer soils have low potential for residential and urban uses. The Savannah soils have medium potential for urban uses.

3. Smithdale association

Well drained, gently sloping and moderately sloping, loamy soils on uplands

This association is in the western part of Lincoln County. The soils are on the higher ridges. They formed in thick beds of loamy sediment. Natural drainageways are mainly slow-flowing, intermittent streams.

This association makes up about 10 percent of the county. About 80 percent of the association is Smithdale soils, and the remaining 20 percent is soils of minor extent.

Smithdale soils are well drained and are on the higher ridges.

The minor soils in this association are the well drained Ruston and Ouachita soils; the moderately well drained Savannah, Sawyer, and Sacul soils; and the somewhat poorly drained Pheba soils.

This soil association is mainly wooded and in pasture. The main crops are tomatoes and other truck crops. Erosion is the main limitation on these soils.

This soil association has medium potential for row crops where slopes are gentle and low potential where slopes are moderate. This association has medium potential for woodland. It has high potential for residential and urban use where slopes are gentle and medium potential where slopes are moderate.

Soils that formed in predominantly wind-laid sediment

These soils make up about 9 percent of Lincoln County. They are in the central part of the county, which is in the Southern Mississippi Valley Silty Uplands. They are moderately well drained to poorly drained, loamy soils that formed chiefly in material sorted from ancient flood plains by wind and laid down in thick to thin deposits over older loamy and clayey sediment.

Large tracts of soils in this group are used for the production of wood products, and many areas are in general farms that produce beef cattle and field crops.

4. Calloway-Grenada-Henry association

Moderately well drained to poorly drained, level to gently sloping, loamy soils on uplands

This association is in the central part of Lincoln County. It consists of broad flats that are broken by low ridges that rise 1 to 10 feet higher than the flats. The natural drainageways are mainly slow-flowing, intermittent streams.

This association makes up about 9 percent of the county. About 35 percent of the association is Calloway soils, 35 percent is Grenada soils, 15 percent is Henry soils, and the remaining 15 percent is soils of minor extent and urban lands.

Calloway soils are somewhat poorly drained and are on flats and the lower parts of ridges. Grenada soils are moderately well drained and are on ridges. Henry soils are poorly drained and are on broad flats.

The minor soils in this association are the well drained Ouachita soils, the moderately well drained Savannah soils, and the poorly drained Amy soils.

This soil association is mainly wooded, but a few small farms are on the better drained soils. Wetness and erosion are the main limitations to the use of these soils.

This association has medium potential for row crops. On most of this association, farming operations are commonly delayed several days after a rain because of wetness. This association has medium potential for woodland; however, harvesting of lumber on the poorly drained soils is usually limited to the drier seasons. Because of wetness, the seasonal high water table, and low bearing strength, the Calloway and Henry soils in this association have low potential for residential and urban uses. Grenada soils have medium potential for most urban uses.

Soils that formed in alluvial sediment deposited by large rivers

These soils make up about 60 percent of Lincoln County. They are in the eastern part of the county, which is in the Southern Mississippi Valley Alluvium. They are excessively drained to poorly drained, loamy and clayey soils that formed on natural levees and in back swamps in sediment chiefly from the Arkansas River and its tributaries.

The soils in this group are used mainly for cultivated crops, but hardwood forests remain in areas subject to flooding.

5. Desha-Wabbaseka-Latanier association

Somewhat poorly drained and moderately well drained, level to gently undulating, clayey and clayey over loamy soils on bottom lands

This association is in the eastern part of Lincoln County. The soils formed in clayey and in clayey over loamy sediment. They are in slack water areas and on low natural levees along the Arkansas River and its former channels. Natural drainageways are mainly slow-flowing, intermittent streams.

This soil association makes up about 6 percent of the county. About 65 percent of the association is Desha soils, about 10 percent is Wabbaseka and Latanier soils, and the remaining 25 percent is soils of minor extent.

The Desha soils are in slack water areas and at a slightly lower elevation than Wabbaseka and Latanier soils. Desha and Latanier soils in the association are somewhat poorly drained, and Wabbaseka soils are moderately well drained.

The minor soils in this association are the well drained Rilla, Roxana, and Coushatta soils; the somewhat poorly drained Portland, Hebert, and McGehee soils; and the poorly drained Perry soils.

This soil association is used mainly for cultivated crops. Wetness is the main limitation to the use of these soils.

This soil association has medium potential for row crops. Farming operations are commonly delayed several days after a rain because of excess water, and surface drains are needed. This association has high potential for woodland; however, harvesting of timber is usually limited to the drier seasons. Wetness, shrink-swell potential, and low strength are severe limitations; therefore, these soils have low potential for most residential and urban uses.

6. Perry-Portland association

Poorly drained and somewhat poorly drained, level, clayey soils on bottom lands

This association is in the eastern part of Lincoln County. The soils are on broad flats in slightly depressional, back swamp and slack water areas. Natural drainageways are mainly slow-flowing, intermittent streams.

This association makes up about 30 percent of the county. About 55 percent of the association is Perry soils, 20 percent is Portland soils, and the remaining 25 percent is soils of minor extent.

The poorly drained Perry soils are at slightly lower elevations than the somewhat poorly drained Portland soils. Both soils have a surface layer of clay and a seasonal high water table.

The minor soils in this association are the well drained Rilla soils; the moderately well drained Wabbaseka soils; the somewhat poorly drained Hebert, McGehee, Desha, and Latanier soils; and the very poorly drained Yorktown soil.

This soil association is used mainly for cultivated crops. Wetness is the main limitation; the water table is within 12 inches of the surface during winter and early spring.

This soil association has high potential for rice and low or medium potential for row crops. Farming operations are commonly delayed several days after a rain because of excess water, and surface drains are needed. This association has high potential for woodland; however, harvesting of timber is usually limited to the drier seasons. Wetness, shrink-swell potential, and low strength are severe limitations; therefore, these soils have low potential for residential and urban uses.

7. Rilla-Hebert-McGehee association

Well drained and somewhat poorly drained, level to undulating, loamy soils on bottom lands

This association is in the eastern part of Lincoln County. The soils formed in loamy sediment. They are on natural levees along former channels of the Arkansas River. Natural drainageways are mainly slow-flowing, intermittent streams and a few slow-flowing, perennial streams.

This soil association makes up about 21 percent of the county. About 55 percent of the association is Rilla soils, about 21 percent is a Hebert soil, about 4 percent is McGehee soils, and the remaining 20 percent is soils of minor extent.

The well drained Rilla soils are on higher parts of natural levees than the somewhat poorly drained Hebert and McGehee soils.

The minor soils in this association are the well drained Caspiana and Coushatta soils; the moderately well drained Wabbaseka soils; the somewhat poorly drained Portland, Desha, and Latanier soils; the poorly drained Perry soils; and the very poorly drained Yorktown soil.

This soil association is used mainly for cultivated crops. Wetness is the main limitation to the use of these soils.

This association has high potential for row crops. Farming operations are commonly delayed a few days after a rain if field drains are not installed. The soils in this association have high potential for woodland, but wetness is a limitation for managing and harvesting the tree crop. The Rilla soils in this association have medium potential for most residential and urban uses. The Hebert and McGehee soils have low potential for most residential and urban uses because of wetness, shrink-swell potential, and low strength.

8. Roxana-Coushatta association

Well drained, level, loamy soils on bottom lands

This association is in the eastern part of Lincoln County. The soils formed in loamy sediment deposited on young natural levees along the Arkansas River.

This association makes up about 3 percent of the county. About 35 percent of the association is Roxana soils, 35 percent is Coushatta soils, and the remaining 30 percent is soils of minor extent.

The Roxana soils are at a slightly higher elevation than the Coushatta soils. Both of these soils are well drained.

The minor soils in this association are the excessively drained Crevasse soils; the well drained Oklared, Caspiana, and Rilla soils; the moderately well drained Wabbaseka soils; the somewhat poorly drained Hebert, McGehee, Desha, Latanier, and Portland soils; and the very poorly drained Yorktown soil.

This soil association is used mainly for cultivated crops. In areas not protected, flooding is the main limitation to the use of these soils.

This soil association has high potential for row crops where the soils are protected by levees and medium potential where they are not. In unprotected areas, crops are limited to the short-growing varieties. This soil association has high potential for woodland; however, in unprotected areas, harvesting of timber is usually limited to the drier seasons. This soil association has high or medium potential for most residential and urban uses where the soils are protected by levees and low potential where they are unprotected because of the severe limitation of flooding.

Broad land use considerations

About 20,000 acres in the survey area are urban or built-up land. Each year more land is being developed for urban uses in Pine Bluff, Star City, and other cities in these counties. The general soil map is most helpful for planning the general outline of urban areas, but it cannot be used for the selection of sites for specific urban structures. In general, in the survey area the soils that have good potential for cultivated crops also have good potential for urban development. The data about specific soils in this survey area can be helpful in planning future land-use patterns.

Areas where soil features are so unfavorable that urban development is prohibitive are not extensive in the survey area. However, large areas of the Crevasse-Oklared association and the Roxana-Coushatta association are on flood plains, and flooding is a severe limitation. Also, the clayey soils of the Perry-Portland and Desha-Wabbaseka-Latanier associations have poor potential for urban development because of wetness and a high shrink-swell rating.

In large areas of these counties are soils that can be developed for urban uses at lower costs than can the soils named above. These include the parts of the Roxana-Coushatta association that are protected by levees, the Smithdale association, and the more sloping soils of the Pheba-Savannah-Amy and Calloway-Grenada-Henry associations. The Roxana-Coushatta association, where protected from flooding, is excellent farmland, and this potential should not be overlooked when broad land uses are considered. The Pheba-Savannah-Amy and Calloway-Grenada-Henry associations consist of soils that are underlain by a fragipan at a depth of less than 40 inches, but other soil qualities are favorable for residential and other nonfarm uses.

In some areas soils have good potential for farm uses but fair or poor potential for nonfarm uses; examples are the Perry-Portland, Desha-Wabbaseka-Latanier, and Rilla-Hebert-McGehee associations. Wetness and shrink-swell potential are the main limitations to the nonfarm uses of these soils. With proper design and installation of foundations, these limitations can be overcome. It should be noted, however, that these soils have good potential for farming, and many farmers have provided sufficient drainage for farm crops.

Vegetables and other specialty crops are uniquely suited to soils of the Smithdale association where proper erosion control practices have been installed. Also good for such crops are soils of the Sacul-Sawyer-Savannah association. These soils are well drained or moderately well drained and warm earlier in spring than heavier, wetter soils. Trees, shrubs, and plants in nurseries are also well suited to these soils.

Most soils in these counties have good potential as woodland. The Pheba-Savannah-Amy, Sacul-Sawyer-Savannah, Smithdale, and Calloway-Grenada-Henry associations are better suited to pine forests, and the Desha-Wabbaseka-Latanier, Perry-Portland, Rilla-Hebert-McGehee, Roxana-Coushatta, and Crevasse-Oklared associations are better suited to hardwood forests.

Soil maps for detailed planning

The kinds of soil, or mapping units, shown on the detailed soil maps at the back of this publication are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a 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 information for each soil is given in the section "Use and management of the soils."

Preceding 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 and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated and the management concerns and practices needed are discussed.

A soil mapping unit represents an area on the landscape and consists mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map at the back of this publication are phases of soil series.

Soils that have profiles that are almost alike make up a *soil series*. Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. All the soils in the United States having the same series name have essentially the same properties that affect their use and their response to management practices.

Soils of one series can differ in texture of the surface layer or in the underlying substratum and in slope, erosion, stoniness, salinity, wetness, or other characteristic that affects the use of the soils. On the basis of such differences, a soil series is divided into phases. The name of a *soil phase* commonly indicates a feature that affects use or management. For example, Calloway silt loam, 0 to 1 percent slopes, is one of several phases within the Calloway series.

Some mapping units are made up of two or more dominant kinds of soil. Two such kinds of mapping units are shown on the soil map of this survey area: soil complexes and undifferentiated groups.

A *soil complex* consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Amy-Urban land complex is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because there is little value in separating them. The pattern and proportion of the soils are not uniform. An area shown on the map has at least one of the dominant (named) soils or may have all of them. Amy soils, frequently flooded, is an undifferentiated group in this survey area.

Most mapping units include small, scattered areas of soils other than those that appear in the name of the mapping unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the mapping unit. The soils that are included in mapping are listed in the description of each mapping unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

The acreage and proportionate extent of each mapping unit are given in table 6, and additional information on properties, limitations, capabilities, and potentials for many soil uses are given for each kind of soil in other tables in this survey. (See "Summary of tables.") Many of the terms used in describing soils are defined in the Glossary.

Soil descriptions and potentials

1—Amy silt loam. This poorly drained, level soil is on broad flats on uplands. Slope is less than 1 percent. Individual areas range from about 20 to 500 acres.

Typically, the surface layer is dark grayish brown silt loam about 3 inches thick. The subsurface layer is gray, mottled silt loam that extends to a depth of about 24 inches. The upper part of the subsoil is gray, mottled silty clay loam that extends to a depth of about 40 inches. The lower part is light brownish gray silt loam that has mottles of brown or gray and that extends to a depth of about 56 inches. The underlying material is gray, mottled silty clay loam that extends to a depth of more than 72 inches.

Included with this soil in mapping are small areas of Savannah and Pheba soils, which make up less than 10 percent of this unit. Also included are a few small areas of soils that have a subsoil of sandy clay loam.

This soil is low in natural fertility. The surface layer and subsoil are strongly acid or very strongly acid. Permeability and runoff are slow. Available water capacity is high. The water table is seasonally high; it is within 12 inches of the surface during winter and early spring.

Most of the soil is wooded, and most cleared areas are pasture. Adapted pasture plants are bermudagrass, bahiagrass, tall fescue, dallisgrass, annual lespedeza, white clover, and sericea lespedeza. Lime and fertilizer improve stand and yields. Suitable crops include soybeans and winter small grains where surface drainage is adequate.

This soil has high potential for loblolly pine and sweetgum. Wetness is the main limitation to equipment use in managing and harvesting the tree crop, but this is usually overcome by logging during the drier seasons.

This soil has low potential for most urban uses. Poor drainage and the seasonal high water table are severe limitations for dwellings, streets, and industrial sites. The slow permeability and the seasonal high water table are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIw-1; woodland suitability group 2w9.

2—Amy soils, frequently flooded. This undifferentiated group consists of level, poorly drained soils on flood plains of local drainageways. The soils are flooded two or three times each year. The undifferentiated group consists of Amy silt loam intermingled in an irregular pattern with Amy soils that have variable surface texture. Individual areas are large enough to map separately, but because of present and predicted use, they were not separated in mapping. Most mapped areas contain the Amy soils that have variable surface texture, but Amy silt loam was mapped in a few areas. Slope is less than 1 percent. Individual areas range from 20 to 50 acres.

Typically, the surface layer is dark grayish brown silt loam about 3 inches thick. The subsurface layer is gray, mottled silt loam that extends to a depth of about 24 inches. The upper part of the subsoil is gray, mottled silty clay loam that extends to a depth of about 40 inches. The lower part is light brownish gray silt loam that has mottles of brown or gray and that extends to a depth of about 56 inches. The underlying material is gray, mottled silty clay loam that extends to a depth of more than 72 inches.

Included with this soil in mapping were small areas of Ouachita soils. These areas make up less than 10 percent of this mapping unit.

These soils are low in natural fertility. The surface layer and subsoil are strongly acid or very strongly acid. Permeability and runoff are slow. Available water capacity is high. The water table is seasonally high, and flooding is frequent during winter and spring.

This undifferentiated group has low potential for cultivated crops because of the hazard of frequent flooding. In most years the flooding occurs during the period of December to June. Most of the area is used for woodland and wildlife.

This undifferentiated group has high potential for loblolly pine, sweetgum, and water oak. Wetness and flooding limit the use of equipment in managing and harvesting the tree crop, but this can be overcome by using special equipment and by logging during drier seasons.

The soils in this undifferentiated group have very low potential for urban uses. Wetness and flooding are the main limitations, and they can be overcome only by major flood control and drainage measures. Capability unit Vw-1; woodland suitability group 2w9.

3—Amy-Urban land complex. This complex consists of poorly drained, level Amy soils and Urban land on broad upland flats in the city of Pine Bluff. Slope is less than 1 percent. Individual areas range from 20 to 800 acres.

Amy soils make up about 25 to 75 percent of this mapping unit, Urban land makes up about 20 to 65 percent, and other soils make up about 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Amy soils have a surface layer of dark grayish brown silt loam about 3 inches thick. The subsurface layer is gray, mottled silt loam that extends to a depth of about 24 inches. The upper part of the subsoil is gray, mottled silty clay loam that extends to a depth of about 40 inches. The lower part is light brownish gray silt loam that has mottles of brown and gray and that extends to a depth of about 56 inches. The underlying material is gray, mottled silty clay loam that extends to a depth of more than 72 inches.

Urban land consists of soils that have been altered or obscured by buildings or other urban structures; therefore, classification of the soils is impractical. Typical structures are single and multiple-unit dwellings, streets, shopping centers less than 40 acres in size, schools, and parks. Areas of Amy soils and other soils that have been altered by cutting, grading, and filling make up some Urban land. In some areas, the soil has not been altered but is covered by 6 to 24 inches of loamy material.

Included in this complex in mapping are small areas of Savannah, Calloway, and Pheba soils and small areas of soils that are frequently flooded. These soils have been altered in some places.

The Amy soil is low in natural fertility. The surface layer and subsoil are strongly acid to very strongly acid. Permeability and runoff are slow. Available water capacity is high. The water table is seasonally high; it is within 12 inches of the surface during the winter and early spring.

This complex has low potential for most urban uses. The seasonal high water table and poor drainage are severe limitations for dwellings, streets, and industrial sites. The slow permeability and the seasonal high water table are severe limitations for septic tank absorption fields. These limitations are difficult to overcome. Landscaping plants that will tolerate a high content of water in the soil can be selected for planting. Wetness is the main limitation to equipment use for planting and maintaining lawns, shrubs, and trees. This limitation is usually overcome by planting during drier seasons. Not assigned to a capability unit or a woodland suitability group.

4—Calloway silt loam, 0 to 1 percent slopes. This somewhat poorly drained, level soil is in smoother areas of the loessial plains. Individual areas are 10 to 100 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The upper part of the subsoil is yellowish brown, mottled silt loam that extends to a depth of about 21 inches. Below this is a firm, brittle fragipan. It is light yellowish brown, mottled silt loam that is compact and brittle to a depth of 37 inches; yellowish brown, mottled silt loam that is compact and brittle to a depth of 51 inches; and yellowish brown and grayish brown, mottled silt loam that is compact and brittle and that extends to a depth of 75 inches or more.

Included with this soil in mapping are a few intermingled areas of Grenada and Henry soils. The included soils make up less than 10 percent of this mapping unit.

This soil is moderate in natural fertility. It is strongly acid throughout except the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts penetration of roots.

This soil has medium potential for farming. The main crops are cotton, rice, and soybeans. Other suitable crops are corn and grain sorghum. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization, and tilth is easy to maintain. Farming operations are commonly delayed a few days after a rain because of excess water, and surface drains are needed.

This soil has medium potential for loblolly pine, cherrybark oak, sweetgum, and water oak. Wetness is the main limitation to equipment use in managing and harvesting the tree crop, but this is usually overcome by logging during the drier seasons.

This soil has low potential for most urban uses. Wetness is a severe limitation for dwellings and industrial sites. Wetness and shrink-swell potential are severe limitations for streets. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIw-1; woodland suitability group 3w8.

5—Calloway silt loam, 1 to 3 percent slopes. This somewhat poorly drained, nearly level soil is in smoother areas of the loessial plains. Individual areas are 10 to 30 acres.

Typically, the surface layer is brown silt loam about 6 inches thick. The upper part of the subsoil is yellowish brown, mottled silt loam that extends to a depth of about 21 inches. Below this is a firm, brittle fragipan. It is light yellowish brown, mottled silt loam that is compact and brittle to a depth of 37 inches; yellowish brown, mottled silt loam that is compact and brittle to a depth of 51 inches; and yellowish brown and grayish brown, mottled silt loam that is compact and brittle and that extends to a depth of 75 inches or more.

Included with this soil in mapping are a few intermingled areas of Grenada and Henry soils. The included soils make up less than 10 percent of this mapping unit.

This soil is moderate in natural fertility. It is strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts penetration of roots.

This soil has medium potential for farming. The main crops are cotton and soybeans. Other suitable crops are corn and grain sorghum. Adapted pasture plants are bermudagrass (fig. 1), bahiagrass, and tall fescue. The soil responds well to fertilization, and tilth is easy to maintain. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage, contour farming, and the use of cover crops help reduce runoff and control erosion. Farming operations are commonly delayed a few days after a rain because of poor internal drainage.

This soil has medium potential for loblolly pine, cherrybark oak, sweetgum, and water oak. Wetness is the main limitation to equipment use in harvesting the tree crop, but this is usually overcome by logging during the drier seasons.

This soil has low potential for most urban uses. Wetness is a severe limitation for dwellings and industrial sites. Wetness and shrink-swell potential are severe limitations for streets. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIe-1; woodland suitability group 3w8.

6—Calloway-Urban land complex. This complex consists of somewhat poorly drained, level and nearly level Calloway soils and Urban land that is mainly Calloway soil material. It is in the city of Pine Bluff. Slope ranges from 0 to 3 percent. Most areas range from about 20 to 200 acres.

Calloway soils make up 25 to 65 percent of this mapping unit, Urban land makes up about 25 to 70 percent, and other soils make up about 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Calloway soils have a surface layer of brown silt loam about 6 inches thick. The upper part of the subsoil is yellowish brown, mottled silt loam that extends to a depth of about 21 inches. Below this is a firm, brittle fragipan. It is light yellowish brown, mottled silt loam that is compact and brittle and that extends to a depth of 37 inches; yellowish brown, mottled silt loam that is compact and brittle and that extends to a depth of 51 inches; and yellowish brown and grayish brown, mottled silt loam that is compact and brittle and that extends to a depth of 75 inches or more.

Urban land consists of soils that have been altered or obscured by buildings or other urban structures; therefore, classification of the soils is impractical. Typical structures are single and multiple-unit dwellings, streets, parking lots, shopping centers less than 40 acres in size, and industrial sites. Areas of Calloway soils and other soils that have been altered by cutting, grading, and filling make up Urban land. In some areas, the soil has not been altered but is covered by 6 to 24 inches of loamy material.

Included with this complex in mapping are a few intermingled areas of Grenada-Urban land complex and Henry-Urban land complex. These soils have been altered in some places.

Calloway soils are moderate in natural fertility. They are strongly acid throughout except the surface layer in limed areas. Permeability is slow, and available water capacity is high. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts penetration of roots.

This complex has low potential for most urban uses. Wetness is a severe limitation for dwellings and industrial sites. Wetness and shrink-swell potential are severe limitations for streets. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Landscaping plants that will tolerate a high content of water in the soil can be selected for planting. Wetness is the main limitation to equipment use for planting and maintaining lawns, shrubs, and trees. This limitation can be overcome by planting during drier seasons. Not assigned to a capability unit or a woodland suitability group.

7—**Caspiana silt loam, 0 to 1 percent slopes.** This well drained, level soil is on low terraces and natural levees. Slope is less than 1 percent. Individual areas range from about 20 to 300 acres.

Typically, the surface layer is dark brown silt loam about 5 inches thick. The subsoil extends to a depth of 36 inches. The upper part is very dark grayish brown silt loam, and the middle and lower parts are brown silt loam. This is underlain with brown very fine sandy loam that extends to a depth of 50 inches and stratified brown and yellowish red silt loam and silty clay loam that extend to a depth of 68 inches or more.

Included with this soil in mapping are small areas of Rilla, Hebert, Perry, Roxana, and Coushatta soils. Also included are a few small areas of soils that have a slope of as much as 3 percent, small areas of soils that have a lighter colored surface layer, and areas of soils that have gray mottles in the subsoil. These included soils make up less than 10 percent of the unit.

This soil is high in natural fertility. Reaction ranges from medium acid to moderately alkaline in the A and B horizons. Permeability is moderate, and available water capacity is high.

This soil has high potential for row crops and small grains. It warms up early in spring and permits early planting. The main crops are cotton and soybeans. Other suitable crops are grain sorghum and winter small grains. Adapted pasture plants are bermudagrass and tall fescue. Crops on this soil respond well to fertilization, and tilth is easy to maintain.

This soil has high potential for eastern cottonwood, sweetgum, and American sycamore.

This soil has medium potential for most urban uses. Shrink-swell potential and low strength are moderate limitations for dwellings, light industrial buildings and streets. Permeability is a moderate limitation for septic tank filter fields. These limitations are difficult to overcome. Capability unit I-1; woodland suitability group 2o4.

8—**Coushatta silt loam.** This well drained, level soil is on natural levees of bottom lands of the Arkansas River. Slope is 0 to 1 percent. Individual areas range from about 20 to 100 acres.

Typically the surface layer is dark brown silt loam about 8 inches thick. The upper part of the subsoil is reddish brown silt loam that extends to a depth of about 15 inches, and the lower part is reddish brown silty clay loam that extends to a depth of about 30 inches. The underlying material is reddish brown very fine sandy loam over dark reddish brown silty clay loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Desha, Roxana, Oklared, and Crevasse soils. These included soils make up less than 10 percent of the mapping unit. Also included are a few small areas of soils that have a dark brown subsoil and areas of soils where a buried horizon is below a depth of 40 inches.

This soil is high in natural fertility. The surface layer is slightly acid to mildly alkaline. Permeability is moderate, and runoff is slow. Available water capacity is high.

This soil has high potential for row crops and small grain. The main crops are cotton, soybeans (fig. 2), and wheat. This soil warms early in spring and permits early planting. Tilth is easy to maintain. The soil can be cultivated over a wide range of moisture conditions. With good management, clean-tilled crops that leave large amounts of residue can be grown year after year.

Adapted pasture plants are bahiagrass, bermudagrass, tall fescue, and white clover.

This soil has high potential for eastern cottonwood, American sycamore, sweetgum, and cherrybark oak. There are no significant limitations to woodland use or management.

This soil has medium potential for most urban uses. Low strength and the shrink-swell potential are moderate limitations for dwellings, industrial sites, streets, and roads. The moderately slow permeability is a limitation for septic tank absorption fields. These limitations can be overcome by good design and by modifying installation procedures. Capability unit I-1; woodland suitability group 1o4.

9—Coushatta soils, occasionally flooded. This undifferentiated group consists of well drained, level and gently undulating soils on natural levees along the Arkansas River. It consists of Coushatta silt loam intermingled in an irregular pattern with Coushatta soils. Individual areas are large enough to map separately, but were not because flooding is the dominant factor in determining use and management. Slope is less than 3 percent. Individual areas range from 20 to 80 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The upper part of the subsoil is reddish brown silt loam that extends to a depth of about 15 inches, and the lower part is reddish brown silty clay loam that extends to a depth of about 30 inches. The underlying material is dark reddish brown very fine sandy loam over dark reddish brown silty clay loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Roxana, Oklared, and Crevasse soils. Also included are areas of soils that have a buried horizon below a depth of 40 inches.

These soils are high in natural fertility. The surface layer is slightly acid to mildly alkaline. Permeability is moderate, and runoff is slow. Available water capacity is high. Occasional flooding is a hazard during winter and early spring. The soils are flooded for periods of 5 to 20 days, generally between January and June, about once every 4 years.

This undifferentiated group has medium potential for row crops. Clean-tilled crops such as cotton and soybeans can be grown most years. Some cotton crops are lost because of flooding. Crops on this soil respond well to fertilization, and tilth is easy to maintain by returning crop residue to the soil. Adapted pasture plants are bermudagrass and tall fescue.

This undifferentiated group has high potential for eastern cottonwood, American sycamore, sweetgum, and cherrybark oak. Occasional flooding can limit use of equipment in managing and harvesting the tree crops, but this can be overcome by harvesting during drier seasons.

This undifferentiated group has low potential for most urban uses. Flooding is a severe limitation for dwellings, industrial sites, septic tank absorption fields, streets, and roads. This limitation is difficult or impractical to overcome. Capability unit IIw-2; woodland suitability group 1o4.

10—Coushatta-Urban land complex. This complex consists of well drained, level Coushatta soils and Urban land, that is mainly Coushatta soil material. It is in the city of Pine Bluff. Slope ranges from 0 to 1 percent. Individual areas range from 40 to 200 acres.

Coushatta soils make up about 25 to 75 percent of this mapping unit, Urban land makes up about 20 to 65 percent, and other soils make up about 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Coushatta soils have a surface layer of dark brown silt loam about 8 inches thick. The upper part of the subsoil is reddish brown silt loam that extends to a depth of about 15 inches, and the lower part is reddish brown silty clay loam that extends to a depth of about 30 inches. The underlying material is reddish brown very fine sandy loam over dark reddish brown silty clay loam that extends to a depth of 60 inches or more.

Urban land consists of soils that have been altered or obscured by buildings or other urban structures; therefore, classification of the soils is impractical. Typical structures are single-and multiple-unit dwellings (fig. 3) and commercial and industrial buildings. Areas of Coushatta soils and other soils that have been altered by cutting, grading, and filling make up some areas mapped as Urban land. In some areas the soil has not been altered, but is covered by 6 to 24 inches of loamy material.

Included with this complex in mapping are small, intermingled areas of Roxana and Rilla soils. These soils have been altered in some places.

Coushatta soils are high in natural fertility. The surface layer is slightly acid to mildly alkaline. Permeability is moderate, and runoff is slow. Available water capacity is high.

This complex has medium potential for most urban uses. Low strength and shrink-swell potential are moderate limitations for dwellings, small commercial buildings, streets, and roads, but these limitations can be easily overcome by good design and careful installation procedures. The moderately slow permeability is a moderate limitation for septic tank absorption fields, but this can be overcome by increasing the size of the absorption area or by modifying the filter field itself. This complex has high potential for lawns, shrubs, and gardens. The soil warms early in spring and permits early planting. It can be cultivated over a wide range of moisture conditions. Tilth is easy to maintain. Adapted grasses are bermudagrass and tall fescue. Not assigned to a capability unit or a woodland suitability group.

11—Crevasse loamy fine sand. This excessively drained, level soil is along levee breaks or stream channels on the protected side of the levee. Slope is less than 1 percent. Individual areas range from about 10 to 100 acres.

Typically, the surface layer is brown loamy fine sand about 9 inches thick. The next layer is yellowish brown fine sand that extends to a depth of about 31 inches. This is underlain with light yellowish brown fine sand that extends to a depth of 65 inches or more.

Included with this soil in mapping are small areas of Coushatta, Oklared, and Roxana soils. These soils make up less than 10 percent of the unit. Also included are a few small areas of soils that have fine sandy loam texture.

This soil is low in natural fertility. Permeability is rapid, and runoff is slow. Available water capacity is low. The surface layer is usually slightly acid. This soil is droughty during seasons of below-normal rainfall.

This soil has low potential for most row crops and medium potential for small grains and pasture and hay crops. Adapted pasture plants are bermudagrass and johnsongrass. The availability of plant nutrients and water is low, and this limits crop growth during drier seasons. Tilth is easy to maintain.

This soil has high potential for American sycamore and eastern cottonwood. Seedling mortality is a concern in some areas.

This soil has high potential for dwellings without basements, small commercial buildings, and septic tank absorption fields. This soil has low potential for sewage lagoons and area sanitary landfills because of seepage, which can be a pollution hazard to ground water supplies. Capability unit IIIs-1; woodland suitability group 3s6.

12—**Crevasse soils, frequently flooded.** This undifferentiated group consists of excessively drained, level soils between the levee and the Arkansas River. It is flooded once or more every 2 years. It consists of Crevasse loamy fine sand intermingled in an irregular pattern with Crevasse soils that have variable surface texture. Individual areas of both soils are large enough to map separately, but because of present and predicted use, they were not separated in mapping. Most mapped areas contain Crevasse soils that have variable surface texture, but Crevasse loamy fine sand was mapped in a few areas. Individual areas range from about 20 to 100 acres.

Typically, the surface layer is brown loamy fine sand about 9 inches thick. The next layer is yellowish brown fine sand that extends to a depth of about 31 inches. This is underlain with light yellowish brown fine sand that extends to a depth of 65 inches more more.

Included in mapping are small areas of Roxana and Coushatta soils. These included soils make up less than 10 percent of the unit.

These soils are low in natural fertility. The surface layer is slightly acid in most places. Permeability is rapid, and runoff is slow. Available water capacity is low. These soils are flooded for periods of 5 to 60 days, generally between January and June.

This undifferentiated group has low potential for cultivated crops because of the hazard of frequent flooding. In most years, the flooding delays spring planting. Crops such as soybeans, which require a short growing season, can be grown, but flooding is likely to damage the crop. Winter small grain is grown in some areas. Bermudagrass is adapted for pasture crops. Many areas are used as woodland and for wildlife.

This undifferentiated group has high potential for eastern cottonwood and American sycamore. Flooding limits the use of equipment in managing and harvesting the tree crop, but this can be overcome by using special equipment and by logging during drier seasons.

The soils in this undifferentiated group have very low potential for urban uses. Wetness and flooding are the main limitations and can be overcome only by major flood-control and drainage measures. Capability unit Vw-2; woodland suitability group 3s6.

13—**Desha clay.** This somewhat poorly drained, level soil is in low, slack water areas along bayous and former channels. Slope is less than 1 percent. Individual areas range from about 20 to 800 acres.

Typically, the surface layer is dark brown clay about 5 inches thick. The subsoil extends to a depth of about 50 inches. It is dark reddish brown, mottled clay in the upper and middle parts and reddish brown, mottled clay in the lower part. The underlying material is dark reddish gray, mottled clay that extends to a depth of 65 inches or more.

Included with this soil in mapping are small areas of Portland, Perry, and McGehee soils. These included soils make up less than 10 percent of the unit.

This soil is high in natural fertility. Reaction is slightly acid or neutral in the surface layer and neutral or mildly alkaline in the subsoil. Permeability and runoff are very slow. Available water capacity is high. When dry, this soil shrinks and cracks, and when wet, it expands and seals the cracks. The water table is seasonally high; it is within 12 inches of the surface during winter and early spring.

This soil has high potential for rice (fig. 4) and medium potential for row crops. Excess water is a severe hazard. Farming operations are commonly delayed for several days after a rain unless surface drains have been installed. The main crops are soybeans and rice. Adapted pasture plants are bermudagrass and tall fescue. Crops on this soil respond well to fertilization. Tilth is difficult to maintain because of the high clay content in the surface layer. Clods form on the surface if the soil is plowed when wet.

This soil has high potential for woodland. Some important trees are green ash, eastern cottonwood, Nuttall oak, and water oak. Wetness limits the use of equipment in managing and harvesting tree crops, but this can be overcome by harvesting during drier seasons.

This soil has low potential for most urban uses. Wetness, shrink-swell potential, and low strength are severe limitations for dwellings and industrial sites. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIw-2; woodland suitability group 2w6.

14—**Desha clay, occasionally flooded.** This somewhat poorly drained, level soil is on broad flats of slack water areas between the Arkansas River and its levee and along the lower flood plains of Bayou Meto. Flooding occurs about once every 4 years. Slope is less than 1 percent. Individual areas range from about 40 to 1,000 acres.

Typically, the surface layer is dark brown clay about 5 inches thick. The subsoil extends to a depth of about 50 inches. It is dark reddish brown, mottled clay in the upper and middle parts and reddish brown, mottled clay in the lower part. The underlying materal is dark reddish gray, mottled clay that extends to a depth of 65 inches or more.

Included with this soil in mapping are spots of Coushatta, Perry, and Portland soils.

This soil is high in natural fertility. Reaction is slightly acid or neutral in the surface layer and neutral or mildly alkaline in the subsoil. Permeability and runoff are very slow. Available water capacity is high. This soil cracks when dry and swells when wet. Generally these soils are flooded between January and June for periods of 5 to 30 days.

This soil has medium potential for rice and low potential for row crops. Flooding is a severe hazard. Only warm-season crops that require a short growing season can be grown. Seedbed preparation is difficult, and tilth is difficult to maintain. The main crop is soybeans. Bermudagrass is an adapted pasture plant.

This soil has medium potential for woodland. Important trees are green ash, eastern cottonwood, sweetgum, and water oak. Wetness and flooding limit the use of equipment in managing and harvesting tree crops, but this can be overcome by using special equipment and by harvesting during drier seasons.

This soil has low potential for most urban uses. Flooding, shrink-swell potential, and low strength are severe limitations for dwellings, industrial sites, streets, and roads. Slow permeability, flooding, and wetness are severe limitations for septic tank absorption fields. These limitations can be overcome only by major flood control and drainage measures. Capability unit IVw-1; woodland suitability group 3w6.

15—Grenada silt loam, 1 to 3 percent slopes. This moderately well drained, nearly level soil is on the smoother parts of the loessial plains. Individual areas are 10 to 200 acres.

Typically, the surface layer is dark brown silt loam about 4 inches thick. The subsoil above the fragipan is yellowish brown and light yellowish brown heavy silt loam that extends to a depth of about 26 inches. Below is a layer of gray, mottled silt loam about 3 inches thick. The lower part of the subsoil is a firm, brittle, mottled fragipan that extends to a depth of 72 inches or more. It is yellowish brown silt loam.

Included with this soil in mapping are a few intermingled areas of Calloway and Henry soils. The included soils make up less than 10 percent of this mapping unit.

This soil is moderate in natural fertility. It is strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts the penetration of roots.

This soil has medium potential for farming. The main crops are cotton and soybeans. Other suitable crops are corn and grain sorghum. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization, and tilth is easy to maintain. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage, contour farming, and the use of cover crops help reduce runoff and control erosion.

This soil has medium potential for woodland. The important trees are loblolly pine, cherrybark oak, sweetgum, and southern red oak.

This soil has medium potential for most urban uses. Wetness and low strength are moderate limitations for streets, dwellings, and industrial sites. Slow permeability in the fragipan is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Capability unit IIe-1; woodland suitability group 3o7.

16—Grenada silt loam, 3 to 8 percent slopes. This moderately well drained, gently sloping soil is on the steeper parts of the loessial plains. Individual areas are 10 to 200 acres.

Typically, the surface layer is dark brown silt loam about 4 inches thick. The subsoil above the fragipan is yellowish brown and light yellowish brown heavy silt loam that extends to a depth of about 26 inches. Below is a layer of gray, mottled silt loam about 3 inches thick. The lower part of the subsoil is a firm, brittle, mottled fragipan that extends to a depth of 72 inches or more. It is yellowish brown silt loam.

Included with this soil in mapping are a few intermingled areas of Calloway and Henry soils. The included soils make up less than 10 percent of this mapping unit.

This soil is moderate in natural fertility. It is strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts the penetration of roots.

This soil has medium potential for farming. The main crops are cotton and soybeans. Other suitable crops are corn and grain sorghum. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization, and tilth is easy to maintain. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage, contour farming, and the use of cover crops help reduce runoff and control erosion.

This soil has medium potential for woodland. The important trees are loblolly pine, cherrybark oak, sweetgum, and southern red oak.

This soil has medium potential for most urban uses. Wetness and low strength are moderate limitations for streets, dwellings, and industrial sites. Slow permeability in the fragipan is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Capability IIIe-1; woodland suitability group 3o7.

17—Grenada-Urban land complex, 1 to 3 percent slopes. This complex consists of moderately well drained, nearly level Grenada soils and Urban land, that is mainly Grenada soil material. It is in the city of Pine Bluff. Most areas range from 20 to 100 acres.

Grenada soils make up about 20 to 65 percent of this mapping unit, Urban land makes up about 25 to 75 percent, and other soils make up 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Grenada soils have a surface layer of dark brown silt loam about 4 inches thick. The subsoil above the fragipan is yellowish brown and light yellowish brown heavy silt loam that extends to a depth of 26 inches. Below is a layer of gray, mottled silt loam about 3 inches thick. The lower part of the subsoil is a firm, brittle, mottled fragipan that extends to a depth of 72 inches or more. It is yellowish brown silt loam.

Urban land consists of soils that have been altered or obscured by buildings or other urban structures; therefore, classification of the soils is impractical. Typical structures are single and multiple-unit dwellings, streets, parking lots, and industrial sites. Areas of Grenada soils and other soils that have been altered by cutting and filling make up some areas mapped as Urban land. In some areas the soil has not been altered, but is covered by 6 to 24 inches of loamy material.

Included with this complex in mapping are a few intermingled areas of Calloway-Urban land complex and Henry-Urban land complex.

Grenada soils are moderate in natural fertility. They are strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is medium, and erosion is a moderate hazard if the areas are not protected by vegetation. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts the penetration of roots.

This complex has medium potential for most urban uses. Wetness and low strength are moderate limitations for streets, dwellings, and industrial sites. Slow permeability in the fragipan is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. This complex has high potential for lawns, shrubs, and gardens. The soil warms early in spring and permits early planting. Tilth is easy to maintain. Not assigned to a capability unit or a woodland suitability group.

18—Grenada-Urban land complex, 3 to 8 percent slopes. This complex consists of moderately well drained, gently sloping Grenada soils and Urban land, that is mainly Grenada soil material. It is in the city of Pine Bluff. Most areas range from 20 to 80 acres.

Grenada soils make up about 30 to 70 percent of this mapping unit, Urban land makes up about 25 to 60 percent, and other soils make up 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Grenada soils have a surface layer of dark brown silt loam about 4 inches thick. The subsoil above the fragipan is yellowish brown and light yellowish brown heavy silt loam that extends to a depth of about 26 inches. Below is a layer of gray, mottled silt loam about 3 inches thick. The lower part of the subsoil is a firm, brittle, mottled fragipan that extends to a depth of 72 inches or more. It is yellowish brown silt loam.

Urban land consists of soils that have been altered or obscured by buildings or other urban structures; therefore, classification of the soils is impractical. Typical structures are single and multiple-unit dwellings, streets, and industrial sites. Areas of Grenada soils and other soils that have been altered by cutting and filling make up some areas mapped as Urban land.

Included with this complex in mapping are a few intermingled areas of Calloway-Urban land complex and Henry-Urban land complex.

Grenada soils are moderate in natural fertility. They are strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate, and available water capacity is medium. Runoff is medium, and erosion is a moderate hazard if the areas are not protected by vegetation. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts the penetration of roots.

This complex has medium potential for most urban uses. Wetness and low strength are moderate limitations for streets, dwellings, and industrial sites. The soil warms early in spring and permits early planting of lawns, shrubs and gardens. Erosion is a severe hazard if the areas are not protected by vegetation. Slow permeability in the fragipan is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. Not assigned to a capability unit or a woodland suitability group.

19—Hebert silt loam. This somewhat poorly drained, level soil is on the lower parts of old natural levees along bayous and abandoned meanders of rivers. Slope is 0 to 1 percent. Individual areas range from about 20 to 300 acres.

Typically, the surface layer is brown silt loam about 7 inches thick. The upper part of the subsoil is grayish brown, mottled silt loam that extends to a depth of about 16 inches. The middle part is brown, mottled silty clay loam that extends to a depth of about 34 inches. The lower part is brown silty clay loam that extends to a depth of about 44 inches. The underlying material, extending to a depth of 66 inches or more, is brown, mottled silt loam.

Included with this soil in mapping are small areas of McGehee, Portland, and Rilla soils. These included soils make up less than 10 percent of this unit.

This soil is high in natural fertility. The surface layer and subsoil are medium acid or strongly acid. Runoff is slow, and permeability is moderately slow. Available water capacity is high. The water table is within 18 inches of the surface during winter and early spring.

This soil has high potential for row crops and small grains. Excess water is a moderate hazard, and drains are needed in places. Unless surface drains have been installed, farming operations are commonly delayed in spring. Crops on this soil respond well to fertilization, and tilth is easy to maintain by returning crop residue to the soil. The main crops are soybeans, cotton, and rice.

This soil has high potential for woodland. Some important trees are eastern cottonwood, cherrybark oak, Nuttall oak, and sweetgum. Wetness is a moderate limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the drier seasons.

This soil has low and medium potential for most urban uses. Wetness is a severe limitation for septic tank absorption fields, sewage lagoons, and sanitary landfills. This limitation is difficult to overcome. Wetness and shrink-swell potential are moderate limitations for dwellings without basements, small commercial buildings, local roads, and streets. Capability unit IIw-3; woodland suitability group 2w5.

20—Henry silt loam. This poorly drained, level soil is in broad, flat depressions of the loessial plains. Slope is 0 to 1 percent. Individual areas are 20 to 200 acres.

Typically, the surface layer is grayish brown, mottled silt loam about 3 inches thick. The subsurface layer extends to a depth of about 28 inches. It is gray, mottled silt loam. The upper part of the subsoil is light brownish gray, mottled silty clay loam that is compact and brittle and that extends to a depth of 52 inches. The lower part, extending to a depth of 72 inches or more, is mottled gray and yellowish brown silt loam.

Included with this soil in mapping are a few intermingled areas of Calloway and Grenada soils. The included soils make up less than 10 percent of this mapping unit.

This soil is moderate in natural fertility. It is medium acid or strongly acid throughout except the surface layer in limed areas. Permeability is slow, and available water capacity is medium. Tilth is easy to maintain. The soil is wet in winter and spring and droughty in summer. The fragipan restricts the penetration of roots.

This soil has medium potential for farming. The main crops are cotton, rice, and soybeans. Other suitable crops are corn and grain sorghum. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization, and tilth is easy to maintain. Farming operations are delayed several days after a rain because of excess water, and surface drains are needed.

This soil has medium potential for loblolly pine, water oak, and sweetgum. Wetness is a severe limitation to equipment use in managing and harvesting the tree crop, but it is usually overcome by logging during the drier seasons.

This soil has low potential for most urban uses. Wetness is a severe limitation for streets, dwellings, and industrial sites. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIw-3; woodland suitability group 3w9.

21—Henry-Urban land complex. This complex consists of poorly drained, level Henry soils and Urban land, that is mainly Henry soil material. It is in the city of Pine Bluff. Slope ranges from 0 to 1 percent. Most areas are 20 to 200 acres.

Henry soils make up about 20 to 65 percent of this mapping unit, Urban land makes up about 25 to 75 percent, and other soils make up about 5 to 10 percent. These areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Henry soils have a surface layer of grayish brown, mottled silt loam about 3 inches thick. The subsurface layer extends to a depth of about 28 inches. It is gray, mottled silt loam. The upper part of the subsoil is light brownish gray, mottled silty clay loam that is compact and brittle and that extends to a depth of about 52 inches. The lower part, extending to a depth of 72 inches or more, is mottled gray and yellowish brown silt loam.

Urban land consists of soils that have been altered or obscured by buildings or other urban structures; therefore, classification of the soils is impractical. Typical structures are single- and multiple-unit dwellings, streets, parking lots, shopping centers less than 40 acres in size, and industrial sites. Areas of Henry soils and other soils that have been altered by cutting, grading, and filling make up some areas mapped as Urban land. In some areas the soil has not been altered but is covered by 6 to 24 inches of loamy material.

Included with this complex in mapping are a few intermingled areas of Grenada-Urban land complex and Calloway-Urban land complex.

Henry soils are moderate in natural fertility. They are medium acid or strongly acid throughout except the surface layer in limed areas. Permeability is slow, and available water capacity is moderate. Tilth is easy to maintain. The soil is wet in winter and spring and droughty in summer. The fragipan restricts the penetration of roots, and the water table is perched above the fragipan during periods of high rainfall.

This complex has low potential for most urban uses. Wetness is a severe limitation for streets, dwellings, and industrial sites. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Landscaping plants that tolerate a seasonal high content of water in the soil can be selected for planting. Wetness is the main limitation to equipment use for planting and maintaining lawns, shrubs, and trees. This limitation can be overcome by planting during drier seasons. Not assigned to a capability unit or a woodland suitability group.

22—McGehee silt loam. This somewhat poorly drained, level soil is on low terraces and natural levees. Slope is less than 1 percent. Individual areas are 20 to 400 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The upper part of the subsoil extends to a depth of about 14 inches. It is grayish brown, mottled silt loam. The middle part is reddish brown, mottled silty clay loam that extends to a depth of about 30 inches. The lower part, extending to a depth of 60 inches or more, is dark reddish brown silty clay.

Included with this soil in mapping are small areas of Rilla, Hebert, Portland, and Perry soils. These included soils make up less than 10 percent of the unit.

This soil is high in natural fertility. Reaction is strongly acid or medium acid in the surface layer and in the upper part of the subsoil and slightly acid to moderately alkaline in the lower part of the subsoil and in the underlying material. Permeability is slow, and available water capacity is high. Tilth is easy to maintain.

This soil has high potential for row crops and small grains. The main crops are cotton, soybeans, and rice. Other suitable crops are corn and grain sorghum. Adapted pasture plants are bermudagrass and tall fescue. The soil responds well to fertilization. Farming operations are delayed a few days after a rain because of excess water, and surface drains are needed.

This soil has high potential for hardwood trees such as eastern cottonwood, cherrybark oak, water oak, willow oak, and sweetgum. Wetness is a moderate limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry seasons.

This soil has low potential for most urban uses. Wetness and shrink-swell potential are severe limitations for dwellings, streets, and industrial sites. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIw-3; woodland suitability group 2w5.

23—**McGehee silt loam, occasionally flooded.** This level, somewhat poorly drained soil is on low terraces and natural levees along the lower part of the flood plain of Bayou Meto. Slope is less than 1 percent. Individual areas are 20 to 100 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The upper part of the subsoil extends to a depth of about 14 inches. It is grayish brown, mottled silt loam. The middle part is reddish brown, mottled silty clay loam that extends to a depth of about 30 inches. The lower part, extending to a depth of 60 inches or more, is dark reddish brown silty clay.

This soil is flooded between January and June for periods of 5 to 30 days. Floods occur on an average of about once every 4 years.

Included with this soil in mapping were small areas of Rilla, Hebert, Portland, and Perry soils. These included soils make up less than 10 percent of the unit.

This soil is high in natural fertility. Reaction is strongly acid or medium acid in the surface layer and in the upper part of subsoil and slightly acid to moderately alkaline in the lower part of the subsoil and in the underlying material. Permeability is slow, and available water capacity is high. Tilth is easy to maintain.

This soil has low potential for row crops and small grains. Soybeans is the main row crop. Flooding is a severe limitation for farming. Adapted pasture plants are bermudagrass and tall fescue.

This soil has high potential for hardwood trees such as eastern cottonwood, cherrybark oak, water oak, willow oak, and sweetgum. Wetness and flooding are moderate limitations to equipment use in managing and harvesting the tree crop, but are usually overcome by logging during the dry seasons.

This soil has low potential for all urban uses. Flooding, wetness, and shrink-swell potential are severe limitations for dwellings, streets, and industrial sites. Flooding, slow permeability, and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IVw-2; woodland suitability group 2w5.

24—**Oklared fine sandy loam, occasionally flooded.** This gently undulating, well drained soil is on low parallel ridges and swales between the Arkansas River and its levees. Slope is less than 1 percent. Individual areas are 40 to 1,000 acres.

Typically, the surface layer is dark brown fine sandy loam about 12 inches thick. The underlying material extends to a depth of 70 inches or more. It is stratified strong brown and pink fine sandy loam and loamy fine sand.

This soil is flooded between January and June for periods of 5 to 30 days. Floods occur on an average of about once every 4 years.

Included with this soil in mapping are small areas of Roxana, Coushatta, Crevasse, and Desha soils. Also included are small areas of soils that are finer textured in the surface layer and below a depth of 40 inches. The areas of finer textured soils are in swales.

This soil is high in natural fertility. Reaction is mildly alkaline or moderately alkaline. The soil is calcareous throughout. Permeability is moderately rapid, and available water capacity is medium. Tilth is easy to maintain.

This soil has low potential for row crops and small grains. Soybeans is the main row crop. Flooding is a severe limitation for farming. Adapted pasture plants are bermudagrass and tall fescue.

This soil has high potential for hardwood trees such as eastern cottonwood and medium potential for pecan and hackberry.

This soil has low potential for all urban uses. Flooding is a severe limitation for dwellings, septic tank absorption fields, and industrial sites. This limitation is difficult or impractical to overcome. Low strength and flooding are moderate limitations for local roads and streets. Capability unit IIw-4; woodland suitability group 2o4.

25—**Ouachita soils, frequently flooded.** This undifferentiated group consists of level, well drained soils on flood plains of local drainageways. It is inundated two or three times each year. It consists of Ouachita silt loam intermingled in an irregular pattern with Ouachita soils that have variable surface texture. Individual areas are large enough to map separately, but because of present and predicted use, they were not separated in mapping. Most mapped areas contain the Ouachita soils that have variable surface texture, but a few areas are dominantly Ouachita silt loam. Slopes are less than 1 percent. Individual areas range from 40 to 200 acres.

Typically, the surface layer is dark brown silt loam about 8 inches thick. The subsoil extends to a depth of about 68 inches. The upper part is dark yellowish brown silt loam, the middle part is yellowish brown silt loam or loam, and the lower part is yellowish brown fine sandy loam. The underlying material is yellowish brown fine sandy loam that extends to a depth of 76 inches or more.

Included with these soils in mapping were spots of Savannah, Smithdale, and Amy soils. These included soils make up less than 10 percent of this mapping unit.

These soils have moderate natural fertility. If not limed the surface layer and subsoil are strongly acid or very strongly acid throughout. Available water capacity is high. Runoff is slow, and permeability is moderately slow.

This undifferentiated group has low potential for cultivated crops because of the hazard of frequent flooding. In most years the flooding occurs during the period of December to June. Most of the area is used as pasture, woodland, and wildlife habitat.

This undifferentiated group has high potential for loblolly pine, sweetgum, and eastern cottonwood. Flooding limits the use of equipment in managing and harvesting the tree crop, but this can be overcome by logging during the drier seasons.

The soils in this undifferentiated group have low potential for urban uses. Flooding is the severe limitation, and it can be overcome only by major flood control measures (fig. 5). Capability unit IVw-3; woodland suitability group 1w8.

26—Perry clay. This level, poorly drained soil is on broad flats along the Arkansas River and its former channels. Slope is less than 1 percent. Individual areas range from 20 to 3,000 acres.

Typically, the surface layer is dark grayish brown clay about 4 inches thick. The upper part of the subsoil is gray, mottled clay that extends to a depth of about 34 inches. The lower part is reddish brown, mottled clay. The underlying material, extending to a depth of 72 inches or more, is reddish brown clay.

Included with this soil in mapping are small areas of Portland and McGehee soils. These included soils make up less than 5 percent of the mapping unit. Also included are small areas of soils that have a very dark grayish brown surface layer and small areas where the reddish brown clay layers are below a depth of 36 inches.

This soil is high in natural fertility. It is strongly acid to slightly acid in the surface layer and in the upper part of the subsoil, and neutral to moderately alkaline in the lower part of the subsoil and in the underlying material. Permeability is very slow, and available water capacity is high. When dry, this soil shrinks and cracks (fig. 6), and when wet, the soil expands and seals the cracks. The water table is seasonally high; it is within 12 inches of the surface during winter and spring.

This soil has high potential for rice and medium potential for row crops and small grains. The main crops are rice and soybeans. Other suitable crops are cotton and grain sorghum. Adapted pasture plants are bermudagrass and tall fescue. Crops on this soil respond well to fertilization. Excess water is a severe hazard. This soil can be cultivated only within a narrow range of moisture content. Farming operations commonly have to be delayed for several days after a rain, and surface drains are needed. The preparation of a seedbed is difficult, and tilth is difficult to maintain.

This soil has high potential for sweetgum and water oak and medium potential for eastern cottonwood and pecan. Wetness is a severe limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry seasons.

This soil has low potential for most urban uses. Wetness, shrink-swell potential, and low strength are severe limitations for dwellings, streets, and industrial sites. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIw-2; woodland suitability group 2w6.

27—Perry clay, occasionally flooded. This level, poorly drained soil is on broad flats between the Arkansas River and its levee and along the lower part of the flood plain of Bayou Meto. Slopes are less than 1 percent. Individual areas are 40 to 2,000 acres.

Typically, the surface layer is dark grayish brown clay about 4 inches thick. The upper part of the subsoil is gray, mottled clay that extends to a depth of about 34 inches. The lower part is reddish brown, mottled clay that extends to a depth of about 55 inches. The underlying material, extending to a depth of 72 inches or more, is reddish brown clay.

These soils are flooded between January and June for periods of 5 to 30 days. Floods occur on an average of about once every 4 years.

Included with this soil in mapping are small areas of Portland, Desha, Yorktown, and McGehee soils. These included soils make up less than 5 percent of the mapping unit. Also included are small areas of soils that have a very dark grayish brown surface layer and small areas of soils in which the reddish brown clay layers are below a depth of 36 inches.

This soil is high in natural fertility. It is strongly acid to slightly acid in the surface layer and in the upper part of the subsoil and neutral to moderately alkaline in the lower part of the subsoil and in the underlying material. Permeability is very slow, and available water capacity is high. When dry, this soil shrinks and cracks, and when wet, it expands and seals the cracks. The water table is seasonally high and within 12 inches of the surface during winter and spring.

These soils have low potential for row crops and small grains. Soybeans are the main row crop. Flooding is a severe limitation for farming. Bermudagrass is an adapted pasture plant.

This soil has a high potential for sweetgum and water oak and medium potential for eastern cottonwood and pecan. Wetness is a severe limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry seasons.

This soil has low potential for most urban uses. Flooding, wetness, shrink-swell potential, and low strength are severe limitations for dwellings, streets, and industrial sites. Flooding, slow permeability, and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IVw-1; woodland suitability group 2w6.

28—**Pheba silt loam, 0 to 2 percent slopes.** This somewhat poorly drained, nearly level soil is on the smoother parts of the Coastal Plain. Individual areas are 10 to 40 acres.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is pale brown silt loam that extends to a depth of about 9 inches. The upper part of the subsoil is light yellowish brown, mottled silt loam that extends to a depth of 23 inches. The next layer is light brownish gray, mottled silt loam that is mostly material from the subsurface layer and that extends to a depth of about 29 inches. The middle part of the subsoil is brown, mottled silt loam that is compact and brittle and that extends to a depth of about 40 inches. The lower part, extending to a depth of 72 inches or more, is yellowish brown, mottled silt loam that is compact and brittle.

Included with this soil in mapping are a few intermingled areas of Amy and Savannah soils and small areas of soils that have sandy clay loam texture in the subsoil. These included soils make up less than 10 percent of the mapping unit.

This soil is moderate in natural fertility. It is strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower, compact and brittle part of the subsoil. Available water capacity is medium. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts the penetration of roots.

This soil has medium potential for farming. The main crop is soybeans. Other suitable crops are cotton, corn, and grain sorghum. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. The soil responds well to fertilization, and tilth is easy to maintain. Farming operations are commonly delayed a few days after a rain because of excess water, and surface drains are needed.

This soil has high potential for loblolly pine and sweetgum. Wetness is the main limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the drier seasons.

This soil has low potential for most urban uses. Wetness is a severe limitation for dwellings and industrial sites. Wetness and low strength are moderate limitations for streets. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIw-4; woodland suitability group 2w8.

29—**Pheba-Urban land complex, 0 to 2 percent slopes.** This complex consists of somewhat poorly drained, nearly level Pheba soils and Urban land that is mainly Pheba soil material. It is in the city of Pine Bluff. Slope ranges from 0 to 2 percent, but averages less than 1 percent. Most areas range from about 20 to 40 acres.

Pheba soils make up about 25 to 75 percent of this mapping unit, Urban land makes up about 20 to 65 percent, and other soils make up 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Pheba soils have a surface layer of dark grayish brown silt loam about 4 inches thick. The subsurface layer is pale brown silt loam that extends to a depth of about 9 inches. The upper part of the subsoil is light yellowish brown, mottled silt loam that extends to a depth of about 23 inches. The next layer is light brownish gray, mottled silt loam that is mostly subsurface material and that extends to a depth of about 29 inches. The middle part of the subsoil is brown, mottled silt loam that is compact and brittle and that extends to a depth of about 40 inches. The lower part, extending to a depth of 72 inches or more, is yellowish brown, mottled silt loam that is compact and brittle.

Urban land consists of soils that have been altered or obscured by buildings or other structures; therefore classification of the soils is impractical. Typical structures are single- and multiple-unit dwellings, streets, parking lots, and business and industrial sites. Areas of Pheba soils and other soils that have been altered by cutting, grading, and filling make up areas mapped as Urban land. In some areas, the soil has not been altered but is covered by 6 to 24 inches of loamy material.

Included with this complex in mapping are a few intermingled areas of Savannah, Amy, and Calloway soils. These soils have been altered in some places.

Pheba soils are moderate in natural fertility. They are strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the lower, compact and brittle part. Available water capacity is medium. Tilth is easy to maintain. The water table is perched above the fragipan during periods of high rainfall. The fragipan restricts the penetration of roots.

This complex has low potential for most urban uses. Wetness is a severe limitation for dwellings and industrial sites. Wetness and low strength are moderate limitations for streets. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Landscaping plants that tolerate a high content of water within the root zone can be selected for planting. Wetness is the main limitation to equipment use for planting shrubs and trees. This limitation can be overcome by planting during drier seasons. Not assigned to a capability unit or a woodland suitability group.

30—Portland clay. This level, somewhat poorly drained soil is in low, slack water areas along the Arkansas River and its former channels. Slopes are less than 1 percent. Individual areas range from 20 to 1,000 acres.

Typically, the surface layer is dark brown clay about 6 inches thick. The upper part of the subsoil is brown, mottled clay. The middle and lower parts, extending to a depth of 72 inches or more, are reddish brown, mottled clay.

Included with this soil in mapping are small areas of Desha, Perry, Hebert, and McGehee soils. Also included are small areas of soils that have a surface layer of silt loam. These included soils make up less than 10 percent of the unit.

This soil is high in natural fertility. Reaction is strongly acid or very strongly acid in the upper 16 to 26 inches except in limed areas. The lower part of the subsoil ranges from slightly acid to moderately alkaline. Permeability is very slow, and available water capacity is high. When dry, this soil shrinks and cracks, and when wet, it expands and seals the cracks. The water table is seasonally high; it is within 12 inches of the surface during winter and early spring.

This soil has high potential for rice and medium potential for row crops and small grains. The main crops are soybeans and rice. Other suitable crops are cotton and grain sorghum. Adapted pasture plants are bermudagrass and tall fescue. Crops on this soil respond well to fertilization. Excess water is a severe hazard (fig. 7). This soil can be cultivated only within a narrow range of moisture content. Farming operations commonly have to be delayed for several days after a rain, and surface drains are needed. The preparation of a seedbed is difficult, and tilth is difficult to maintain.

This soil has high potential for hardwood trees such as green ash and sweetgum. Wetness is a severe limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry seasons.

This soil has low potential for most urban uses. Wetness, shrink-swell potential, and low strength are severe limitations for dwellings, industrial sites, streets, and roads. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIw-2; woodland suitability group 2w6.

31—Portland clay, occasionally flooded. This level, somewhat poorly drained soil is in low, slack water areas between the Arkansas River and its levee and along the lower part of the flood plain of Bayou Meto. Slope is less than 1 percent. Individual areas range from 40 to 1,000 acres.

Typically, the surface layer is dark brown clay about 6 inches thick. The upper part of the subsoil is brown, mottled clay that extends to a depth of about 16 inches. The middle and lower parts, extending to a depth of 72 inches or more, are reddish brown, mottled clay.

This soil is flooded between January and June for periods of 5 to 30 days. Floods occur on an average of about once every 4 years.

Included with this soil in mapping are small areas of Desha, Perry, Hebert, and McGehee soils. Also included are small areas of soils that have a surface layer of silt loam. These included soils make up less than 10 percent of the unit.

This soil is high in natural fertility. Reaction is strongly acid or very strongly acid in the upper 16 to 26 inches except in limed areas. The lower part of the subsoil ranges from slightly acid to moderately alkaline. Permeability is very slow, and available water capacity is high. When dry, this soil shrinks and cracks, and when wet, it expands and seals the cracks. The water table is seasonally high; it is within 12 inches of the surface during winter and early spring.

These soils have medium potential for row crops and small grains. Soybeans and rice are the main row crops. Flooding is a severe limitation for farming. Adapted pasture plants are bermudagrass and tall fescue.

This soil has high potential for hardwood trees such as green ash and sweetgum. Wetness and flooding are severe limitations to equipment use in managing and harvesting the tree crop, but are usually overcome by logging during the dry seasons.

This soil has low potential for most urban uses. Flooding, wetness, shrink-swell potential, and low strength are severe limitations for dwellings, streets, and industrial sites. Flooding, slow permeability, and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IVw-1; woodland suitability group 2w6.

32—Portland-Urban land complex. This complex consists of somewhat poorly drained, level Portland soils and Urban land that is mainly Portland soil material. It is in the city of Pine Bluff. Slope is less than 1 percent. Most areas range from about 30 to 80 acres.

Portland soils make up about 20 to 40 percent of this mapping unit, Urban land makes up about 50 to 75 percent, and other soils make up 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Portland soils have a surface layer of dark brown clay about 6 inches thick. The upper part of the subsoil is brown mottled clay that extends to a depth of about 16 inches. The middle and lower parts, extending to a depth of 72 inches or more, are reddish brown, mottled clay.

Urban land consists of soils that have been altered or obscured by buildings or other urban structures; therefore, classification of the soils is impractical. Typical structures are single- and multiple-unit dwellings, railroad yards, and commercial buildings. Areas of Portland soils and other soils that have been altered by cutting, grading, and filling make up Urban land. In some areas, the soil has not been altered but is covered by 6 to 24 inches of clayey material.

Included with this complex in mapping are a few intermingled areas of Perry, McGehee, and Hebert soils. These soils have been altered in some places.

Portland soils are high in natural fertility. Reaction is strongly acid or very strongly acid in the upper 16 to 26 inches except in limed areas. The lower part of the subsoil ranges from slightly acid to moderately alkaline. Permeability is very slow, and available water capacity is high. When dry, these soils shrink and crack, and when wet, they expand and seal the cracks. The water table is seasonally high; it is within 12 inches of the surface during winter and early spring.

This complex has low potential for most urban uses. Wetness, shrink-swell potential, and low strength are severe limitations for dwellings, commercial buildings, streets, and roads. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult and expensive to overcome. Landscaping plants that tolerate a high content of water in the soil can be selected for planting. Unprotected areas are muddy and sticky when wet. Not assigned to a capability unit or a woodland suitability group.

33—**Rilla silt loam, 0 to 1 percent slopes.** This well drained, level soil is on natural levees and terraces of former channels of the Arkansas River. Individual areas are 20 to 300 acres.

Typically, the surface layer is brown silt loam about 9 inches thick. The upper part of the subsoil is yellowish red silt loam that extends to a depth of about 15 inches. The middle part is yellowish red silty clay loam that extends to a depth of about 28 inches and yellowish red silt loam that extends to a depth of about 42 inches. The lower part is reddish brown loam that extends to a depth of about 55 inches. The underlying material, extending to a depth of 72 inches or more, is yellowish red loam.

Included with this soil in mapping are some soils that have a surface layer of fine sandy loam and small areas of Hebert, McGehee, and Portland soils. These included soils make up less than 10 percent of the unit. Also included are small areas of soils that have clayey horizons below a depth of 36 inches.

This soil has high natural fertility. Reaction ranges from slightly acid to strongly acid in the surface layer and from medium acid to very strongly acid in the subsoil. Permeability is moderate, and runoff is slow. Available water capacity is high.

This soil has high potential for row crops and small grains. The main crops are cotton (fig. 8) and soybeans. Other suitable crops are grain sorghum, winter small grains, and corn. This soil warms early in spring and permits early plantings. Tilth is easy to maintain. The soil can be cultivated over a wide range of moisture conditions. Adapted pasture plants are bahiagrass, bermudagrass, and tall fescue.

This soil has high potential for eastern cottonwood, American sycamore, cherrybark oak, and sweetgum, and it has no significant limitations for woodland use or management.

This soil has medium potential for most urban uses. Shrink-swell potential and low strength are moderate limitations for dwellings, small commercial buildings, and local roads and streets. Moderate permeability and wetness are moderate limitations for septic tank absorption fields. Capability unit I-1; woodland suitability group 2o4.

34—**Rilla silt loam, undulating.** This well drained undulating soil is in the form of ridges and swales along former channels of the Arkansas River. Slope is 0 to 3 percent. Individual areas are 20 to 100 acres.

Typically the surface layer is brown silt loam about 9 inches thick. The upper part of the subsoil is yellowish red silt loam that extends to a depth of about 15 inches. The middle part is yellowish red silty clay loam that extends to a depth of about 28 inches and yellowish red silt loam that extends to a depth of about 42 inches. The lower part is reddish brown loam that extends to a depth of about 55 inches. The underlying material, extending to a depth of 72 inches or more, is yellowish red loam.

Included with this soil in mapping are small areas of soils that have slopes of more than 3 percent and small areas of Hebert, McGehee, and Portland soils. These included soils make up less than 10 percent of the unit. Also included are small areas of soils that have clayey horizons below a depth of 36 inches.

This soil has high natural fertility. Permeability is moderate, and runoff is slow. Available water capacity is high. Reaction ranges from slightly acid to strongly acid in the surface layer and from medium acid to very strongly acid in the subsoil.

This soil has high potential for row crops and small grain. The main crops are cotton and soybeans. Other suitable crops are grain sorghum, winter small grains, and corn. This soil warms early in spring and permits early planting. Tilth is easy to maintain. The soil can be cultivated over a wide range of moisture conditions. The short side slopes of ridges are susceptible to slight erosion. Adapted pasture plants are bahiagrass, bermudagrass, and tall fescue.

This soil has high potential for eastern cottonwood, American sycamore, cherrybark oak, and sweetgum, and it has no significant limitations for woodland use or management.

This soil has medium potential for most urban uses. Shrink-swell potential and low strength are moderate limitations for dwellings, small commercial buildings, and local roads and streets. Moderate permeability and wetness are moderate limitations for septic tank absorption fields. Capability unit IIe-2; woodland suitability group 2o4.

35—**Roxana silt loam.** This well drained, level soil is on natural levees of bottom lands of the Arkansas River. Slope is 0 to 1 percent. Individual areas range from about 20 to 100 acres.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The underlying material, extending to a depth of 41 inches, is stratified brown, light brown, dark brown, and reddish brown silt loam. The material below, extending to a depth of 72 inches or more, is dark brown and reddish brown silt loam and silty clay loam.

Included with this soil in mapping are small areas of Rilla, Coushatta, and Caspiana soils. These included soils make up less than 10 percent of the unit. Also included are a few small areas of soils that have gray mottles below a depth of 20 inches and small areas of soils that have a brown and dark grayish brown surface layer.

This soil is high in natural fertility. Reaction ranges from slightly acid to neutral throughout the profile. Permeability is moderate, and runoff is slow. Available water capacity is high.

This soil has high potential for row crops and small grains. The main crops are cotton and soybeans. Other suitable crops are grain sorghum, winter small grains, and corn. This soil warms early in spring and permits early planting. Tilth is easy to maintain. The soil can be cultivated over a wide range of moisture conditions. Adapted pasture plants are bermudagrass and tall fescue.

This soil has high potential for eastern cottonwood, sweetgum, and American sycamore, and it has no significant limitations for woodland use or management.

This soil has high potential for most urban uses. Limitations are slight for dwellings, small commercial sites, and septic tank absorption fields. Low strength is a moderate limitation for local roads and streets. This limitation can be easily overcome by modifying design during construction. Capability unit I-1; woodland suitability group 1o4.

36—**Roxana silt loam, occasionally flooded.** This unit consists of level soils on the natural levees along the bottom lands of the Arkansas River. They are flooded for periods of 5 to 20 days, generally between January and June. Floods occur on an average of about once every 4 years. Slope is less than 1 percent. Individual areas range from 20 to 80 acres.

Typically, the surface layer is dark brown silt loam about 10 inches thick. The underlying material, extending to a depth of 41 inches, is stratified brown, light brown, dark brown, and reddish brown silt loam. The material below, extending to a depth of 72 inches or more, is dark brown and reddish brown silt loam and silty clay loam.

Included with this soil in mapping are small areas of Coushatta, Latanier, and Oklared soils. Also included are small areas of soils that have gray mottles below a depth of 20 inches and small areas of soils that have a brown and dark grayish brown surface layer.

This soil is high in natural fertility. Reaction ranges from slightly acid to neutral throughout the profile. Permeability is moderate, and runoff is slow. Available water capacity is high. Occasional flooding is a hazard during winter and early spring.

This soil has medium potential for row crops. Clean-tilled crops such as cotton and soybeans can be grown most years, although some cotton crops are lost because of flooding. Crops on this soil respond well to fertilization, and tilth is easy to maintain. Adapted pasture plants are bermudagrass and tall fescue.

This soil has high potential for eastern cottonwood, sweetgum, pecan, and American sycamore. Occasional flooding can limit use of equipment in managing and harvesting the tree crops, but this can be overcome by logging during drier seasons.

This soil has low potential for most urban uses. Flooding is a severe limitation for dwellings, small commercial buildings, septic tank absorption fields, roads, and streets. This limitation is difficult or impractical to overcome. Capability unit IIw-2; woodland suitability group 1o4.

37—**Roxana-Urban land complex.** This complex consists of well drained, level Roxana soils and Urban land that is mainly Roxana soil material. It is in the city of Pine Bluff. Slope is less than 1 percent. Most areas range from 40 to 200 acres.

Roxana soils make up about 20 to 65 percent of this mapping unit, Urban land makes up about 25 to 75 percent, and other soils make up 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Roxana soils have a surface layer of dark brown silt loam about 10 inches thick. The underlying material, extending to a depth of 41 inches, is stratified brown, light brown, dark brown, and reddish brown silt loam. The material below, extending to a depth of 72 inches or more, is dark brown and reddish brown silt loam and silty clay loam.

Urban land consists of soils that have been altered or obscured by buildings or other structures; therefore classification of the soils is impractical. Typical structures are single- and multiple-unit dwellings, streets, and industrial sites. Areas of Roxana soils and other soils that have been altered by cutting, grading, and filling make up Urban land. In some areas, the soil has not been altered but is covered by 6 to 24 inches of loamy material.

Included with this complex in mapping are a few intermingled areas of Coushatta and Portland soils. These soils have been altered in some places.

Roxana soils are high in natural fertility. Reaction ranges from slightly acid to neutral throughout the profile. Permeability is moderate, and runoff is slow. Available water capacity is high.

This complex has high potential for most urban uses. Limitations are slight for dwellings, small commercial sites, and septic tank absorption fields. Low strength is a moderate limitation for local roads and streets. This limitation can be easily overcome by modifying design during construction. This complex has high potential for a wide variety of landscape plants, lawn grasses, and trees. The soil warms early in spring and permits early plantings. It can be cultivated over a wide range of moisture conditions. Tilth is easy to maintain. Not assigned to a capability unit or a woodland suitability group.

38—**Ruston fine sandy loam, 1 to 3 percent slopes.** This well drained, nearly level soil is on uplands of the Coastal Plain. Individual areas are 20 to 200 acres.

Typically, the surface layer is brown fine sandy loam about 9 inches thick. The upper and middle parts of the subsoil are red sandy clay loam that extends to a depth of about 46 inches. The lower part of the subsoil is red and pale brown fine sandy loam over red sandy clay loam that extends to a depth of 80 inches or more.

Included with this soil in mapping are a few intermingled areas of Smithdale, Savannah, and Sacul soils. Also included are small areas of soils that have slopes of more than 3 percent. These included soils make up less than 10 percent of the unit.

This soil is moderate to low in natural fertility. It is strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate, and available water capacity is high. Runoff is medium. Tilth is easy to maintain.

This soil has high potential for farming. The main crops are soybeans and truck crops. Other suitable crops are corn, cotton, and small grains. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage, contour farming, and the use of cover crops, including grasses and legumes, in the cropping system help reduce runoff and control erosion.

This soil has medium potential for loblolly pine, and it has no significant limitations to woodland use or management.

This soil has high potential for most urban uses. Limitations are slight for septic tank absorption fields, dwellings, and industrial sites. Low strength is a moderate limitation for local roads and streets. This limitation is easily overcome by modifying design during construction. Capability unit IIe-3; woodland suitability group 3o1.

39—Sacul fine sandy loam, 1 to 3 percent slopes. This moderately well drained, nearly level soil is on the smoother parts of the Coastal Plain. Individual areas are 10 to 40 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer is pale brown fine sandy loam that extends to a depth of about 7 inches. The upper part of the subsoil is red clay that extends to a depth of about 18 inches. The middle part is red, mottled clay that extends to a depth of about 36 inches. The lower part is mottled red, gray, and brown clay loam that extends to a depth of about 56 inches. The underlying material, extending to a depth of 72 inches or more, is light brownish gray, mottled clay loam.

Included with this soil in mapping are a few intermingled areas of Sawyer, Savannah, Ruston, and Smithdale soils. Also included are small areas of soils that have slopes of more than 3 percent and small areas of soils that have sandy clay and sandy clay loam texture in the subsoil.

This soil is low in natural fertility. It is strongly acid or very strongly acid throughout except for the surface layer in limed areas. Permeability is slow, and available water capacity is high. Tilth is easy to maintain.

This soil has medium potential for farming. The main crop is soybeans. Other suitable crops are corn and small grains. Adapted pasture plants are bermudagrass and bahiagrass. Crops on this soil respond well to fertilization. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage; the use of cover crops, including grasses and legumes, in the cropping system; and contour farming help reduce runoff and control erosion. Farming operations are commonly delayed a few days after a rain because of poor internal drainage.

This soil has medium potential for loblolly pine and shortleaf pine. Erosion is the main limitation to woodland management.

This soil has low potential for most urban uses. Low strength and shrink-swell potential are severe limitations for streets, dwellings, and industrial sites. Slow permeability is a severe limitation for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIe-2; woodland suitability group 3c2.

40—Sacul fine sandy loam, 3 to 8 percent slopes. This moderately well drained, gently sloping soil is on the uplands of the Coastal Plain. Individual areas are 10 to 400 acres.

Typically, the surface layer is dark grayish brown fine sandy loam about 3 inches thick. The subsurface layer is pale brown fine sandy loam that extends to a depth of about 7 inches. The upper part of the subsoil is red clay that extends to a depth of about 18 inches. The middle part of the subsoil is red, mottled clay that extends to a depth of about 36 inches. The lower part of the subsoil is mottled red, gray, and brown clay loam that extends to a depth of about 56 inches. The underlying material, extending to a depth of 72 inches or more, is light brownish gray, mottled clay loam.

Included with this soil in mapping are a few intermingled areas of Sawyer, Savannah, Ruston, and Smithdale soils. Also included are small areas of soils that have slopes of more than 8 percent and small areas of soils that have sandy clay and sandy clay loam texture in the subsoil.

This soil is low in natural fertility. It is strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is slow, and available water capacity is high. Tilth is easy to maintain.

This soil has low potential for farming. The erosion hazard is a severe limitation for any row crop. Adapted pasture plants are bermudagrass and bahiagrass. Crops on this soil respond well to fertilization.

This soil has medium potential for loblolly pine and shortleaf pine. Erosion is the main limitation to woodland management.

This soil has low potential for most urban uses. Low strength and shrink-swell potential are severe limitations for streets, dwellings, and industrial sites. Slow permeability is a severe limitation for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IVe-1; woodland suitability group 3c2.

41—Savannah fine sandy loam, 1 to 3 percent slopes. This moderately well drained, nearly level soil is on the smoother parts of the Coastal Plain. Individual areas are 10 to 300 acres.

Typically, the surface layer is yellowish brown fine sandy loam about 9 inches thick. The subsoil above the fragipan is yellowish brown loam that extends to a depth of about 24 inches. The upper part of the fragipan is yellowish brown, mottled loam that extends to a depth of about 35 inches. The middle and lower parts of the fragipan are loam and sandy loam that are mottled in shades of gray and brown and that extend to a depth of about 59 inches. The underlying material, extending to a depth of 72 inches or more, is mottled yellowish brown and gray sandy loam.

Included with this soil in mapping are a few intermingled areas of Sawyer, Pheba, Ruston, and Amy soils. Also included are small areas of soils that have slopes of more than 3 percent. These included soils make up less than 10 percent of the unit.

This soil is low in natural fertility. It is strongly acid or extremely acid throughout except the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Runoff is medium. Available water capacity is medium. Tilth is easy to maintain. The fragipan restricts penetration of roots.

This soil has medium potential for farming. The main crops are truck crops and soybeans. Other suitable crops are cotton, corn, and small grains. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage; the use of cover crops, including grasses and legumes, in the cropping system; and contour farming help reduce runoff and control erosion.

This soil has medium potential for loblolly pine (fig.9), shortleaf pine, and southern red oak, and it has no significant limitations for woodland use or management.

This soil has medium potential for most urban uses. Wetness is a moderate limitation for dwellings and industrial sites. Low strength is a moderate limitation for roads and streets. Moderately slow permeability is a severe limitation for septic tank absorption fields. These limitations are difficult to overcome. Capability unit IIe-1; woodland suitability group 3o7.

42—Savannah fine sandy loam, 3 to 8 percent slopes. This moderately well drained, gently sloping soil is on the uplands of the Coastal Plain. Individual areas are 10 to 90 acres.

Typically, the surface layer is yellowish brown fine sandy loam about 9 inches thick. The subsoil above the fragipan is yellowish brown loam that extends to a depth of about 24 inches. The upper part of the fragipan is yellowish brown, mottled loam that extends to a depth of about 35 inches. The middle and lower parts of the fragipan are loam and sandy loam that are mottled in shades of gray and brown and that extend to a depth of about 59 inches. The underlying material, extending to a depth of 72 inches or more, is mottled yellowish brown and gray sandy loam.

Included with this soil in mapping are a few intermingled areas of Smithdale, Sawyer, Pheba, and Amy soils. Also included are small areas of soils that have slopes of less than 3 percent. These included soils make up less than 10 percent of the unit.

This soil is low in natural fertility. Reaction ranges from strongly acid to extremely acid throughout the soil except the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Runoff is medium. Available water capacity is medium. Tilth is easy to maintain. The fragipan restricts penetration of roots.

This soil has medium potential for farming. The main crops are truck crops and soybeans. Other suitable crops are cotton, corn, and small grains. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage, contour farming, and the use of cover crops, including grasses and legumes, in the cropping system help reduce runoff and control erosion.

This soil has medium potential for loblolly pine, shortleaf pine, and southern red oak, and it has no significant limitations for woodland use or management.

This soil has medium potential for most urban uses. Wetness is a moderate limitation for dwellings and industrial sites. Low strength is a moderate limitation for roads and streets. Moderately slow permeability is a severe limitation for septic tank absorption fields. These limitations are difficult to overcome. Capability unit IIIe-1; woodland suitability group 3o7.

43—Savannah-Urban land complex, 1 to 3 percent slopes. This complex consists of moderately well drained, nearly level Savannah soils and Urban land that is mainly Savannah soil material. It is in the city of Pine Bluff. Slopes range from 1 to 3 percent, but average less than 2 percent. Most areas range from 20 to 100 acres.

Savannah soils make up about 25 to 65 percent of this mapping unit, Urban land makes up about 25 to 70 percent, and other soils make up 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Savannah soils have a surface layer of yellowish brown fine sandy loam about 9 inches thick. The subsoil above the fragipan is yellowish brown loam that extends to a depth of about 24 inches. The upper part of the fragipan is yellowish brown, mottled loam that extends to a depth of about 35 inches. The middle and lower parts of the fragipan are loam and sandy loam that are mottled in shades of gray and brown and that extend to a depth of about 59 inches. The underlying material, extending to a depth of 72 inches or more, is mottled yellowish brown and gray sandy loam.

Urban land consists of soils that have been altered or obscured by buildings or other structures; therefore, classification of the soils is impractical. Typical structures are single- and multiple-unit dwellings, streets, and roads. Areas of Savannah soils and other soils that have been altered by cutting, grading, and filling make up areas mapped as Urban land. In some areas, the soil has not been altered but is covered by 6 to 24 inches of loamy material.

Included with this complex are a few intermingled areas of Pheba, Ruston, Sacul, Sawyer, and Amy soils. These soils have been altered in some places.

The Savannah soils are low in natural fertility. They are strongly acid or extremely acid throughout except the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium, and erosion is a moderate hazard if the areas are not protected by vegetation. The fragipan restricts the penetration of roots.

This complex has medium potential for most urban uses. Wetness is a moderate limitation for dwellings and industrial sites. Low strength is a moderate limitation for roads and streets. These limitations can be overcome by modifying design during construction. Moderately slow permeability is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. This complex has medium potential for lawn grasses, shrubs, and trees. Landscaping plants that tolerate a seasonal water table within the root zone can be selected for planting. The seasonal water table can be overcome by planting during drier seasons. Not assigned to a capability unit or a woodland suitability group.

44—Savannah-Urban land complex, 3 to 8 percent slopes. This complex consists of moderately well drained, gently sloping Savannah soils and Urban land that is mainly Savannah soil material. It is in the city of Pine Bluff. Slope ranges from 3 to 8 percent. Most areas range from 20 to 100 acres in size.

Savannah soils make up about 25 to 65 percent of this mapping unit, Urban land makes up about 25 to 70 percent, and other soils make up 5 to 10 percent. The areas are so intricately mixed that it is not feasible to separate them at the mapping scale for this survey.

Typically, Savannah soil has a surface layer of yellowish brown fine sandy loam about 9 inches thick. The subsoil above the fragipan is yellowish brown loam that extends to a depth of about 24 inches. The upper part of the fragipan is yellowish brown, mottled loam that extends to a depth of about 35 inches. The middle and lower parts of the fragipan are loam and sandy loam that are mottled in shades of gray and brown and that extend to a depth of about 59 inches. The underlying material, extending to a depth of 72 inches or more, is mottled yellowish brown and gray sandy loam.

Urban land consists of soils that have been altered or obscured by buildings or other structures; therefore, classification of the soils is impractical. Typical structures are single- and multiple-unit dwellings, streets, and roads. Areas of Savannah soils and other soils that have been altered by cutting, grading, and filling make up areas mapped as Urban land.

Included with this complex in mapping are a few intermingled areas of Pheba, Ruston, Sacul, Sawyer, and Amy soils. These soils have been altered in some places.

The Savannah soils are moderate in natural fertility. They are strongly acid or extremely acid except the surface layer in limed areas. Permeability is moderate in the upper part of the subsoil and moderately slow in the fragipan. Available water capacity is medium. Runoff is medium, and erosion is a severe hazard if the areas are not protected by vegetation. The fragipan restricts the penetration of roots.

This complex has medium potential for most urban uses. Wetness is a moderate limitation for dwellings and industrial sites. Low strength is a moderate limitation for roads and streets. These limitations can be overcome by modifying design during construction. Moderately slow permeability is a severe limitation for septic tank absorption fields. This limitation is difficult to overcome. This complex has medium potential for lawn grasses, shrubs, and trees. Landscaping plants that will tolerate a seasonal water table within the root zone can be selected for planting. The seasonal water table can be overcome by planting during drier seasons of the year. Erosion is a severe hazard if areas are not protected by vegetation. Not assigned to a capability unit or a woodland suitability group.

45—Sawyer silt loam, 1 to 3 percent slopes. This moderately well drained, nearly level soil is on the smoother parts of the Coastal Plain. Individual areas are 10 to 200 acres.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The upper part of the subsoil is yellowish brown silt loam and silty clay loam that extend to a depth of about 29 inches. The lower part of the subsoil, extending to a depth of 80 inches or more, is gray, mottled silty clay loam, silty clay, and clay.

Included with this soil in mapping are a few intermingled areas of Sacul, Savannah, and Pheba soils and a few small areas of soils that have a fine sandy loam surface layer. These included soils make up less than 10 percent of the unit.

This soil is moderate to low in natural fertility. It is strongly acid or extremely acid throughout except the surface layer in limed areas. Permeability is slow, and runoff is medium. Available water capacity is high. Tilth is easy to maintain.

This soil has medium potential for farming. The main crops are truck crops and soybeans. Other suitable crops are cotton, corn, and small grains. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization. Erosion is a moderate hazard if cultivated crops are grown. Minimum tillage; the use of cover crops, including grasses and legumes, in the cropping system; and contour farming help reduce runoff and control erosion.

This soil has high potential for loblolly pine. Wetness is a moderate limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry seasons.

This soil has low potential for most urban uses. Low strength and shrink-swell potential are severe limitations for dwellings and local roads and streets. Low strength, shrink-swell potential, and wetness are severe limitations for industrial sites. Slow permeability is a severe limitation for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIe-3; woodland suitability group 2w8.

46—Sawyer silt loam, 3 to 8 percent slopes. This moderately well drained, gently sloping soil is on the uplands of the Coastal Plain. Individual areas are 10 to 100 acres.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The upper part of the subsoil is yellowish brown silt loam and silty clay loam that extend to a depth of about 29 inches. The lower part of the subsoil, extending to a depth of 80 inches or more, is gray, mottled silty clay loam, silty clay, and clay.

Included with this soil in mapping are a few intermingled areas of Sacul, Savannah, and Pheba soils and a few small areas of soils that have a fine sandy loam surface layer. These included soils make up less than 10 percent of the unit.

This soil is moderate to low in natural fertility. It is strongly acid or extremely acid throughout except the surface layer in limed areas. Permeability is slow, and runoff is medium. Available water capacity is high. Tilth is easy to maintain.

This soil has medium potential for farming. The main crops are truck crops and soybeans. Other suitable crops are cotton, corn, and small grains. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage; the use of cover crops, including grasses and legumes, in the cropping system; and contour farming help reduce runoff and control erosion.

This soil has high potential for loblolly pine. Wetness is a moderate limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry seasons.

This soil has low potential for most urban uses. Low strength and shrink-swell potential are severe limitations for dwellings and local roads and streets. Low strength, shrink-swell potential, and wetness are severe limitations for industrial sites. Slow permeability is a severe limitation for septic tank absorption fields. These limitations are difficult or impractical to overcome. Capability unit IIIe-3; woodland suitability group 2w8.

47—Smithdale fine sandy loam, 3 to 8 percent slopes. This well drained, gently sloping soil is on uplands of the Coastal Plain. Individual areas are 10 to 500 acres.

Typically, the surface layer is dark brown fine sandy loam about 6 inches thick. The upper part of the subsoil is yellowish red fine sandy loam that extends to a depth of about 13 inches. The middle part is red sandy clay loam that extends to a depth of about 34 inches. The lower part, extending to a depth of 80 inches or more, is red sandy loam that has pockets of clean sand grains.

Included with this soil in mapping are a few intermingled areas of Ruston, Savannah, and Sacul soils. Also included are small areas of soils that have slopes of more than 8 percent. These included soils make up less than 10 percent of the unit.

This soil is moderate in natural fertility. It is strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate, and available water capacity is high. Runoff is medium. Tilth is easy to maintain.

This soil has medium potential for farming. The main crops are truck crops and soybeans. Other suitable crops are cotton, corn, and small grains. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage; contour farming; and the use of cover crops, including grasses and legumes, in the cropping system help reduce runoff and control erosion.

This soil has medium potential for loblolly pine, and it has no significant limitations for woodland use or management.

This soil has high potential for most urban uses. Limitations are slight for septic tank absorption fields, dwellings, and local roads and streets. Slope is a moderate limitation for industrial sites. This limitation can be easily overcome by modifying design during construction. Capability unit IIIe-3; woodland suitability group 3o1.

48—Smithdale fine sandy loam, 8 to 12 percent slopes. This well drained, moderately sloping soil is on uplands of the Coastal Plain. Individual areas are 20 to 500 acres.

Typically, the surface layer is dark brown fine sandy loam about 6 inches thick. The upper part of the subsoil is yellowish red fine sandy loam that extends to a depth of about 13 inches. The middle part is red sandy clay loam that extends to a depth of about 34 inches. The lower part, extending to a depth of 80 inches or more, is red sandy loam that has pockets of clean sand grains.

Included with this soil in mapping are a few intermingled areas of Savannah and Sacul soils. Also included are small areas of soils that have slopes of less than 3 percent. These included soils make up less than 10 percent of the unit.

This soil is moderate in natural fertility. It is strongly acid or very strongly acid throughout except the surface layer in limed areas. Permeability is moderate, and available water capacity is high. Runoff is medium. Tilth is easy to maintain.

This soil has low potential for farming. The main crops are truck crops. Other suitable crops are cotton, soybeans, corn, and small grains. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Erosion is a severe hazard if cultivated crops are grown. Minimum tillage; contour farming; and the use of cover crops, including grasses and legumes, in the cropping system help reduce runoff and control erosion.

This soil has medium potential for loblolly pine, and it has no significant limitations for woodland use or management.

This soil has medium potential for most urban uses. Slope is a moderate limitation for dwellings, local roads and streets, and septic tank absorption fields. This limitation can be easily overcome by modifying design during construction. Slope is a severe limitation for industrial sites. Capability unit IVe-2; woodland suitability group 3o1.

49—Wabbaseka-Latanier complex, undulating. This complex consists of small areas of Wabbaseka and Latanier soils that are so intermingled that they could not be separated at the scale selected for mapping. The landscape is low ridges with narrow tops, nearly level side slopes, and narrow swales. Wabbaseka soils are on the narrow ridgetops and nearly level side slopes. Latanier soils are on the foot slopes and in the narrow swales. These soils formed in thin beds of clayey sediment over loamy sediment along the Arkansas River and its former channels. Slope ranges from 3 to 8 percent. Individual areas range from 20 to 100 acres. Individual areas of each soil range from 2 to 10 acres.

Wabbaseka clay makes up about 60 percent of each mapped area. Typically, the surface layer is dark brown clay about 4 inches thick. The upper part of the subsoil is dark reddish brown clay that extends to a depth of about 14 inches. The lower part is dark reddish brown silty clay that extends to a depth of about 18 inches. Below are reddish brown loam, brown fine sandy loam, and light brown loamy fine sand that extend to a depth of 80 inches or more.

Wabbaseka soils are high in natural fertility. Reaction of the A and B horizons is neutral or mildly alkaline and ranges from slightly acid to moderately alkaline in the C horizon. Permeability is very slow, and available water capacity is high.

Latanier clay makes up about 30 percent of each mapped area. Typically, the surface layer is dark brown clay about 4 inches thick. The upper part of the subsoil is dark reddish brown clay that extends to a depth of about 21 inches. The lower part is dark reddish gray silty clay loam that extends to a depth of about 26 inches. Below are dark brown loam and brown and dark brown very fine sandy loam.

Latanier soils are high in natural fertility. Reaction is neutral in the A horizon; slightly acid or neutral, and in places calcareous, within a depth of 36 inches in the B horizon; and neutral or mildly alkaline, and in places calcareous, in the C horizon. Permeability is slow, and available water capacity is high.

The remaining 10 percent of this complex consists of Coushatta, Roxana, and Desha soils.

This complex has medium potential for row crops and small grains. The main crop is soybeans. Other suitable crops are cotton, rice, and grain sorghum. Adapted pasture plants are bermudagrass, bahiagrass, and tall fescue. Crops on this soil respond well to fertilization. Excess water is a severe hazard. This soil can be cultivated only within a narrow range of moisture content. Farming operations commonly have to be delayed for several days after a rain, and surface drains are needed. The preparation of a seedbed is difficult, and tilth is difficult to maintain.

This complex has high potential for hardwood trees, such as cherrybark oak, eastern cottonwood, sweetgum, and water oak. Wetness is a severe limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry season.

The Wabbaseka soils in this complex have medium or high potential for most urban uses. Wetness is a moderate limitation for industrial sites, streets, and roads. There are no limitations for dwellings without basements and septic tank absorption fields. The Latanier soils in this complex have low potential for most urban uses. Shrink-swell potential and low strength are severe limitations for dwellings, industrial sites, streets, and roads. Slow permeability and wetness are severe limitations for septic tank absorption fields. These limitations are difficult or impractical to overcome. Wabbaseka soil is in capability unit IIIw-5; woodland suitability group 2w5. Latanier soil is in capability unit IIIw-5; woodland suitability group 2w5.

50—Wabbaseka-Latanier complex, occasionally flooded. This complex consists of small areas of Wabbaseka and Latanier soils that are so intermingled that they could not be separated at the scale selected for mapping. The landscape is low ridges with narrow tops, nearly level side slopes, and narrow swales. Wabbaseka soils are on the narrow ridgetops and nearly level side slopes. Latanier soils are on the foot slopes and in the narrow swales. These soils formed in thin beds of clayey sediment over loamy sediment between the Arkansas River and its levee and along the lower part of the flood plain of Bayou Meto. Slope ranges from 3 to 8 percent. Individual areas range from 20 to 100 acres. Individual areas of each soil range from 2 to 10 acres.

Wabbaseka clay makes up about 60 percent of each mapped area. Typically, the surface layer is dark brown clay about 4 inches thick. The upper part of the subsoil is dark reddish brown clay that extends to a depth of about 14 inches. The lower part is dark reddish brown silty clay that extends to a depth of about 18 inches. Below are reddish brown loam, brown fine sandy loam, and light brown loamy fine sand that extend to a depth of 80 inches or more.

Wabbaseka soils are high in natural fertility. Reaction of the A and B horizons is neutral or mildly alkaline and ranges from slightly acid to moderately alkaline in the C horizon. Permeability is very slow, and available water capacity is high.

Latanier clay makes up about 30 percent of each mapped area. Typically, the surface layer is dark brown clay about 4 inches thick. The upper part of the subsoil is dark reddish brown clay that extends to a depth of about 21 inches. The lower part is dark reddish gray silty clay loam that extends to a depth of about 26 inches. Below is dark brown loam underlain by brown and dark brown very fine sandy loam.

Latanier soils are high in natural fertility. Reaction is neutral in the A horizon; slightly acid or neutral, and in places calcareous, within a depth of 36 inches in the B horizon; and neutral or mildly alkaline, and in places calcareous, in the C horizon. Permeability is slow, and available water capacity is high.

The remaining 10 percent of this complex consists of Coushatta, Roxana, and Desha soils.

These soils are flooded between January and June for periods of 5 to 30 days. Floods occur on an average of about once every 4 years.

This complex has medium potential for row crops. Soybeans is the main crop. Flooding is a severe limitation for farming; only warm-season annual crops that require a short growing season can be safely grown. Adapted pasture plants are bermudagrass and bahiagrass. Crops on this soil respond well to fertilization. Excess water is a severe hazard. This soil can be cultivated only within a narrow range of moisture content. Farming operations commonly have to be delayed for several days after a rain, and surface drains are needed. The preparation of a seedbed is difficult, and tilth is difficult to maintain.

This complex has high potential for hardwood trees, such as cherrybark oak, eastern cottonwood, sweetgum, and water oak. Wetness is a severe limitation to equipment use in managing and harvesting the tree crop, but is usually overcome by logging during the dry season.

This complex has low potential for most urban uses. Flooding is a severe limitation for dwellings, industrial sites, streets, roads and septic tank absorption fields. These limitations are difficult or impractical to overcome. Wabbaseka soil is in capability unit IIIw-6; woodland suitability group 2w5. Latanier soil is in capability unit IVw-5; woodland suitability group 2w5.

51—Yorktown silty clay. This level, very poorly drained soil is in low, ponded backswamp and brake areas of the Arkansas River. Slope is less than 1 percent. Individual areas range from 50 to 300 acres.

Typically, the surface layer is gray silty clay about 8 inches thick. The upper part of the subsoil is gray, mottled clay that extends to a depth of about 24 inches. The middle part of the subsoil is dark gray, mottled clay over greenish gray, mottled clay that extends to a depth of about 42 inches. The lower part, extending to a depth of 60 inches or more, is reddish brown, mottled clay.

Included with this soil in mapping are small areas of Perry soils. Also included are small areas of soils that have reddish brown clay above a depth of 40 inches.

This soil is high in natural fertility. It is medium acid to neutral in the surface layer and in the upper part of the subsoil and mildly or moderately alkaline in the lower part of the subsoil. Permeability is very slow, and available water capacity is high. These soils are flooded with 6 inches to 5 feet of water for at least 10 months in most years.

This soil has low potential for cultivated crops because of the duration of flooding. In most years, these soils are flooded at least 10 months during the period of October to August. These soils are used only for wildlife habitat, although occasionally during an extended dry period, timber can be harvested.

This soil has medium potential for baldcypress and low potential for all other trees. The duration of flooding is a severe limitation to the use of equipment in managing and harvesting the tree crop.

This soil has very low potential for all urban uses. Flooding, wetness, and shrink-swell potential are severe limitations and are impractical to overcome. Capability unit VIIw-1; woodland suitability group 4w6.

Use and management of the soils

The soil survey is a detailed inventory and evaluation of the most basic resource of the survey area—the soil. It is useful in adjusting land use, including urbanization, to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in uses of the land.

While a soil survey is in progress, soil scientists, conservationists, engineers, and others keep extensive notes about the nature of the soils and about unique aspects of behavior of the soils. These notes include data on erosion, drought damage to specific crops, yield estimates, flooding, the functioning of septic systems, and other factors affecting the productivity, potential, and limitations of the soils under various uses and management. In this way, field experience and measured data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section is useful in planning use and management of soils for crops and pasture, rangeland, and woodland, and as sites for buildings, highways and other transportation systems, sanitary facilities, parks and other recreation facilities, and wildlife habitat. From the data presented, the potential of each soil for specified land uses can be determined, soil limitations to these land uses can be identified, and costly failures in houses and other structures, caused by unfavorable soil properties, can be avoided. A site where soil properties are favorable can be selected, or practices that will overcome the soil limitations can be planned.

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. Productivity and the environment are closely related to the nature of the soil. Plans should maintain or create a land-use pattern in harmony with the natural soil.

Contractors can find information that is useful in locating sources of sand and gravel, roadfill, 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 also 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, and trees and shrubs are influenced by the nature of the soil.

Crops and pasture

W. WILSON FERGUSON, conservation agronomist, Soil Conservation Service, helped prepare this section.

The major management concerns in the use of the soils for crops and pasture are described in this section. In addition, the crops or pasture plants best suited 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 estimated yields of the main crops and hay and pasture plants are presented for each soil.

This section provides information about the overall agricultural potential of the survey area and about the management practices that are needed. The information is useful to equipment dealers, land improvement 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." Planners of management systems for individual fields or farms should also consider the detailed information given in the description of each soil.

More than 231,441 acres in Jefferson County and 155,555 acres in Lincoln County were used for crops and pasture in 1969, according to the Census of Agriculture. Of this total, 204,350 acres in Jefferson County and 125,943 acres in Lincoln County were cropland (see table 1 for principal crops harvested).

The potential of the soils in Jefferson and Lincoln Counties for increased production of food is good. Food production could also 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.

Acreage in crops and pasture has gradually been decreasing as more and more land is used for urban development. The use of this soil survey to help make land-use decisions that will influence the future role of farming in the county is discussed in the section "Soil map for general planning."

Row arrangement and suitable surface drainage are needed for dependable growth in wet areas. Many tracts that are subject to frequent flooding are unsuitable for, or only marginally suitable for, 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. Seedbed preparation should be delayed until spring to secure maximum benefit from 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 that are tilled frequently with heavy equipment. Keeping tillage to a minimum, varying the depth of tillage, and tilling when soil moisture content is favorable helps prevent formation of a plowpan. Deep-rooted grasses and legumes in the cropping system help break up the plowpan.

If left bare, many soils tend to puddle, pack, and crust 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, dallisgrass, and Pensacola bahiagrass are the summer perennials most commonly grown. Coastal bermudagrass and Pensacola bahiagrass are fairly new to these counties, but both are highly satisfactory in production of good quality forage. Tall fescue, the chief winter perennial grass now grown in these counties, grows well only on soils that have a favorable soil-moisture relationship. All of these grasses respond well to fertilizer and 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 average yields per acre that can be expected of the principal crops under a high level of management are shown in table 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. Absence of an estimated yield indicates that the crop is not suited to or not commonly grown on the soil or that a given crop is not commonly irrigated.

The estimated yields were based mainly on the experience and records of farmers, conservationists, and extension agents. Results of field trials and demonstrations and available yield data from nearby counties were also considered.

The yields were estimated assuming that the latest soil and crop management practices were used. Hay and pasture yields were estimated for the most productive varieties of grasses and legumes climatically suited to the area and the soil. A few farmers may be obtaining average yields higher than those shown in table 7.

The management needed to achieve the indicated yields of the various crops depends on 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, barnyard manure, and green-manure crops; harvesting 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 crops grown; that good quality irrigation water is uniformly applied in proper amounts as needed; and that tillage is kept to a minimum. Rice is the only irrigated crop in the survey area. Other crops may receive supplemental irrigation where they are rotated with rice and an irrigation system is available.

The estimated yields reflect the productive capacity of the soils for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 7 are grown in the survey area, but estimated yields are not included because the acreage of these crops is small. The local offices of the Soil Conservation Service and the Cooperative Extension Service can provide information about the management concerns and productivity of the soils for these crops.

Capability classes and subclasses

Capability classes and subclasses show, in a general way, the suitability of soils for most kinds of field crops. The soils are classed 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. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forest trees, or for engineering 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. A survey area may not have soils of all classes.

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; they are defined as follows:

Class I soils have few limitations that restrict their use.

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

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

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

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.

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, rangeland, woodland, wildlife habitat, or recreation.

The capability unit is identified in the description of each soil mapping unit in the section "Soil Maps for Detailed Planning." 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-2 or IIIe-1.

Woodland management and productivity

JAMES T. BEENE, forester, Soil Conservation Service, helped prepare this section.

When the first settlers arrived in Jefferson and Lincoln Counties, virgin forest covered all of the area except river sandbars and scattered, small patches where the Indians grew such crops as corn, beans, and squash.

In the lowlands the principal tree species were sweetgum, water tupelo, baldcypress, bottomland oaks, ash, sycamore, cottonwood, and hickory. On the uplands and loess plains were loblolly pine, shortleaf pine, red oak, black oak, white oak, hickory, ash, and sweetgum.

Woodland makes up about 193,500 acres, or 35 percent, of the land area in Jefferson County and about 142,800 acres, or 40 percent, of the land area in Lincoln County(*9*). In recent years, there has been a trend to convert several hundred acres each year from woodland to cropland. It is expected that this trend will continue, but at a gradually reduced rate.

Table 8 contains information useful to woodland owners or forest managers planning use of soils for wood crops. Mapping unit symbols for soils suitable for wood crops are listed, and the woodland suitability group for each soil is given. All soils in the same woodland suitability group require the same general kinds of woodland management and have about the same potential productivity.

The first part of the *woodland suitability group 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; *c*, clay in the upper part of the soil; and *s*, sandy texture. The letter *o* indicates insignificant limitations or restrictions. If a soil has more than one limitation, priority in placing the soil into a limitation class is in the following order: w, c, and s.

In table 8 the soils are also rated for a number of factors to be considered in management. *Slight*, *moderate*, and *severe* are used to indicate the degree of major soil limitations.

The third element in the symbol, a numeral, indicates the kind of trees for which the soils in the group are best suited and also indicates the severity of the hazard or limitation. The numerals 1, 2, and 3 indicate slight, moderate, and severe limitations, respectively, and suitability for needleleaf trees. The numerals 4, 5, and 6 indicate slight, moderate, and severe limitations, respectively, and suitability for broadleaf trees. The numerals 7, 8, and 9 indicate slight, moderate, and severe limitations, respectively, and suitability for both needleleaf and broadleaf trees.

Ratings of the *erosion hazard* 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. Seedlings from good planting stock that are properly planted during a period of sufficient rainfall are rated. 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 or *important 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 at age 50, except for eastern cottonwood, for which the index is given for age 30. The site index applies to fully stocked, even-aged, unmanaged stands. Important trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

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

Engineering

JAMES L. JANSKI, civil engineer, Soil Conservation Service, helped prepare this section.

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

The ratings in the engineering tables 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 a soil survey and used in determining the ratings in this section were grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock that is within 5 or 6 feet of the surface, soil wetness, depth to a seasonal high 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.

On the basis of information assembled about soil properties, ranges of values can 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 can 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 uses; (2) make preliminary estimates pertinent to construction in a particular area; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative 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, testing, and analysis by personnel having expertise in the specific use contemplated.

The information is presented mainly in tables. Table 9 shows, for each kind of soil, the degree and kind of limitations for building site development; table 10, for sanitary facilities; and table 12, for water management. Table 11 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 a special meaning in soil science. Many of these terms are defined in the Glossary.

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 9. 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 cemetery plots. 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, bedrock, or large stones. 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 9 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 does 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, potential frost action, 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. Depth to bedrock, slope, and large stones in or on the soil are also important considerations in the choice of sites for these structures and were considered in determining the ratings. Susceptibility to flooding is a serious limitation.

Local roads and streets referred to in table 9 have an all-weather surface that can carry light to medium traffic all year. They consist of a 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 classifications of the soil and the soil texture, density, shrink-swell potential, and potential frost action 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 affect stability and ease of excavation.

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 affect ease of excavation or installation of these facilities will be of interest to contractors and local officials. Table 10 shows the degree and kind of limitations of each soil for such uses and for use of the soil as daily cover for landfills. It is important to observe local ordinances and regulations.

If the degree of soil limitation is expressed as *slight*, soils are generally 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 absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock, and susceptibility to flooding. Stones, boulders, and shallowness to bedrock interfere with installation. Excessive slope may cause lateral seepage and surfacing of the effluent. Also, soil erosion and soil slippage are hazards if absorption fields are installed on sloping soils.

In some soils, loose sand and gravel or fractured bedrock is less than 4 feet below the tile lines. In these soils the absorption field does not adequately filter the effluent, and ground water in the area may be contaminated.

On many of the soils that have moderate or severe limitations for use as septic tank absorption fields, a system to lower the seasonal water table could be installed or the size of the absorption field could be increased so that performance is satisfactory.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons have a nearly level floor and cut slopes or embankments of compacted soil material. Aerobic lagoons generally are designed to hold sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water. Soils that are very high in content of organic matter and those that have cobbles, stones, or boulders are not suitable. Unless the soil has very slow permeability, contamination of ground water is a hazard 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 the lagoon's capacity for liquid waste. Slope, depth to bedrock, and susceptibility to flooding also affect the suitability 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 solid waste (refuse) and soil material that is placed in successive layers either in excavated trenches or on the surface of the soil. The waste is spread, compacted, and covered daily with thin layers of soil. Landfill areas are subject to heavy vehicular traffic. Risk of polluting ground water and trafficability affect the suitability of a soil for this use. The best soils have a loamy or silty texture, have moderate to slow permeability, are deep to a seasonal water table, and are not subject to flooding. Clayey soils are likely to be sticky and difficult to spread. Sandy or gravelly soils generally have rapid permeability, which might allow noxious liquids to contaminate ground water. Soil wetness may be a limitation because operating heavy equipment on a wet soil is difficult. Seepage into the refuse increases the risk of pollution of ground water.

In the trench type of landfill, ease of excavation also affects the suitability of a soil for this purpose, so the soil must be deep to bedrock and free of large stones and boulders. Where the seasonal water table is high, water seeps into trenches.

Unless otherwise stated, the limitations in table 10 apply only to the soil material within a depth of about 6 feet. If the trench is deeper, a limitation 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 and covered daily with topsoil. The limitations caused by soil texture, depth to bedrock, and content of stones do not apply to this type of landfill. Soil wetness, however, can be a limitation because of difficulty in operating equipment.

Daily cover for landfill should be soil that is easy to excavate and spread over the compacted fill in wet and dry periods. Soils that are loamy or silty and free of stones or boulders are better than other soils. Clayey soils may be sticky and difficult to spread; sandy soils may be subject to soil blowing.

The soils selected for final cover of landfills should be suitable for growing plants. Of all the 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. These factors include slope, erodibility, and potential for plant growth.

Construction materials

The suitability of each soil as a source of roadfill, sand, gravel, and topsoil is indicated in table 11 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, generally about 6 feet.

Roadfill is soil material used in embankments for roads. Soils are evaluated as a source of roadfill for low embankments, which generally are less than 6 feet high and less exacting in design than high embankments. The ratings reflect the ease of excavating and working the material and the expected performance of the material where 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 some of the soil properties that influence such performance is given in the descriptions of the soil series.

The ratings apply to the soil material 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 their profile. The estimated engineering properties in table 15 provide specific information about the nature of each horizon. This information can help determine the suitability of each horizon for roadfill.

Soils rated *good* are coarse grained. They have low shrink-swell potential, low potential frost action, and few cobbles and stones. 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 moderate shrink-swell potential, moderately steep slopes, or wetness. If the thickness of suitable material is less than 3 feet, the entire soil is rated *poor*.

Sand and *gravel* are used in great quantities in many kinds of construction. The ratings in table 11 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, and stratification are given in the soil series descriptions and in table 15.

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 support plantlife. Also considered is the damage that can result at the area from which the topsoil is taken.

The ease of excavation is influenced by the thickness of suitable material, wetness, slopes, and amount of stones. The ability of the soil to support plantlife is determined by texture, structure, and the amount of soluble salts or toxic substances. Organic matter in the A1 or Ap horizon greatly increases the absorption and retention of moisture and nutrients. Therefore, the soil material from these horizons should be carefully preserved for later use.

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

Soils rated *fair* are loose sandy soils 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, stones, or soluble salt.

Soils rated *poor* are very sandy soils and very firm clayey soils; soils with suitable layers less than 8 inches thick; soils having large amounts of gravel, stones, 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 generally 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.

Water management

Many soil properties and site features that affect water management practices have been identified in this soil survey. In table 12 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 specified 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 best suited to this use have a low seepage potential, which is determined by permeability and the depth to fractured or permeable bedrock or other permeable material.

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

Aquifer-fed excavated ponds are bodies of water made 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 12 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; depth to bedrock, hardpan, or other layers that affect the 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. They allow water to soak into the soil or flow slowly to an outlet. Features that affect suitability of a soil for terraces are uniformity and steepness of slope; depth to bedrock, hardpan, or other unfavorable material; large stones; permeability; ease of establishing vegetation; and resistance to water erosion, soil blowing, soil slipping, and piping.

Grassed waterways are constructed to channel runoff to outlets at a nonerosive velocity. Features that affect the use of soils for waterways are slope, permeability, erodibility, wetness, and suitability for permanent vegetation.

Recreation

The soils of the survey area are rated in table 13 according to limitations that affect their suitability for recreation uses. 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 recreation use by the duration and intensity of flooding and the season when flooding occurs. Onsite assessment of height, duration, intensity, and frequency of flooding is essential in planning recreation facilities.

The degree of the limitation of the soils is expressed 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 13 can be supplemented by information in other parts of this survey. Especially helpful are interpretations for septic tank absorption fields, given in table 10, and interpretations for dwellings without basements and for local roads and streets, given in table 9.

Camp areas require such site preparation as shaping and leveling for 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 flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders 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 or stones or boulders 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.

Paths and trails for walking, horseback riding, bicycling, and other uses 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 annual period of use. They should have moderate slopes and have few or no stones or boulders on the surface.

Wildlife habitat

ROY A. GRIZZELL, JR., biologist, Soil Conservation Service, helped prepare this section.

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

All wildlife is affected by the basic characteristics of soils. They are affected indirectly in many ways by fertility, slope, wetness, and other characteristics of soils. For example, the permeability rate of a soil determines whether the soil can be used to impound water in ponds and lakes to be stocked with fish.

Extensive wooded areas, such as those in the Bayou Meto Game Management Area, are well suited as habitat for deer, wild turkey, squirrel, and other woodland wildlife. These areas and similar ones on private land provide suitable food, cover, and drinking water for wildlife if they are 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 construction 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 either are scarce or do not inhabit the area.

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

In table 14, 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 planning for parks, wildlife refuges, nature study areas, and other developments for wildlife; selecting areas that are suitable for wildlife; selecting soils that are suitable for creating, improving, or maintaining specific elements of wildlife habitat; and determining the intensity of management needed for each element of the habitat.

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. Moderately intensive management is 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 must be intensive. 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 in most areas.

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

Grain and seed crops are seed-producing annuals used by wildlife. 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. 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 grasses and forbs, including weeds, that provide food and cover for wildlife. 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 fruit-producing shrubs that are commercially available and suitable for planting on soils rated good are Russian-olive, 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 plants that furnish habitat or supply food in the form of browse, seeds, or fruitlike cones. Soil properties that have a major effect on 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. 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 water that have an average depth of less than 5 feet and that 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 marshes, waterfowl feeding areas, and 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 cropland, pasture, 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.

Woodland habitat consists of areas of hardwoods or conifers, or a mixture of both, and associated grasses, legumes, and wild herbaceous plants.

Wetland habitat consists of open, marshy or swampy, shallow-water areas where water-tolerant plants grow.

Soil properties

Extensive data about soil properties 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 selected soil samples from typical profiles.

In making soil borings during field mapping, soil scientists can identify several important soil properties. They note the seasonal soil moisture condition or the presence of free water and its depth. For each horizon in the profile, they note the thickness and color of the soil material; the texture, or amount of clay, silt, sand, and gravel or other coarse fragments; the structure, or the natural pattern of cracks and pores in the undisturbed soil; and the consistence of the soil material in place under the existing soil moisture conditions. They record the depth of plant roots, determine the pH or reaction of the soil, and identify any free carbonates.

Samples of soil material are analyzed in the laboratory to verify the field estimates of soil properties and to determine all major properties of 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 soil series not tested are available from nearby survey areas.

The available field and laboratory data are summarized in tables. The tables give the estimated range of engineering properties, the engineering classification, and the physical and chemical properties of each major horizon of each soil in the survey area. They also present pertinent soil and water features, engineering test data, and data obtained from physical and chemical laboratory analyses of soils.

Engineering properties

Table 15 gives estimates of engineering properties and classifications for the major horizons of each soil in the survey area.

Most soils have, within the upper 5 or 6 feet, horizons of contrasting properties. Table 15 gives information for each of these contrasting horizons in a typical profile. *Depth* to the upper and lower boundaries of each horizon is indicated. More information about the range in depth and about other properties in each horizon is given for each soil series in the section "Soil series and morphology."

Texture is described in table 15 in the standard terms (*6*) used by the U.S. 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 are defined in the Glossary.

The two systems commonly used in classifying soils for engineering use are the Unified Soil Classification System (Unified) (*2*) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO) (*1*).

The *Unified* system 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 in 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 in group 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 higher for the poorest. The AASHTO classification for soils tested in the survey area, with group index numbers in parentheses, is given in table 20. The estimated classification, without group index numbers, is given in table 15. Also in table 15 the percentage, by weight, of rock fragments more than 3 inches in diameter is estimated for each major horizon. These estimates are determined mainly by observing volume percentage in the field and then converting that, by formula, to weight percentage.

Percentage of the soil material less than 3 inches in diameter that passes each of four sieves (U.S. standard) 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 consistence of soil. These indexes are used in both the Unified and AASHTO soil classification systems. They are also used as indicators in making general predictions of soil behavior. Range in liquid limit and plasticity index are estimated on the basis of test data from the survey area or from nearby areas and on observations of the many soil borings made during the survey.

In some surveys, the estimates are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterburg limits extend a marginal amount across classification boundaries (1 or 2 percent), the classification in the marginal zone is omitted in table 15.

Physical and chemical properties

Table 16 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 typical pedon 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 vertical water movement 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 planning and designing 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, ornamental plants, or other plants to be grown; in evaluating soil amendments for fertility and stabilization; and in evaluating the corrosivity of soils.

Salinity is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of the nonirrigated soils. The salinity of individual irrigated fields is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of individual fields can differ greatly from the value given in table 16. Salinity affects the suitability of a soil for crop production, its stability when used as a construction material, and its potential to corrode metal and concrete.

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 the swelling was estimated on the basis of the kind and amount of clay in the soil and on measurements of similar soils. The size of the load and the magnitude of the change in soil moisture content also 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 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 rate of corrosion of concrete is based mainly on the sulfate content, texture, and acidity of the soil. Protective measures for steel or more resistant concrete help to avoid or minimize damage resulting from the corrosion. Uncoated steel intersecting soil boundaries or soil horizons is more susceptible to corrosion than an installation that is entirely within one kind of soil or within one soil horizon.

Erosion factors are used to predict the erodibility of a soil and its tolerance to erosion in relation to specific kinds of land use and treatment. The soil erodibility factor (K) is a measure of the susceptibility of the soil to erosion by water. Soils having the highest K values are the most erodible. K values range from 0.10 to 0.64. To estimate annual soil loss per acre, the K value of a soil is modified by factors representing plant cover, grade and length of slope, management practices, and climate. The soil-loss tolerance factor (T) is the maximum rate of soil erosion, whether from rainfall or soil blowing, that can occur without reducing crop production or environmental quality. The rate is expressed in tons of soil loss per acre per year.

Soil and water features

Table 17 contains information helpful in planning land uses and engineering projects that are likely to be affected by soil and water features.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are placed in one of four groups on the basis of the intake of water after the soils have been wetted and have received precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist chiefly of deep, well drained to excessively drained sands or gravels. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep to deep, moderately well drained to well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils that have a layer that impedes the downward movement of water or soils that have moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clay soils that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding is the temporary covering of soil with water from overflowing streams, with runoff from adjacent slopes, and by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes is not considered flooding. Flooding is rated in general terms that describe the frequency and duration of flooding and the time of year when flooding is most likely. The ratings are based on evidence 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; and absence of distinctive soil horizons that form in soils of the area that are not subject to flooding. The ratings are also based on local information about floodwater levels in the area and the extent of flooding; and information that relates the position of each soil on the landscape to historic floods.

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.

High water table is the highest level of a saturated zone more than 6 inches thick 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 in many borings made during the course of the soil survey. Indicated are the depth to the seasonal high water table; the kind of water table, that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. Only 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 construction of basements is feasible and to determine how septic tank absorption fields and other underground installations will function. Also, a seasonal high water table affects ease of excavation.

Depth to bedrock is shown for all soils that are underlain by bedrock at a depth of 5 to 6 feet or less. For many soils, the limited depth to bedrock is a part of the definition of the soil series. The depths shown are based on measurements made in many soil borings and on other observations during the soil mapping. The kind of bedrock and its hardness as related to ease of excavation is also shown. Rippable bedrock can be excavated with a single-tooth ripping attachment on a 200-horsepower tractor, but hard bedrock generally requires blasting.

Test data

Physical and chemical analyses of selected soils

Physical and chemical data 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, mineral 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 proven helpful in rating soils for residential, industrial, recreational, or transportational uses.

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 needs for additional information on these particular soils. Generally, priority is given to soils for which few or no laboratory data are available.

In Jefferson and Lincoln Counties, soils representing four soil series were selected for laboratory analyses. Profiles of these soils are described in the section "Soil series and morphology." The analyses were made by the University of Arkansas in Fayetteville. Tables 18 and 19 show the results.

Silt and clay particle size distribution was determined by the hydrometer method(*3*). Sands were measured by sieving(*8*).

Organic matter was determined by a modified Walkley-Black method. The organic matter is digested with potassium dichromate-sulfuric 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* hydrogen chloride) and measured colorimetrically.

The bases were extracted with 1*N*, pH 7.0, ammonium acetate. Calcium (Ca), potassium (K), and sodium (Na) were determined with a flamephotometer and magnesium (Mg) was measured by atomic absorption. The extractable acidity was determined by the barium chloride-triethanolamine method(*8*).

The total extractable calcium, potassium, magnesium, sodium, and extractable acidity are approximations 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.

Engineering test data

Table 20 contains the results of engineering tests performed by the Arkansas State Highway Department on four soils important in Jefferson and Lincoln Counties. The table shows the specific location where samples were taken, the depth to which sampling was done, and the results of tests to determine particle-size distribution and other properties significant in soil engineering.

Maximum dry density is the maximum dry unit weight of the soil when it has been compacted at optimum moisture content by the prescribed method of compaction. The moisture content which gives the highest dry unit weight is called the optimum moisture content for the specific method of compaction.

Mechanical analysis shows the percentages, by weight, of soil particles that would pass sieves of specified sizes. Sand and other coarser materials do not pass through the No. 200 sieve. Silt and clay pass through the No. 200 sieve. Silt is the material larger than 0.002 millimeter in diameter that passes through the No. 200 sieve, and clay is the fraction passing through the No. 200 sieve that is smaller than 0.002 millimeter in diameter.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil is increased from a dry state, the material changes from a solid to a plastic state. If the moisture content is further increased, the material changes from a plastic to a liquid state. The plastic limit is the moisture content at which the soil material passes from solid to plastic. The liquid limit is the moisture content at which the material changes from plastic to liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic.

Classification of the soils

In this section, the soil series recognized in the survey area are described, the current system of classifying soils is defined, and the soils in the area are classified according to the current system.

Soil series and morphology

In this section, each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual(*6*). Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or mapping units, of each soil series are described in the section "Soil maps for detailed planning."

Amy series

The Amy series consists of poorly drained, slowly permeable soils that formed in silty Coastal Plain sediment. These soils are on broad upland flats and flood plains. They are saturated with water late in winter and early in spring. The native vegetation is mixed pines and hardwoods. Slope is dominantly less than 1 percent.

Amy soils are geographically associated with Pheba, Savannah, and Ouachita soils. Pheba soils, which are level to nearly level and are on upland flats, are somewhat poorly drained and have a fragipan. Savannah soils, which are nearly level to gently sloping and are on uplands, are moderately well drained and have a fragipan. Ouachita soils, on flood plains, formed in loamy sediment and are better drained than Amy soils.

Typical pedon of Amy silt loam in an idle area in the NW1/4SW1/4SE1/4 sec. 12, T. 6 S., R. 10 W., in Jefferson County:

A1—0 to 3 inches; dark grayish brown (10YR 4/2) silt loam; few fine faint yellowish brown and gray mottles; weak fine granular structure; very friable; many fine and medium roots; few fine soft dark accretions; very strongly acid; clear smooth boundary.

A21—3 to 8 inches; gray (10YR 6/1) silt loam; many fine distinct yellowish brown mottles; weak fine subangular blocky structure; friable; many fine roots; few soft dark accretions; very strongly acid; gradual smooth boundary.

A22—8 to 24 inches; gray (10YR 6/1) silt loam; many medium distinct yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine roots; common fine pores; few soft dark accretions; very strongly acid; abrupt wavy boundary.

B21t—24 to 40 inches; gray (10YR 5/1) silty clay loam; many medium distinct yellowish brown (10YR 5/8) and brown (10YR 5/3) mottles; moderate medium subangular blocky structure; firm; few soft dark accretions; patchy clay films on faces of peds; few (less than 5 percent) interfingers of gray (10YR 6/1) silt loam; very strongly acid; abrupt wavy boundary.

B22tg—40 to 56 inches; light brownish gray (10YR 6/2) silt loam; many medium distinct yellowish brown (10YR 5/8) and common fine faint gray mottles; moderate medium subangular blocky structure; firm; common fine pores; few soft dark accretions; patchy clay films on faces of peds; very strongly acid; abrupt wavy boundary.

Cg—56 to 72 inches; gray (10YR 5/1) silty clay loam; many medium distinct yellowish brown (10YR 5/8) mottles; massive; firm; few fine pores; few soft dark accretions; very strongly acid.

Solum thickness ranges from 40 to 70 inches. Reaction is strongly acid or very strongly acid.

The A horizon is dominantly about 24 inches thick, but ranges to less than 9 inches. The A1 horizon has hue of 10YR with value of 4 and chroma of 1 or 2 or value of 5 and chroma of 2. The A2 horizon has hue of 10YR, value of 6, and chroma of 1 or 2.

The B horizon has hue of 10YR, value of 5 or 6, and chroma of 1, or it has hue of 10YR or 2.5Y, value of 6, and chroma of 2. Texture is silt loam or silty clay loam. Mottles are common or many and fine or medium and are in shades of brown or gray.

The C horizon is similar in color, texture, and mottling to the B horizon.

Calloway series

The Calloway series consists of somewhat poorly drained, slowly permeable soils that formed in thick deposits of windblown silts. These soils are on broad, level and nearly level loessial plains. They are saturated with water late in winter and early in spring. Slope is dominantly less than 1 percent, but ranges to as much as 3 percent along local drainageways.

Calloway soils are geographically associated with Grenada and Henry soils. Grenada soils, on adjacent side slopes, are better drained than Calloway soils. Henry soils, in depressions, are more poorly drained than Calloway soils and have chroma of less than 2.

Typical pedon of Calloway silt loam from an area of Calloway silt loam, 1 to 3 percent slopes, in an idle field in the NE1/4NW1/4SW1/4 sec. 23, T. 7 S., R. 9 W., in Jefferson County:

Ap—0 to 6 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; many fine roots; few fine soft dark concretions; medium acid; abrupt smooth boundary.

B—6 to 21 inches; yellowish brown (10YR 5/4) silt loam; many fine distinct gray and yellowish brown mottles; weak medium subangular blocky structure; friable; few fine roots; few fine soft dark accretions; few fine pores; strongly acid; gradual wavy boundary.

B&A—21 to 37 inches; light yellowish brown (10YR6/4) silt loam; many medium distinct gray (10YR 6/1) mottles; medium and thick light brownish gray (10YR 6/2) silt coatings on the vertical faces of prisms in part of this horizon; weak coarse prismatic structure parting to moderate medium subangular blocky; prisms are 10 to 20 cm in diameter; about 75 percent by volume of horizontal cross-section is firm and brittle, remainder is friable; few fine roots between prisms; few fine soft dark accretions; many fine pores; strongly acid; gradual wavy boundary.

Bx1—37 to 51 inches; yellowish brown (10YR 5/4) silt loam; few medium distinct gray (10YR 5/1) and yellowish brown (10YR 5/8) mottles; moderate coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle; patchy clay films on faces of peds; few fine dark concretions; strongly acid; abrupt wavy boundary.

Bx2—51 to 67 inches; yellowish brown (10YR 5/4) silt loam; many medium faint yellowish brown (10YR 5/8) mottles and grayish brown (10YR 5/2) pockets of silty clay loam 2 to 8 inches in diameter; moderate coarse prismatic structure parting to strong medium angular blocky; very firm, compact and brittle; continuous clay films on faces of peds; few fine dark concretions; strongly acid; abrupt broken boundary.

Bx3—67 to 75 inches; mottled grayish brown (10YR 5/2), brownish yellow (10YR 6/8), and yellowish brown (10YR 5/4) silt loam; moderate coarse prismatic structure parting to strong medium subangular and angular blocky; very firm, compact and brittle; continuous clay films on faces of peds; few fine dark concretions; strongly acid.

Solum thickness exceeds 60 inches. Reaction is strongly acid or medium acid throughout. Depth to the fragipan ranges from 14 to 38 inches.

The A horizon is less than 10 inches thick. It has hue of 10YR with value of 4 and chroma of 1 or 2 or value of 5 and chroma of 2 or 3.

The B horizon has hue of 10YR, value of 4 or 5, and chroma of 4 and is mottled in shades of gray.

The B&A horizon has hue of 10YR, value of 5 or 6, and chroma of 4. Texture is silt loam or silty clay loam. Silt coatings on faces of prisms are friable and are gray or light brownish gray.

The Bx horizon has hue of 10YR, value of 5, and chroma of 2, 4, or 6. Texture is silt loam or silty clay loam. Mottles are in shades of gray, brown, and yellow.

Caspiana series

The Caspiana series consists of well drained, moderately permeable soils that formed in beds of loamy alluvium. These soils are on low terraces and natural levees of former channels of the Arkansas River and the larger bayous. The native vegetation was mixed hardwoods. Slope is dominantly less than 1 percent.

Caspiana soils are geographically associated with Perry, Hebert, and Rilla soils. Perry soils, on broad flats, are clayey throughout the control section. Hebert soils, on low natural levees, are more poorly drained than Caspiana soils. Rilla soils, on older natural levees bordering former channels of the Arkansas River, do not have a mollic epipedon.

Typical pedon of Caspiana silt loam from an area of Caspiana silt loam, 0 to 1 percent slopes, in a cultivated field in the NW1/4NW1/4SW1/4 sec. 8, T. 4 S., R. 7 W., in Jefferson County:

Ap—0 to 5 inches; dark brown (7.5YR 3/2) silt loam; weak fine granular structure; friable; neutral; abrupt smooth boundary.

B21t—5 to 15 inches; very dark grayish brown (10YR 3/2) silt loam; moderate medium subangular blocky structure; firm; thin patchy clay films; slightly acid; gradual smooth boundary.

B22t—15 to 23 inches; brown (7.5YR 5/4) silt loam; many dark brown (7.5YR 3/2) coatings on many vertical faces of peds; moderate medium subangular blocky structure; firm; thin patchy films; slightly acid; gradual smooth boundary.

B23t—23 to 36 inches; brown (7.5YR 5/4) silt loam; few dark brown (7.5YR 3/2) coatings on many vertical faces of peds; moderate medium subangular blocky structure; firm; distinct patchy clay films on faces of peds; neutral; gradual smooth boundary.

C1—36 to 50 inches; brown (7.5YR 5/4) very fine sandy loam; massive; friable; few fine calcium carbonate concretions; moderately alkaline; gradual wavy boundary.

C2—50 to 68 inches; brown (7.5YR 5/4) silt loam; few 1/16 to 1/2 inch strata of yellowish red (5YR 5/6) silty clay loam and pale brown (10YR 6/3) silt loam; massive; friable; few fine calcium carbonate concretions; moderately alkaline.

Solum thickness ranges from 30 to 50 inches. Reaction ranges from medium acid to moderately alkaline in the A and B horizons.

The A horizon ranges from 4 to 11 inches in thickness. This horizon has hue of 10YR, value of 3, and chroma of 1 through 3, or it has hue of 7.5YR, value of 3, and chroma of 2.

The upper part of the B horizon ranges from 6 to 12 inches in thickness. This horizon has hue of 10YR, value of 3, and chroma of 2 or 3 and is silt loam or silty clay loam. The lower part of the B horizon has hue of 5YR, value of 4 or 5, and chroma of 4 or 6; hue of 7.5YR, value of 4, and chroma of 4; or hue of 7.5YR, value of 5, and chroma of 4 or 6.

The C horizon has the same color range as the lower part of the B horizon and is typically very fine sandy loam, silt loam, loam, and silty clay loam. Reaction ranges from slightly acid to moderately alkaline.

Coushatta series

The Coushatta series consists of well drained, moderately permeable soils that formed in stratified loamy sediment. These soils are on natural levees along the Arkansas River. The native vegetation was mixed hardwoods. Slope ranges from 0 to 1 percent.

Coushatta soils are geographically associated with Desha, Crevasse, and Roxana soils. Desha soils, in lower lying, slack-water areas, have vertic properties. Crevasse soils, on flood plains, formed in sandy alluvium and are excessively drained. Roxana soils, on slightly higher natural levees on flood plains, have a coarse-silty control section.

Typical pedon of Coushatta silt loam in a cultivated field in the NE1/4SW1/4SW1/4 sec. 3, T. 7 S., R. 6 W., in Lincoln County:

Ap—0 to 8 inches; dark brown (7.5YR 4/4) silt loam; weak medium granular structure and weak platy structure at a thin depth of 5 to 8 inches; friable; many fine roots; neutral; abrupt smooth boundary.

B21—8 to 15 inches; reddish brown (5YR 4/3) silt loam; weak medium subangular blocky structure; friable; common fine roots; many fine pores; neutral; gradual smooth boundary.

B22—15 to 30 inches; reddish brown (5YR 4/3) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; common fine pores; mildly alkaline; calcareous; abrupt smooth boundary.

C—30 to 52 inches; reddish brown (5YR 5/3) very fine sandy loam; massive; friable; mildly alkaline; calcareous; abrupt smooth boundary.

Ab—52 to 60 inches; dark reddish brown (5YR 3/3) silty clay loam; moderate medium subangular blocky structure; firm; mildly alkaline; calcareous.

Solum thickness ranges from 15 to 36 inches. A calcareous matrix is at a depth of 15 to 40 inches. Reaction ranges from slightly acid to mildly alkaline in the A and B horizons and is neutral or mildly alkaline in the C horizon.

The Ap horizon has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 4. Textures are silt loam or very fine sandy loam.

The B2 horizon has hue of 5YR, value of 4 or 5, and chroma of 3 or 4. Texture ranges from silt loam to silty clay loam and is stratified in some pedons.

The C horizon has the same color ranges as the B horizon. Texture ranges from silt loam to silty clay loam or very fine sandy loam. Some pedons have buried horizons.

Crevasse series

The Crevasse series consists of excessively drained, rapidly permeable soils that formed in sandy alluvium. These level soils are along levee breaks and stream channels. The natural vegetation was loblolly pine and cottonwood trees. Slope is dominantly less than 1 percent.

Crevasse soils are geographically associated with Coushatta, Oklared, and Roxana soils. Coushatta and Roxana soils, on natural levees, are well drained and have a fine-silty and coarse-silty control section. Oklared soils, on low ridges and swales of levees, are well drained and have a coarse-loamy control section.

Typical pedon of Crevasse loamy fine sand in a cultivated area in the NE1/4SE1/4SW1/4SW1/4 sec. 7, T. 6 S., R. 8 W., in Jefferson County:

Ap—0 to 9 inches; brown (10YR 5/3) loamy fine sand; single grained; loose; few fine roots; slightly acid; abrupt smooth boundary.

C1—9 to 31 inches; yellowish brown (10YR 5/4) fine sand; single grained; loose; few fine roots; medium acid; gradual smooth boundary.

C2—31 to 65 inches; light yellowish brown (10YR 6/4) fine sand; single grained; loose; medium acid.

Reaction ranges from medium acid to neutral throughout the profile.

The A horizon ranges from 4 to 10 inches in thickness. It has hue of 10YR, value of 4, and chroma of 2 or value of 5 and chroma of 2 or 3.

The C horizon has hue of 10YR, value of 5, and chroma of 2 to 6 or value of 6 and chroma of 4. The texture is fine sand or loamy fine sand.

Desha series

The Desha series consists of somewhat poorly drained, very slowly permeable soils. These soils formed in thick beds of fine textured, slack water deposits from the Arkansas River. They have a seasonally high water table in late winter and early spring. The native vegetation is mixed hardwood forests, predominantly water-tolerant species. Slope is dominantly less than 1 percent.

Desha soils are geographically associated with McGehee, Perry, Oklared, Wabbaseka, and Latanier soils. McGehee soils, on slightly higher parts of bottom lands, formed in loamy sediment over thick beds of clayey sediment and have less clay in the control section. Perry soils formed in slack water deposits on bottom lands and are more poorly drained than Desha soils. Oklared soils, on low ridges and swales, are well drained. Wabbeseka soils, on ridges and side slopes of undulating levees, formed in clayey over loamy sediment. Latanier soils, on foot slopes and narrow swales of natural levees, formed in clayey over loamy sediment.

Typical pedon of Desha clay in a cultivated field in the NE1/4NW1/4NW1/4NE1/4 sec. 24, T. 7 S., R. 6 W., in Lincoln County:

Ap—0 to 5 inches; dark brown (7.5YR 3/2) clay; moderate fine subangular blocky structure; firm, plastic; many fine roots; neutral; abrupt smooth boundary.

B1—5 to 18 inches; dark reddish brown (5YR 3/3) clay; few fine faint brown and gray mottles; moderate medium subangular blocky structure; firm, plastic; peds have pressure faces on all sides; few slickensides; few fine roots; few fine black concretions; neutral; gradual smooth boundary.

B2—18 to 38 inches; dark reddish brown (5YR 3/3) clay; few fine faint gray, yellowish red, and brown mottles; moderate medium subangular blocky structure; firm, plastic; peds have many pressure faces; few slickensides; few fine roots; few fine black concretions; neutral; gradual smooth boundary.

B3—38 to 50 inches; reddish brown (5YR 4/4) clay; few medium distinct gray (5YR 5/1) mottles; moderate medium subangular blocky structure; firm, plastic; peds have common pressure faces; few fine black concretions; neutral; gradual wavy boundary.

C—50 to 65 inches; dark reddish gray (5YR 4/2) clay; many fine distinct strong brown (7.5YR 5/6) mottles; massive; firm, plastic; few fine black concretions; neutral.

Solum thickness ranges from about 40 to 70 inches. Reaction is slightly acid or neutral in the A horizon and neutral or mildly alkaline in the B and C horizons.

The A horizon ranges from 3 to 9 inches in thickness.

The B horizon has hue of 7.5YR or 5YR, value of 3, and chroma of 2 or 3 in the upper part, and hue of 5YR or 2.5YR, value of 3 or 4, and chroma of 3 or 4 in the lower part. Mottles are few to common in shades of gray, brown, and red throughout the horizon.

The C horizon has hue of 5YR or 7.5YR, value of 4, and chroma of 3 or 4, or it has hue of 5YR, value of 5, and chroma of 2. Mottles are in shades of gray, brown, and red.

Grenada series

The Grenada series consists of moderately well drained, moderately permeable soils that formed in thick deposits of windblown silts. These nearly level and gently sloping soils are on loessial plains. The native vegetation was mixed hardwoods and pine. Slope is dominantly less than 8 percent.

Grenada soils are geographically associated with Calloway and Henry soils. Calloway soils, on the lower parts of slopes and on broad flats, are somewhat poorly drained. Henry soils, in depressions, are poorly drained and have chroma of less than 2.

Typical pedon of Grenada silt loam from an area of Grenada silt loam, 3 to 8 percent slopes, in a wooded area in the NE1/4NW1/4NE1/4SW1/4 sec. 19, T. 10 S., R. 5 W., in Lincoln County:

A1—0 to 4 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine roots; many fine pores; few fine black accretions; very strongly acid; clear smooth boundary.

B21—4 to 18 inches; yellowish brown (10YR 5/6) heavy silt loam; moderate medium subangular blocky; friable; few fine roots; few worm casts; few fine black accretions; very strongly acid; gradual smooth boundary.

B22—18 to 26 inches; light yellowish brown (10YR 6/4) heavy silt loam; common fine to medium distinct gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; few fine black accretions; very strongly acid; clear wavy boundary.

A'2—26 to 29 inches; gray (10YR 6/1) silt loam; common fine to medium distinct brown (10YR 5/3) and yellowish brown (10YR 5/6) mottles; weak fine and medium subangular blocky structure; friable, slightly brittle; many fine vesicular pores; few fine black concretions; very strongly acid; clear irregular boundary.

Bx1—29 to 45 inches; yellowish brown (10YR 5/6) heavy silt loam; common fine to medium distinct gray (10YR 6/1) and brown (10YR 5/3) mottles; moderate coarse prismatic structure parting to moderate fine and medium subangular blocky; firm; compact and brittle; continuous clay films on faces of peds and prisms; gray (10YR 6/1) silt tongues between prisms; few vesicular pores; few fine black concretions; very strongly acid; gradual smooth boundary.

Bx2—45 to 72 inches; yellowish brown (10YR 5/6) silt loam; common fine to medium distinct gray (10YR 6/1) and brown (10YR 5/3) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle, very hard; few patchy clay films on faces of peds; few thin light gray silt coatings on peds and prism faces; few fine black concretions; strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or very strongly acid throughout. Depth to the fragipan ranges from 16 to 30 inches.

The A horizon is less than 8 inches thick. It has hue of 10YR, value of 4, and chroma of 2 or 3 or value of 5 and chroma of 2.

The B horizon has hue of 10YR, value of 5, and chroma of 4 or 6 or value of 6 and chroma of 4. Texture of the B horizon is heavy silt loam or light silty clay loam.

The A'2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 to 2 or value of 7 and chroma of 3. Texture is silt loam or silt.

The Bx horizon has hue of 10YR, value of 5, and chroma of 3, 4, or 6 and has mottles with chroma of 2 or less. Texture is heavy silt loam or light silty clay loam.

Hebert series

The Hebert series consists of somewhat poorly drained, level, moderately slowly permeable soils on old natural levees. These soils formed in loamy sediment deposited by the Arkansas River. The native vegetation was mixed hardwoods. Slope is dominantly less than 1 percent.

Hebert soils are associated with McGehee, Rilla, Caspiana, and Perry soils. McGehee soils, on natural levees, are finer textured in the lower part of the subsoil than Hebert soils. Rilla soils, in undulating areas of natural levees, are well drained. Caspiana soils, on low natural levees, are better drained. Perry soils, on broad flats, are clayey throughout the control section.

Typical pedon of Hebert silt loam in a cultivated field in the SW1/4NW1/4NW1/4NW1/4 sec. 18, T. 4 S., R. 7 W., in Jefferson County:

Ap—0 to 7 inches; brown (10YR 5/3) silt loam; weak fine granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

B21t—7 to 16 inches; grayish brown (10YR 5/2) silt loam; light gray (10YR 7/2) dry silt coatings as much as 1 mm thick on faces of peds; many fine faint brown mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; patchy clay films on faces of peds; strongly acid; clear wavy boundary.

B22t—16 to 23 inches; brown (7.5YR 5/4) silty clay loam; light brownish gray (10YR 6/2) silt coatings on faces of many peds; common fine distinct strong brown mottles; moderate medium subangular blocky structure; firm; thick patchy clay films on faces of some peds and in pores; strongly acid; clear wavy boundary.

B23t—23 to 34 inches; brown (7.5YR 5/4) silty clay loam; light brownish gray (10YR 6/2) silt coatings on peds; many fine faint reddish brown and dark grayish brown mottles; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; thick patchy clay films in pores and on faces of peds; few fine black concretions; strongly acid; clear wavy boundary.

B24t—34 to 44 inches; brown (10YR 5/3) silty clay loam; pale brown (10YR 6/3) silt coatings on faces of peds; many fine distinct strong brown mottles; moderate medium subangular blocky structure; firm; few fine pores; thin patchy clay films in pores and on faces of some peds; few fine black concretions; medium acid; gradual smooth boundary.

C—44 to 66 inches; brown (7.5YR 5/4) silt loam; few medium distinct strong brown (7.5YR 5/6) mottles; massive; friable; mildly alkaline.

Solum thickness ranges from 36 to 60 inches. Reaction ranges from slightly acid to strongly acid in the A and B horizons and from slightly acid to mildly alkaline in the C horizon.

The A horizon is dominantly about 7 inches thick but ranges to 12 inches. The Ap horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

The B horizon dominantly has hue of 5YR, value of 4 or 5, and chroma of 3 or 4, or it has hue of 7.5YR, value of 4 or 5, and chroma of 4. Subhorizons of the Bt horizon in some pedons have hue of 10YR, value of 4 to 6, and chroma of 2 or value of 6 and chroma of 3. Mottles are in shades of brown, gray, and red.

The C horizon has a similar range of color and mottles as the B horizon. Texture ranges from silty clay loam to very fine sandy loam thinly stratified in places with finer textured sediment.

Henry series

The Henry series consists of poorly drained, slowly permeable soils that formed in thick deposits of windblown silts. These soils are on broad, level or depressional loessial plains. They are saturated with water in winter and spring. Slope is 0 to 1 percent.

Henry soils are geographically associated with Calloway and Grenada soils. Calloway soils, on the adjacent lower slopes and broad flats, are somewhat poorly drained. Grenada soils, on ridges and side slopes, are moderately well drained.

Typical pedon of Henry silt loam in a wooded area in the NW1/4NE1/4NE1/4 sec. 25, T. 10 S., R. 6 W., in Lincoln County:

A1—0 to 3 inches; grayish brown (10YR 5/2) silt loam; many fine distinct yellowish brown mottles; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

A21g—3 to 14 inches; gray (10YR 6/1) silt loam; common fine distinct brown and yellowish brown mottles; weak fine granular structure; very friable; few fine dark concretions; many fine roots; strongly acid; gradual smooth boundary.

A22g—14 to 28 inches; gray (10YR 6/1) silt loam; common fine distinct brown and yellowish brown mottles; weak fine subangular blocky structure; friable; many fine dark concretions; strongly acid; abrupt wavy boundary.

Bx—28 to 52 inches; light brownish gray (10YR 6/2) silty clay loam; common fine distinct yellowish brown mottles; weak coarse prismatic structure parting to strong medium blocky; firm, compact and brittle; thick clay films within the prisms; gray silt coatings between prisms in upper part of horizon; common fine dark concretions; strongly acid; gradual wavy boundary.

B3g—52 to 72 inches; mottled gray (10YR 6/1) and yellowish brown (10YR 5/4) silt loam; few thin lenses of grayish brown (10YR 5/2) silty clay loam; moderate medium subangular blocky structure; firm; few fine dark concretions; strongly acid.

Solum thickness is more than 60 inches. Reaction is strongly acid or medium acid throughout. Depth to the fragipan ranges from 18 to 36 inches.

The Ap or A1 horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3 or value of 6 and chroma of 2. It is mottled in places in shades of brown. The A2 horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is mottled in shades of brown.

The B horizon has hue of 10YR, values of 5 or 6, and chroma of 1 or 2. It is mottled in shades of brown. Texture is silt loam or silty clay loam.

The C horizon has the same color and texture range as the B horizon.

Latanier series

The Latanier series consists of somewhat poorly drained, slowly permeable soils that formed in beds of clayey over loamy alluvium. These soils are on foot slopes and in narrow swales of undulating natural levees of the Arkansas River and its former channels. The native vegetation was mixed hardwoods. Slope is dominantly less than 3 percent.

Latanier soils are geographically associated with Wabbaseka, Desha, and Roxana soils. Wabbaseka soils, on narrow ridgetops and adjacent side slopes, are nonvertic. Desha soils, on adjacent broad flats, are clayey throughout. Roxana soils, on natural levees, are well drained.

Typical pedon of Latanier clay from an area of Wabbaseka-Latanier complex, undulating, in a cultivated field in the NE1/4SE1/4NE1/4 sec. 18, T. 6 S., R. 7 W., in Jefferson County:

Ap—0 to 4 inches; dark brown (7.5YR 3/2) clay; weak medium subangular blocky structure; firm; neutral; gradual wavy boundary.

B21—4 to 21 inches; dark reddish brown (5YR 3/3) clay; moderate medium subangular blocky structure; firm; neutral; abrupt wavy boundary.

B22—21 to 26 inches; dark reddish gray (5YR 4/2) silty clay loam; moderate medium subangular blocky structure; friable; peds coated with brown (7.5YR 5/4) fine sandy loam; neutral; abrupt wavy boundary.

IIC1—26 to 38 inches; dark brown (7.5YR 4/4) loam; massive; friable; calcareous; neutral; abrupt wavy boundary.

IIC2—38 to 50 inches; dark brown (7.5YR 4/4) very fine sandy loam; massive; very friable; calcareous; neutral; abrupt wavy boundary.

IIC3—50 to 60 inches; brown (7.5YR 5/4) very fine sandy loam; massive; very friable; calcareous; neutral.

Solum thickness and depth to contrasting texture range from 20 to 34 inches. The B horizon is slightly acid or neutral and in places is calcareous. The C horizon is neutral or mildly alkaline and in some places is calcareous within a depth of 36 inches.

The A horizon ranges from 4 to 8 inches in thickness. It has hue of 7.5YR, value of 3, and chroma of 2, or it has hue of 5YR, value of 3, and chroma of 2 or 3.

The B horizon has hue of 2.5YR, value of 3, and chroma of 4; hue of 5YR, value of 3 or 4, and chroma of 3 or 4; or hue of 5YR, value of 4, and chroma of 2. Texture is clay, silty clay, or heavy silty clay loam.

The C horizon has hue of 2.5YR to 7.5YR, value of 4, and chroma of 4 or value of 5 and chroma of 4 or 6. It is monotextured or has thin strata ranging from very fine sandy loam to light silty clay loam.

McGehee series

The McGehee series consists of somewhat poorly drained, slowly permeable soils that formed in thick, silty and clayey alluvium. These soils are on low terraces and natural levees of former channels of the Arkansas River. The native vegetation was mixed hardwoods. Slope is dominantly less than 1 percent.

McGehee soils are geographically associated with Portland, Hebert, Rilla, Perry, and Desha soils. Portland soils, on broad flats, are clayey throughout the control section. Hebert soils, on adjacent natural levees, are silt loam or silty clay loam in the lower part of the B horizon and in the C horizon. Rilla soils, on adjacent natural levees, are well drained. Perry soils, on broad flats, are more poorly drained than McGehee soils. Desha soils, on broad flats, are clayey throughout the control section.

Typical pedon of McGehee silt loam in a cultivated field in the SE1/4SE1/4NE1/4 sec. 1, R. 8 W., T. 5 S., in Jefferson County:

Ap—0 to 7 inches; dark brown (10YR 4/3) silt loam; weak medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.

B1g—7 to 14 inches; grayish brown (10YR 5/2) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; thin gray silt coatings on faces of some peds; many fine roots; medium acid; clear smooth boundary.

B21t—14 to 20 inches; reddish brown (5YR 5/4) silty clay loam; common medium distinct strong brown (7.5YR 5/6) and few fine distinct grayish brown mottles; moderate medium subangular blocky structure; firm; slightly plastic; few fine roots; common pores; discontinuous clay films on faces of peds; few fine dark concretions; strongly acid; gradual wavy boundry.

B22t—20 to 30 inches; reddish brown (5YR 4/4) silty clay loam; few fine distinct strong brown and few fine faint yellowish red mottles; moderate medium subangular blocky structure; firm, slightly plastic; few fine roots; common pores; discontinuous clay films on faces of peds; few dark concretions; strongly acid; gradual wavy boundary.

IIB3—30 to 60 inches; dark reddish brown (5YR 3/4) silty clay; moderate medium subangular blocky structure; firm, plastic; pressure faces on some peds; common medium pores; few small dark concretions; neutral; gradual smooth boundary.

Solum thickness is 40 to 72 inches. Depth to horizons of silty clay or clay ranges from 20 to 30 inches. Reaction is usually strongly acid or medium acid in the solum and ranges to moderately alkaline in the IIC horizon.

The A horizon ranges from 6 to 10 inches in thickness. This horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3 and is mottled in shades of gray and brown.

The B1g horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 2 and is mottled in shades of brown. Texture is silt loam or silty clay loam. The B21t horizon has hue of 5YR or 7.5YR, value of 5, and chroma of 4 and is mottled in shades of gray, brown, and red. The B22t horizon has hue of 5YR, value of 4 or 5, and chroma of 3 or 4 and is mottled in shades of red and brown. The IIB3 horizon has hue of 7.5YR or 5YR, value of 3 or 4 and is mottled in shades of brown and gray. Texture is clay or silty clay.

The IIC horizon, where present, has hue of 10YR to 5YR, value of 4 or 5, and chroma of 2 to 4 and is mottled in shades of gray, brown, and red. Texture is clay or silty clay.

Oklared series

The Oklared series consists of well drained, moderately rapidly permeable soils that formed in thick alluvium. These soils are on low, parallel ridges and swales between the Arkansas River and its levees. The ridges are about 1 to 4 feet higher than the swales and are 30 to 100 feet wide. The swales are 25 to 75 feet wide. The native vegetation was mixed hardwoods. Slopes range to as much as 3 percent.

Oklared soils are geographically associated with Crevasse, Roxana, and Desha soils. Crevasse soils, on adjacent natural levees, have sandy textures in the control section. Roxana soils, on adjacent natural levees, have a coarse-silty control section. Desha soils, on broad flats, are clayey throughout the control section.

Typical pedon of Oklared fine sandy loam from an area of Oklared fine sandy loam, occasionally flooded, in a pasture in the SW1/4NE1/4NW1/4 sec. 29, T. 3 S., R. 10 W., in Jefferson County:

Ap—0 to 12 inches; dark brown (7.5YR 4/4) fine sandy loam; weak fine granular structure; very friable; calcareous; mildly alkaline; abrupt smooth boundary.

C1—12 to 32 inches; strong brown (7.5YR 5/6) fine sandy loam; massive; very friable; bedding planes evident; calcareous; mildly alkaline; gradual wavy boundary.

C2—32 to 45 inches; pink (7.5YR 7/4) loamy fine sand; massive; very friable; common bedding planes; calcareous; moderately alkaline; gradual smooth boundary.

C3—45 to 70 inches; strong brown (7.5YR 5/6) fine sandy loam; massive; very friable; common bedding planes; thin strata of silt loam and loamy fine sand; calcareous; moderately alkaline.

Reaction is mildly alkaline or moderately alkaline and calcareous throughout.

The A horizon ranges from 8 to 15 inches in thickness. This horizon has hue of 10YR, value of 4 or 5, and chroma of 3, or it has hue of 7.5YR, value of 4 or 5, and chroma of 2 or 4 or value of 5 and chroma of 6. Texture is fine sandy loam or loam.

The C horizon has hue of 5YR or 7.5YR, value of 5 or 6, and chroma of 6; hue of 7.5YR, value of 7, and chroma of 3 or 4; or hue of 5YR, value of 5, and chroma of 8 or value of 7 and chroma of 6. The texture of the C horizon at depths of 10 to 40 inches is dominantly fine sandy loam, loam, or very fine sandy loam that has thin strata of fine or coarser textured material. At depths of 40 to 60 inches, texture is dominantly loamy fine sand, fine sandy loam, loam, or very fine sandy loam that has strata of coarser or finer textured materials.

Ouachita series

The Ouachita series consists of well drained, moderately slowly permeable soils that formed in loamy sediment on flood plains of streams in the Coastal Plain. The native vegetation was mixed hardwoods and pine. Slope is dominantly less than 1 percent.

Ouachita soils are geographically associated with Amy soils. Amy soils, in depressions, are poorly drained and have chroma of less than 2.

Typical pedon of Ouachita silt loam from an area of Ouachita soils, frequently flooded, in a pasture in the SW1/4SE1/4SW1/4 sec. 12, T. 6 S., R. 10 W., in Jefferson County:

Ap—0 to 8 inches; dark brown (10YR 4/3) silt loam; weak medium subangular blocky structure; friable; many medium and fine roots; medium acid; abrupt smooth boundary.

B21—8 to 22 inches; dark yellowish brown (10YR 4/4) silt loam; moderate medium subangular blocky structure; friable; many fine roots; many fine pores; strongly acid; clear smooth boundary.

B22—22 to 33 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few fine pores; very strongly acid; gradual smooth boundary.

B23—33 to 47 inches; yellowish brown (10YR 5/4) loam; few fine faint grayish brown mottles; moderate medium subangular blocky structure; slightly plastic; few fine roots; few fine pores; very strongly acid; gradual smooth boundary.

B24—47 to 56 inches; yellowish brown (10YR 5/4) loam; few medium distinct gray (10YR 5/1) and yellowish brown (10YR 5/8) mottles; moderate medium subangular blocky structure; friable; few fine pores; very strongly acid; gradual smooth boundary.

B25—56 to 68 inches; yellowish brown (10YR 5/4) fine sandy loam; few medium distinct gray (10YR 5/1) and yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine pores; very strongly acid; gradual wavy boundary.

C—68 to 76 inches; yellowish brown (10YR 5/4) fine sandy loam; many medium distinct gray (10YR 5/1) and yellowish brown (10YR 5/8) mottles; weak fine granular structure; very friable; few fine pores; very strongly acid.

Solum thickness ranges from 40 to 80 inches. If not limed, the soil is strongly acid or very strongly acid throughout.

The A horizon ranges from 6 to 12 inches in thickness. It has hue of 10YR, value of 4, and chroma of 2 or 3 or value of 5 and chroma of 3. Texture is silt loam or loam.

The upper part of the B horizon has hue of 10YR, value of 4 or 5, and chroma of 3 or 4. The texture is silt loam or silty clay loam. The lower part has hue of 10YR, value of 4 or 5, and chroma of 3 or 4, and some pedons are mottled in shades of gray and brown below a depth of 24 inches. Texture is silt loam, loam, or fine sandy loam.

Perry series

The Perry series consists of poorly drained, very slowly permeable soils that formed in beds of clayey alluvium. These soils are on broad flats along the Arkansas River and its former channels. The native vegetation was mixed hardwood trees. Slope is dominantly less than 1 percent.

Perry soils are geographically associated with Portland, McGehee, Hebert, Rilla, Desha, and Yorktown soils. Portland soils, on adjacent broad flats, are better drained than Perry soils. McGehee and Hebert soils, on adjacent low natural levees, are nonvertic. Rilla soils, on the natural levees, are well drained and are nonvertic. Desha soils, on broad flats, are somewhat poorly drained. Yorktown soils, on low, ponded back swamps, are very poorly drained.

Typical pedon of Perry clay in a cultivated field in the NE1/4SE1/4SE1/4 sec. 16, T. 8 5., R. 7 W. in Lincoln County:

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) clay; moderate medium subangular blocky structure; very firm; many fine roots; strongly acid; abrupt smooth boundary.

B21g—4 to 18 inches; gray (10YR 5/1) clay; many medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few slickensides; strongly acid; clear smooth boundary.

B22g—18 to 34 inches; gray (10YR 5/1) clay; many medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; very firm; few fine roots; few slickensides; slightly acid; gradual wavy boundary.

IIB3—34 to 55 inches; reddish brown (5YR 4/3) clay; few fine faint red mottles; moderate medium subangular blocky structure; very firm; gray coatings on some faces of peds; few fine roots; few dark concretions; common slickensides; mildly alkaline; clear smooth boundary.

IIC—55 to 72 inches; reddish brown (5YR 4/4) clay; few fine faint grayish brown and reddish brown mottles; moderate medium subangular blocky structure; firm; many fine carbonate concretions; moderately alkaline.

Thickness of the solum ranges from 30 to 60 inches. Depth to the IIB horizon ranges from 21 to 36 inches. Reaction is strongly acid to slightly acid in the A and B horizons and neutral to moderately alkaline in the IIB and IIC horizons.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2.

The Bg horizon has hue of 10YR, value of 4 or 5, and chroma of 1 and it has few to many mottles in shades of brown.

The IIB horizon has hue of 5YR, value of 3 or 5, and chroma of 2 to 4, and it has few to many mottles in shades of red, gray, and brown.

The IIC horizon has hue of 5YR, value of 4 or 5, and chroma of 4 or 6. It is calcareous and contains few to many, fine to coarse, carbonate concretions.

Pheba series

The Pheba series consists of somewhat poorly drained, moderately slowly permeable soils that formed in acid, medium textured sediment. These nearly level soils are on uplands of the Coastal Plain. The native vegetation was mixed hardwoods and pine. Slopes are dominantly less than 2 percent.

Pheba soils are geographically associated with Savannah and Amy soils. Savannah soils, on adjacent side slopes, are better drained than Pheba soils. Amy soils, in depressions, are poorly drained and have chroma of less than 2.

Typical pedon of Pheba silt loam from an area of Pheba silt loam, 0 to 2 percent slopes, in an open field in the SW1/4SW1/4SW1/4 sec. 35, T. 5 S., R. 10 W., in Jefferson County:

A1—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; many fine faint gray and yellowish brown mottles; weak fine granular structure; friable; many fine and medium roots; few fine pores; few fine dark concretions; strongly acid; abrupt smooth boundary.

A2—4 to 9 inches; pale brown (10YR 6/3) silt loam; few medium distinct yellowish brown (10YR 6/8) mottles; weak fine subangular blocky structure; friable; many fine roots, few fine dark concretions; few fine pores; strongly acid; clear smooth boundary.

B2—9 to 23 inches; light yellowish brown (10YR 6/4) silt loam; common fine distinct yellowish brown (10YR 5/8) and few fine faint gray mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; many fine dark accretions; very strongly acid; clear wavy boundary.

A'2—23 to 29 inches; light brownish gray (10YR 6/2) silt loam; many medium distinct yellowish brown (10YR 5/8) and few medium faint brown mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; few fine dark accretions; very strongly acid; abrupt wavy boundary.

Bx1—29 to 40 inches; brown (10YR 5/3) silt loam; many medium distinct yellowish brown (10YR 5/8) and gray (10YR 6/1) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle in about 70 percent of the volume; few patchy clay films; gray (10YR 6/2) silt coatings between most prisms; few soft dark accretions; very strongly acid; abrupt wavy boundary.

Bx2—40 to 56 inches; light yellowish brown (10YR 6/4) silt loam; many medium distinct light brownish gray (10YR 5/2) and yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle in about 70 percent of the volume; patchy clay films on faces of peds; light brownish gray (10YR 6/2) silt coatings between most prisms and on faces of most peds; few dark accretions; very strongly acid; gradual smooth boundary.

Bx3—56 to 72 inches; yellowish brown (10YR 5/6) silt loam; common fine distinct light brownish gray (10YR 6/2) mottles; weak coarse prismatic structure parting to moderate medium angular blocky; firm, very compact and brittle in about 70 percent of the volume; continuous clay films; light brownish gray (10YR 6/2) silt coatings between some prisms and on faces of few peds; very strongly acid.

Solum thickness is more than 60 inches. Reaction of the soil is strongly acid or very strongly acid except for the surface layer in limed areas. Depth to the fragipan ranges from 14 to 30 inches.

The A1 horizon has hue of 10YR, value of 4, and chroma of 1 to 3. The Ap or A2 horizon has hue of 10YR, value of 5, and chroma of 2 or value of 6 and chroma of 3.

The B2 horizon has hue of 10YR, value of 5, and chroma of 4 or 6 or value of 6 and chroma of 3 or 4. It is mottled in shades of brown, yellow, and gray. Mottles that have chroma of 2 or lower are within 16 inches of the surface. Texture is silt loam or loam.

The A'2 horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Texture is silt loam.

The Bx horizon has hue of 10YR, value of 5, and chroma of 3 to 6 or value of 6 and chroma of 4. It is mottled in shades of brown, gray, and red. Texture is silt loam or silty clay loam.

Portland series

The Portland series consists of somewhat poorly drained, very slowly permeable soils. These soils formed in thick beds of fine textured, slack water deposits from the Arkansas River and its former channels. They have a seasonally high water table late in winter and early in spring. The native vegetation was mixed hardwood trees. Slope is dominantly less than 1 percent.

Portland soils are geographically associated with McGehee, Perry, Rilla, and Yorktown soils. McGehee soils, on slightly higher parts of bottom lands, formed in loamy sediment over thick beds of clayey sediment. Perry soils formed in slack water deposits on bottom lands and are poorly drained. Rilla soils, on terraces and natural levees, are well drained and formed in silty alluvium. Yorktown soils, on low, ponded back swamps, are very poorly drained.

Typical pedon of Portland clay in a cultivated area in the SW1/4SW1/4SW1/4 sec. 15, T. 8 S., R. 7 W., in Lincoln County:

Ap—0 to 6 inches; dark brown (10YR 4/3) clay; moderate medium blocky structure; firm, plastic; many fine roots; slightly acid; abrupt smooth boundary.

B21—6 to 16 inches; brown (7.5YR 5/4) clay; common medium distinct strong brown (7.5YR 5/8) and grayish brown (10YR 5/2) mottles; moderate medium blocky structure; firm, plastic; common slickensides; many fine roots; few fine dark concretions; strongly acid; gradual smooth boundary.

B22—16 to 30 inches; reddish brown (5YR 4/3) clay; moderate medium blocky structure; very firm, plastic; few fine roots; many fine dark concretions; common slickensides; slightly acid; clear wavy boundary.

B23—30 to 48 inches; reddish brown (5YR 4/4) clay; few fine faint brown mottles; moderate medium blocky structure; very firm, plastic; common slickensides; few fine dark concretions; mildly alkaline; clear wavy boundary.

B24—48 to 72 inches; reddish brown (5YR 4/4) clay; few fine faint brown mottles; moderate medium blocky structure; very firm; plastic; few slickensides; few fine dark concretions; few calcium carbonate concretions; calcareous; moderately alkaline.

Thickness of the solum ranges from 38 to 72 inches or more. The upper 16 to 26 inches is strongly acid or very strongly acid except in limed areas. The lower part ranges from slightly acid to moderately alkaline. Calcareous concretions below a depth of 30 inches range from absent to common.

The A horizon ranges from 5 to 10 inches in thickness. This horizon has hue of 10YR, value of 3 to 5, and chroma of 3, or it has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2. Where the value is 3, the horizon is less than 10 inches deep.

The B horizon has hue of 5YR or 7.5YR, value of 4, and chroma of 4; hue of 5YR, value of 4, and chroma of 3; or hue of 7.5YR, value of 5, and chroma of 4. The upper part of the B horizon has few to common mottles with chroma of 2 or less. Texture is clay or silty clay.

The C horizon, where present, has the same colors as the B horizon. Some pedons have a stratified layer at a depth of 38 to 72 inches.

Rilla series

The Rilla series consists of well drained, moderately permeable soils that formed in silty alluvium. These soils are on terraces and natural levees of former channels of the Arkansas River. The native vegetation was mixed hardwoods. Slope is dominantly less than 3 percent.

Rilla soils are geographically associated with Hebert, McGehee, Portland, Perry, Caspiana, and Yorktown soils. Hebert soils, on adjacent natural levees, are somewhat poorly drained. McGehee soils, on the adjacent natural levees, are somewhat poorly drained and are silty clay or clay in the lower part of the B horizon and in the C horizon. Portland and Perry soils, on broad flats, are clayey throughout the control section. Caspiana soils, on natural levees, have a mollic epipedon. Yorktown soils, on low, ponded back swamps, are very poorly drained.

Typical pedon of Rilla silt loam from an area of Rilla silt loam, 0 to 1 percent slopes, in a cultivated field in the NW1/4NW1/4NE1/4 sec. 24, T. 7 S., R. 9 W., in Jefferson County:

Ap—0 to 9 inches; brown (10YR 5/3) silt loam; massive; slightly hard, friable; slightly acid; abrupt smooth boundary.

B21t—9 to 15 inches; yellowish red (5YR 5/6) silt loam; moderate medium subangular blocky structure; hard, firm; few thin patchy clay films on many faces of secondary peds; thin light brown (7.5YR 6/4) silt coatings on faces of primary peds; very strongly acid; gradual smooth boundary.

B22t—15 to 28 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; hard, firm; thin light brown (7.5YR 6/4) silt coatings on faces of primary peds; thin discontinuous clay films on faces of secondary peds; very strongly acid; gradual smooth boundary.

B23t—28 to 42 inches; yellowish red (5YR 4/6) silt loam; moderate medium subangular blocky structure; hard, firm; thin light brown (7.5YR 6/4) silt coatings on faces of primary peds; thin discontinuous clay films on faces of secondary peds; strongly acid; gradual smooth boundary.

B3—42 to 55 inches; reddish brown (5YR 4/4) loam; few light brown (7.5YR 6/4) silt pockets and many silt streaks; massive; hard, firm; few thin patchy clay films on many faces of peds; slightly acid; clear smooth boundary.

C—55 to 72 inches; yellowish red (5YR 4/6) loam; reddish brown (5YR 4/4) silty clay loam pockets and streaks as much as 1/2 inch thick; massive; hard, firm; slightly acid.

Solum thickness ranges from 40 to 60 inches. Reaction is slightly acid to strongly acid in the A horizon, strongly acid or very strongly acid in the B horizon, and very strongly acid to neutral in the C horizon.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3, or it has hue of 7.5YR, value of 4 or 5, and chroma of 2.

The Bt horizon has hue of 5YR, value of 4 or 5, and chroma of 3, 4, or 6, or it has hue of 7.5YR, value of 5, and chroma of 4 or 6. Texture is silt loam or silty clay loam. Silt coatings are on major structural surfaces. The B3 horizon has hue of 5YR, value of 4 or 5, and chroma of 4 or 6. Texture is silt loam or silty clay loam.

The C horizon has hue of 5YR, value of 4 or 5, and chroma of 4 or 6, or it has hue of 7.5YR, value of 4 or 5, and chroma of 4. Texture is loam or silty clay loam.

Roxana series

The Roxana series consists of well drained, moderately permeable soils that formed in beds of loamy alluvium. These soils are on natural levees along bottom lands of the Arkansas River. The native vegetation was mixed hardwoods. Slope ranges from 0 to 1 percent.

Roxana soils are geographically associated with Coushatta, Crevasse, Latanier, and Oklared soils. Coushatta soils, on slightly lower natural levees on flood plains, have a fine-silty control section. Crevasse soils, on flood plains, formed in sandy alluvium and are excessively drained. Latanier soils, on foot slopes and narrow swales of natural levees, have a mollic epipedon with clayey over loamy texture. Oklared soils, on higher natural levees on flood plains, have a coarse-loamy control section.

Typical pedon of Roxana silt loam in a cultivated field in the NE1/4NE1/4NW1/4 sec. 32, T. 5 S., R. 7 W., in Jefferson County:

Ap—0 to 10 inches; dark brown (7.5YR 4/4) silt loam; weak fine granular structure; very friable; neutral; abrupt smooth boundary.

C1—10 to 17 inches; brown (7.5YR 5/4) silt loam; reddish brown (5YR 4/4) strata 1/2 to 1 inch thick; massive; common thin bedding planes are evident; very friable; mildly alkaline; gradual smooth boundary.

C2—17 to 31 inches; brown (7.5YR 5/4) silt loam; reddish brown (5YR 4/4) and light brown (7.5YR 6/4) strata 1/16 to 1/4 inch thick; massive; few thin bedding planes; very friable; mildly alkaline; gradual smooth boundary.

C3—31 to 41 inches; brown (7.5YR 5/4) silt loam; light brown (7.5YR 6/4) and dark brown (7.5YR 4/4) strata 1/4 to 1/2 inch thick; massive; few thin bedding planes; very friable; mildly alkaline; abrupt smooth boundary.

IIAb—41 to 52 inches; dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable; mildly alkaline; abrupt smooth boundary.

IIIBb—52 to 72 inches; reddish brown (5YR 4/4) silty clay loam; weak medium subangular blocky structure; friable; few soft dark accretions; mildly alkaline.

Bedding planes are evident in the control section. Reaction ranges from slightly acid to neutral throughout the profile.

The Ap horizon has hue of 7.5YR, value of 4, and chroma of 2 or 4, or it has hue of 10YR, value of 3, and chroma of 4.

The C horizon has hue of 5YR, value of 4 or 5, and chroma of 6, or it has hue of 7.5YR, value of 4 or 5, and chroma of 4. Texture is fine sandy loam or silt loam.

Some pedons have buried horizons at a depth of 40 inches or more. These horizons are stratified loam, very fine sand, fine sandy loam, silt loam, or silty clay loam.

Ruston series

The Ruston series consists of well drained, moderately permeable soils that formed in thick marine deposits of sandy loam and sandy clay loam. These soils are nearly level and are on uplands of the Coastal Plain. The native vegetation was mixed hardwoods and pine. Slope ranges from 1 to 3 percent.

Ruston soils are geographically associated with Savannah, Smithdale, Sacul, and Sawyer soils. Savannah soils, which are nearly level and gently sloping and are on uplands, have a fragipan. Smithdale soils, on adjacent uplands, are gently sloping and moderately sloping. Sacul soils, which are nearly level and gently sloping and are on uplands, are clayey. Sawyer soils, which are nearly level and gently sloping and are on uplands, are fine-silty.

Typical pedon of Ruston fine sandy loam from an area of Ruston fine sandy loam, 1 to 3 percent slopes, in an idle field in the SW1/4 of lot 7, sec. 5, T. 9 S., R. 7 W., in Lincoln County:

Ap—0 to 9 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; friable; many fine roots; 2 to 4 percent siliceous gravel by volume; medium acid; abrupt smooth boundary.

B21t—9 to 24 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; patchy clay films on surfaces of peds; few fine roots; 2 to 4 percent siliceous gravel by volume; strongly acid; clear smooth boundary.

B22t—24 to 46 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; 2 to 4 percent siliceous gravel by volume; strongly acid; clear smooth boundary.

B&A'2—46 to 55 inches; red (2.5YR 4/6) fine sandy loam; weak fine subangular blocky structure; friable; streaks of pale brown (10YR 6/3) fine sandy loam A'2 material that make up approximately 25 percent of the horizon; sand grains bridged and coated with clay; 2 to 4 percent siliceous gravel by volume; strongly acid; clear wavy boundary.

B'2t—55 to 80 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; sand grains bridged and coated with clay; 2 to 4 percent siliceous gravel by volume; strongly acid.

Solum thickness ranges from 60 to 80 inches or more. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon has hue of 10YR, value of 5 to 6, and chroma of 2 to 4 or value of 4 and chroma of 2 or 3.

The Bt horizon has hue of 2.5YR and 5YR, value of 4 or 5, and chroma of 6 or 8, or it has hue of 5YR, value of 4, and chroma of 4. Textures are fine sandy loam, loam, clay loam, or sandy clay loam. The B't horizon in some pedons is mottled with shades of gray and brown. The clay content decreases from the upper part of the Bt horizon to the B&A'2 horizon, but increases in the B'2t horizon.

The A'2 horizon has hue of 10YR, value of 6, and chroma of 3 or 4. The texture is fine sandy loam or sandy loam in streaks and pockets that make up 50 percent of the horizon.

Sacul series

The Sacul series consists of moderately well drained, slowly permeable soils that formed in acid, unconsolidated, stratified loamy and clayey deposits. These nearly level and gently sloping soils are on uplands of the Coastal Plain. The native vegetation was mixed hardwoods and pine. Slope ranges from 1 to 8 percent.

Sacul soils are geographically associated with Sawyer, Savannah, Ruston, and Smithdale soils. Ruston soils, which are nearly level and are on uplands, are fine-loamy. Smithdale soils, which are gently sloping and sloping and are on uplands, are fine-loamy. Savannah soils, which are nearly level and gently sloping and are on uplands, are fine-loamy and have a fragipan. Sawyer soils, which are nearly level and gently sloping and are on uplands, are fine-silty.

Typical pedon of Sacul fine sandy loam from an area of Sacul fine sandy loam, 3 to 8 percent slopes, in a wooded area in the SE1/4NW1/4SE1/4 sec. 15, T. 6 S., R. 11 W., in Jefferson County:

A1—0 to 3 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; few fine soft dark accretions, many roots; medium acid; abrupt smooth boundary.

A2—3 to 7 inches; pale brown (10YR 6/3) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; few soft dark accretions; medium acid; clear smooth boundary.

B21t—7 to 18 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm, plastic; few fine soft dark accretions; continuous clay films on faces of peds; very strongly acid; gradual smooth boundary.

B22t—18 to 25 inches; red (2.5YR 5/6) clay; common medium distinct grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; firm, plastic; few fine and medium roots; few fine soft dark accretions; continuous red (2.5YR 4/6) clay films on faces of peds; very strongly acid; diffused boundary.

B23t—25 to 36 inches; mottled light brownish gray (10YR 6/2), red (2.5YR 4/6), and reddish brown (2.5YR 5/6) clay; moderate medium subangular blocky structure; firm, plastic; few fine and moderate roots; continuous clay films on faces of peds; very strongly acid; gradual smooth boundary.

B24t—36 to 47 inches; mottled light brownish gray (10YR 6/2) and red (2.5YR 4/8) clay loam; few small pockets of yellowish red (5YR 5/8) sand; moderate medium subangular blocky structure; friable; few fine roots; continuous clay films on faces of most peds; very strongly acid; clear smooth boundary.

B25t—47 to 56 inches; mottled light brownish gray (10YR 6/2) and yellowish brown (10YR 5/8) clay loam; few small pockets of yellowish red (5YR 5/8) sand; moderate medium subangular blocky structure; friable; continuous clay films on faces of most peds; very strongly acid; clear smooth boundary.

C—56 to 72 inches; light brownish gray (10YR 6/2) clay loam; few thin layers of brown (10YR 5/3) silt loam; few medium distinct yellowish brown (10YR 5/8) mottles; massive; friable; extremely acid.

Solum thickness ranges from 40 to more than 72 inches. Reaction throughout the profile is strongly acid or very strongly acid unless the soil has been limed.

The A1 or Ap horizon ranges from 2 to 6 inches in thickness. This horizon has hue of 10YR, value of 4, and chroma of 2 or 3. The A2 horizon ranges from 4 to 8 inches in thickness. This horizon has hue of 10YR, value of 5 or 6, and chroma of 3.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4, and chroma of 8 or value of 5 and chroma of 6. The middle part of the Bt horizon has the same colors and is mottled in shades of gray. Textures of the upper and middle parts of the Bt horizon are clay or silty clay mottled in shades of red, gray, and brown. These colors are about equal in amount, or either the gray or the red is dominant. Texture of the lower part of the Bt horizon is silty clay loam, clay loam, or silt loam.

The C horizon is mottled red, yellow, and gray and is stratified with textures of sandy loam and sandy clay loam or clay loam.

Savannah series

The Savannah series consists of moderately well drained, moderately permeable soils that formed in thick beds of loamy sediment. These nearly level and gently sloping soils are on uplands of the Coastal Plain. The native vegetation was mixed hardwoods and pine. Slope ranges from 1 to 8 percent.

Savannah soils are geographically associated with Amy, Pheba, Sawyer, Ruston, Sacul, and Smithdale soils. Amy soils, which are level and are on uplands, are fine-silty and do not have a fragipan. Pheba soils, which are nearly level and are on uplands, are coarse-silty. Sawyer soils, which are nearly level and are on uplands, do not have a fragipan. Sacul soils, which are nearly level and gently sloping and are on uplands, are fine-silty and do not have a fragipan. Ruston soils, which are nearly level and gently sloping and are on uplands, are clayey. Smithdale soils, which are gently sloping and moderately sloping and are on uplands, are well drained and do not have a fragipan.

Typical pedon of Savannah fine sandy loam from an area of Savannah fine sandy loam, 1 to 3 percent slopes, in an idle field in the SE1/4SW1/4NW1/4 sec. 31, T. 5 S., R. 10 W., in Jefferson County:

Ap—0 to 9 inches; yellowish brown (10YR 5/4) fine sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; abrupt smooth boundary.

B2t—9 to 24 inches; yellowish brown (10YR 5/8) loam; moderate medium subangular blocky structure; friable; few fine roots; patchy clay films on faces of peds; few fine soft dark accretions; strongly acid; clear smooth boundary.

Bx1—24 to 35 inches; yellowish brown (10YR 5/6) loam; many medium distinct grayish brown (10YR 5/2) and brownish yellow (10YR 6/8) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; hard, compact and brittle in about 60 percent of mass; common fine voids; patchy clay films on faces of peds; light brownish gray (10YR 6/2) silt coatings on faces of prisms; few fine soft dark concretions; very strongly acid; clear smooth boundary.

Bx2—35 to 46 inches; mottled grayish brown (10YR 5/2), yellowish brown (10YR 5/4), and strong brown (7.5YR 5/8) loam; weak coarse prismatic structure parting to moderate medium subangular blocky; hard, compact and brittle in about 60 percent of mass; few fine voids; clay films on many faces of peds; light brownish gray (10YR 6/2) silt coatings on faces of peds; very strongly acid abrupt irregular boundary.

Bx3—46 to 59 inches; mottled reddish brown (5YR 5/4), strong brown (7.5YR 5/8), and yellowish brown (10YR 5/4) sandy loam; weak coarse prismatic structure parting to moderate medium angular and subangular blocky; firm, compact and brittle in about 60 percent of mass; sand grains coated and bridged with clay; light brownish gray (10YR 6/2) silt coatings on faces of prisms; very strongly acid; clear smooth boundary.

B3—59 to 72 inches; mottled yellowish brown (10YR 5/4, 5/8) and gray (10YR 6/1) sandy loam with pockets of pale brown (10YR 6/3) loamy sand; weak medium angular and subangular blocky structure; friable; very strongly acid.

Solum thickness ranges from 60 inches to more than 80 inches. Reaction ranges from strongly acid to extremely acid throughout the profile.

The A horizon ranges from 6 to 12 inches in thickness. This horizon has hue of 10YR, value of 4, and chroma of 2 or value of 5 and chroma of 3, 4, or 6.

The Bt horizon has hue of 7.5YR, value of 5, and chroma of 6 or 8, or it has hue of 10YR, value of 5, and chroma of 4, 6, or 8. Textures of the Bt and Bx horizons are sandy loam, sandy clay loam, or loam. The Bx horizon is mottled yellow, brown, red, and gray, or it is yellowish brown mottled with gray.

Sawyer series

The Sawyer series consists of moderately well drained, slowly permeable soils that formed in stratified loamy and clayey sediment. These nearly level and gently sloping soils are on uplands of the Coastal Plain. The native vegetation was mixed hardwoods and pine. Slope ranges from 1 to 8 percent.

Sawyer soils are geographically associated with Savannah, Sacul, and Ruston soils. Savannah soils, which are nearly level and gently sloping and are on uplands, are fine-loamy and have a fragipan. Sacul soils, which are nearly level and gently sloping and are on uplands, are clayey. Ruston soils, which are nearly level and are on uplands, are fine-loamy.

Typical pedon of Sawyer silt loam from an area of Sawyer silt loam, 1 to 3 percent slopes, in a wooded area in the SE1/4NE1/4SE1/4 sec. 26, T. 7 S., R. 10 W., in Jefferson County:

A1—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and medium roots; few fine soft dark accretions; strongly acid; abrupt smooth boundary.

B21t—5 to 12 inches; yellowish brown (10YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few patchy clay films on faces of peds; common fine roots; few soft dark accretions; few small pebbles; very strongly acid; gradual smooth boundary.

B22t—12 to 20 inches; yellowish brown (10YR 5/6) silty clay loam; few fine distinct yellowish red (5YR 5/8) and grayish brown (10YR 5/2) mottles; moderate medium subangular blocky structure; slightly plastic; patchy clay films on faces of peds; few fine roots; few fine soft dark accretions; few small pebbles; extremely acid; gradual smooth boundary.

B23t—20 to 29 inches; yellowish brown (10YR 5/6) silty clay loam; many fine distinct gray and yellowish red mottles; moderate medium subangular blocky structure; firm, plastic; continuous clay films on faces of peds; few fine roots; few fine dark concretions; few small pebbles; very strongly acid; clear smooth boundary.

B24t—29 to 36 inches; gray (10YR 5/1) silty clay loam; many fine distinct red and strong brown mottles; moderate medium subangular blocky structure; plastic; continuous clay films; few fine roots; few fine dark concretions; few small pebbles; very strongly acid; clear smooth boundary.

B25t—36 to 52 inches; gray (10YR 5/1) silty clay; common medium distinct strong brown (7.5YR 5/8) mottles; strong medium subangular blocky structure; plastic; continuous clay films on faces of peds; few fine roots; few fine dark concretions; few small pebbles; very strongly acid; clear smooth boundary.

B26t—52 to 80 inches; gray (10YR 5/1) clay; few medium distinct strong brown (7.5YR 5/8) mottles and few fine distinct dark red mottles;

moderate medium blocky structure; plastic; continuous clay films on faces of peds; few fine roots; few small pebbles; red mottles are more friable than the matrix; extremely acid.

Solum thickness ranges from 60 to 80 inches or more. Depth to the clayey B24t horizon ranges from 22 to 40 inches. Reaction ranges from extremely acid through strongly acid except in limed areas.

The A horizon ranges from 4 to 9 inches in thickness. This horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3.

The B21t horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 6 or 8, or it has hue of 10YR, value of 5, and chroma of 4. Some pedons have few fine or medium, grayish mottles. The B22t and B23t horizons have the same color range as the B21t horizon and have common or many fine or medium mottles in shades of gray, brown, and red. The B21t, B22t, and B23t horizons are silt loam, loam, silty clay loam, or clay loam. The B24t, B25t, and B26t horizons are mottled red, brown, and gray, or any one of these colors is dominant and mottles are in the other two colors. The red colors are in hue of 2.5YR and 5YR, value of 4, and chroma of 6 or 8, or in hue of 5YR, value of 5, and chroma of 6 or 8. The brown colors are in hue of 7.5YR and 10YR, value of 5, and chroma of 6 or 8, or in hue of 10YR, value of 5, and chroma of 4. The gray colors are in hue of 10YR, value of 5 or 6, and chroma of 1 or 2. The B24t, B25t, and B26t horizons are silty clay or clay.

Smithdale series

The Smithdale series consists of well drained, moderately permeable soils that formed in thick beds of loamy sediment. These gently sloping and moderately sloping soils are on uplands of the Coastal Plain. The native vegetation was mixed hardwoods and pine. Slope ranges from 3 to 12 percent.

Smithdale soils are geographically associated with Ruston, Savannah, and Sacul soils. Ruston soils, which are nearly level, are on adjacent uplands. Savannah soils, which are nearly level and gently sloping and are on uplands, have a fragipan. Sacul soils, which are nearly level and gently sloping and are on uplands, are clayey.

Typical pedon of Smithdale fine sandy loam from an area of Smithdale fine sandy loam, 8 to 12 percent slopes, in an idle field in the SW1/4 lot 7, sec. 5, T. 9 S., R. 7 W., in Lincoln County:

Ap—0 to 6 inches; dark brown (10YR 4/3) fine sandy loam; weak fine granular structure; very friable; many medium and fine roots; 7 to 10 percent gravel by volume; medium acid; abrupt smooth boundary.

B1—6 to 13 inches; yellowish red (5YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; many fine roots; 7 to 10 percent gravel by volume; strongly acid; gradual wavy boundary.

B21t—13 to 34 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; many thin patchy clay films on faces of peds; 7 to 10 percent gravel by volume; strongly acid; gradual wavy boundary.

B22t—34 to 55 inches; red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; sand grains coated and bridged with clay; common pockets of uncoated sand grains; 7 to 10 percent gravel; strongly acid; gradual wavy boundary.

B23t—55 to 80 inches; red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; very friable; sand grains bridged and coated with clay; few pockets and streaks of uncoated sand grains; 7 to 10 percent gravel; strongly acid.

Solum thickness ranges from 60 to more than 100 inches. Reaction is strongly acid or very strongly acid throughout except for the surface layer in limed areas.

The A horizon ranges from 5 to 9 inches in thickness. This horizon has hue of 10YR, value of 4, and chroma of 2 or 3, or it has hue of 7.5YR, value of 4, and chroma of 4.

The upper part of the Bt horizon has hue of 2.5YR or 5YR, value of 4, and chroma of 6 or 8, or it has hue of 5YR, value of 5, and chroma of 6. Texture is clay loam, sandy clay loam, or loam. The lower part of the Bt horizon has colors similar to those in the upper part, except that it has few to many pockets of uncoated sand grains. Texture is sandy loam. Gravel content ranges from 0 to 10 percent.

Wabbaseka series

The Wabbaseka series consists of moderately well drained, very slowly permeable soils that formed in beds of clayey over loamy alluvium. These soils are on the ridges and side slopes of undulating natural levees of the Arkansas River and its former channels. The native vegetation was mixed hardwoods. Slope is dominantly less than 3 percent.

Wabbaseka soils are geographically associated with Latanier and Desha soils. Latanier soils, on adjacent foot slopes and narrow swales, are vertic. Desha soils, on adjacent broad flats, are clayey throughout.

Typical pedon of Wabbaseka clay from an area of Wabbaseka-Latanier complex, undulating, in a cultivated field in the NW1/4NW1/4SE1/4 sec. 18, T. 6 S., R. 7 W., in Jefferson County:

Ap—0 to 4 inches; dark brown (7.5YR 3/2) clay; moderate medium subangular blocky structure; firm; plastic; many fine roots; neutral; abrupt smooth boundary.

B21—4 to 14 inches; dark reddish brown (5YR 3/3) clay; moderate medium blocky structure; firm, plastic; common fine roots; neutral; abrupt wavy boundary.

B22—14 to 18 inches; dark reddish brown (5YR 3/3) silty clay; moderate medium subangular blocky structure; firm, plastic; few fine roots; neutral; abrupt wavy boundary.

IIC1—18 to 26 inches; reddish brown (5YR 4/4) loam; massive; friable; neutral; abrupt wavy boundary.

IIC2—26 to 42 inches; brown (7.5YR 4/4) fine sandy loam; massive; very friable; slightly acid; abrupt wavy boundary.

IIC3—42 to 80 inches; light brown (7.5YR 6/4) loamy fine sand with few fine strata 1/16 to 1/8 inch thick of brown (7.5YR 4/4) loam; single grained; loose; slightly acid.

Solum thickness and depth of the fine textured material range from 12 to 20 inches. Reaction is neutral or mildly alkaline in the A and B horizons and slightly acid to moderately alkaline in the C horizon.

The A horizon ranges from 3 to 9 inches in thickness. This horizon has hue of 5YR, 7.5YR, or 10YR; value of 3; and chroma of 2 or 3.

The B horizon has hue of 5YR, value of 3, and chroma of 2 or 3; hue of 5YR, value of 4 or 5, and chroma of 6 or 8; or hue of 7.5YR, value of 4 or 5, and chroma of 4. Texture is clay or silty clay.

The IIC horizons have hue of 5YR or 7.5YR, value of 4, and chroma of 4 or value of 5 and chroma of 4 to 8. Textures are silt loam, fine sandy loam, very fine sandy loam, loam, loamy fine sand, or loamy sand. In most places, the IIC horizon below a depth of 40 inches has bedding planes or thin strata of finer textures.

Yorktown series

The Yorktown series consists of very poorly drained, very slowly permeable soils that formed in thick beds of clayey alluvium. These soils are in low, ponded sloughs and abandoned oxbows of the Arkansas River. The native vegetation was mixed hardwood trees. Slope is dominantly less than 1 percent.

Yorktown soils are geographically associated with Perry, Portland, and Rilla soils. Perry and Portland soils, on adjacent broad flats, are vertic. Rilla soils, on adjacent natural levees, are well drained.

Typical pedon of Yorktown silty clay from an area of Yorktown silty clay beneath 12 inches of water in the NE1/4SW1/4NW1/4 sec. 14, T. 8 S., R. 7 W., in Lincoln County:

O1—2 inches to 0; dark brown (7.5YR 3/2) partially decomposed twigs, leaves, and roots; medium acid; abrupt smooth boundary.

A1—0 to 8 inches; gray (5Y 5/1) silty clay; few fine prominent dark brown mottles; weak coarse subangular blocky structure; very sticky, firm; many fine roots; medium acid; clear smooth boundary.

B21g—8 to 24 inches; gray (5Y 5/1) clay; many medium prominent yellowish red (5YR 4/8) mottles; moderate coarse blocky structure; very sticky, very firm; common fine roots; common fine black accretions; medium acid; clear smooth boundary.

B22g—24 to 35 inches; dark gray (5Y 4/1) clay; common fine and medium prominent yellowish red (5YR 4/6) mottles; moderate medium and coarse blocky structure; very sticky, very firm; few medium roots; common fine black accretions; medium acid; clear smooth boundary.

B23g—35 to 42 inches; greenish gray (5BG 5/1) clay; many coarse prominent strong brown (7.5YR 5/6) and few coarse prominent yellowish red (5YR 5/8) mottles; weak coarse blocky structure; very sticky, very firm; few medium roots; common black accretions; medium acid; abrupt smooth boundary.

B3—42 to 60 inches; reddish brown (5YR 4/4) clay; common fine prominent gray mottles; strong medium blocky structure parting to strong fine blocky; sticky, very firm; common fine pressure faces; greenish gray (5YR 5/1) fillings in root channels; many fine black concretions; mildly alkaline.

Solum thickness ranges from 50 to 80 inches. Depth to the B3 horizon ranges from 40 to 60 inches. Reaction of the A and B2g horizons ranges from medium acid to neutral. The B3 horizon is mildly or moderately alkaline. Some pedons have a B3 horizon that is calcareous and that contains a few fine, carbonate concretions.

The A horizon has hue of 10YR and 5Y, value of 4 to 6, and chroma of 1, or it is neutral and has value of 4 to 6.

The B21g and B22g horizons have hue of 5Y and 10YR, value of 4 to 6, and chroma of 1, or they have neutral reaction and have value of 4 or 5. Mottles are few to many and fine or medium in shades of red and brown. The B23g horizon has hue of 5G, 5Y, or 5BG; value of 5 or 6; and chroma of 1 and common or many, fine to coarse mottles in shades of red.

The B3 horizon has hue of 5YR, value of 4 or 5, and chroma of 3 or 4, or it has hue of 2.5YR, value of 3 or 4, and chroma of 4 and is mottled in shades of gray.

Classification

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 (*4, 7*).

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on 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 21, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. 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 Ultisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are 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 Aquult (*Aqu*, meaning water, plus *ult*, from Ultisol).

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. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Ochraquults (*Ochr*, meaning simple horizons, plus *aquult*, the suborder of Ultisols that have an aquic moisture regime).

SUBGROUP. Each great group may be 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, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceeding the name of the great group. The adjective *Typic* identifies the subgroup that is thought to typify the great group. An example is Typic Ochraquults.

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 differentiae. An example is fine-silty, siliceous, thermic, mesic, Typic Ochraquults.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

Formation of the soils

In this section the factors of soil formation are discussed and related to the formation of soils in Jefferson and Lincoln Counties, and the processes of soil formation are described.

Factors of soil formation

Soil is formed by weathering and other processes that act upon the regolith. The characteristics of the soil at any given point depend upon climate, living organisms, parent material, relief, and time. Each factor acts on the soils and modifies the effects of the other four. When climate, living organisms, or any other one of the five factors is varied to a significant extent, a different soil may be formed (*5*).

Climate and living organisms are the active forces in soil formation. Relief modifies the effects of climate and living organisms, mainly by its influence on temperature and runoff. Because climate, vegetation, parent material, and relief interact over a period of time, time is the fifth factor of soil formation. Thus, the effect of time is also reflected in the characteristics of the soil.

Climate

The climate of Jefferson and Lincoln Counties is characterized by mild winters, warm summers, and generally abundant rainfall. The present climate probably is similar to the climate under which the soils in the counties formed. For additional information about the climate, refer to the section "General nature of the survey area."

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 translocating or removing dissolved or suspended materials. Because remains of plants decompose rapidly, the organic acids thus formed hasten the formation of clay minerals and the 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 counties is uniform, though its effect is modified locally by runoff. Climate alone does not account for differences in the soils of the counties.

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 in organic matter and nitrogen in the soil, gains or losses in plant nutrients, and changes in structure and porosity.

Before Jefferson and Lincoln Counties were settled, the native vegetation had more influence on soil formation than did animal activity.

On the flood plains the trees were mainly hardwoods. Stands of baldcypress and water tupelo filled swamp areas, where some of the Perry and Yorktown soils formed. On the poorly drained to well drained flood plains and natural levees, where Hebert, Roxana, Coushatta, Caspiana, McGehee, Oklared, Desha, Ouachita, Portland, Rilla, and some of the Amy and Perry soils formed, the trees were chiefly oaks, sweetgum, ash, sycamore, pecan, hickory, and baldcypress.

On the uplands, where the Smithdale, Ruston, Grenada, Henry, Pheba, Sacul, Savannah, Sawyer, and some of the Amy soils formed, the forests were mainly mixed stands of shortleaf and loblolly pines, oaks, and hickory.

With the development of agriculture in the counties, man has become an influence in the formation of the soils. By clearing forests and tilling the soil; by introducing new plants; by fertilizing; by adding chemicals for insect, disease, and weed control; and by improving drainage and controlling floods, man is changing the direction of soil formation. Even in many of the areas that have remained in woodland, man is influencing soil formation through woodland management practices, such as selective harvesting, timber stand improvement, and planting pure stands of preferred species. Only a few results of man's activities can be seen now. Examples are changes in structure, color, organic matter and nutrient content, and thickness of the surface horizon or plow layer. Many results of man's activities will probably not be evident for several centuries.

Parent material

Parent material is the unconsolidated mass from which a soil forms. It determines the chemical and mineral composition of the undisturbed soil. In Jefferson and Lincoln Counties, the soils formed in three broad classes of parent material: alluvium deposited by the Arkansas River, loess blown from older Mississippi Valley alluvial surfaces (*10*), and Coastal Plain sediment deposited in the Gulf of Mexico when it covered southern and eastern Arkansas.

The Gulf deposits consist mainly of noncalcareous loamy and clayey sediments, and include some gravelly strata. This sediment has been strongly leached, and the content of bases is low. The loess mantle is silt loam and silty clay loam about 1 foot to more than 12 feet thick. It has been moderately leached, but since it contained large amounts of weatherable minerals, the soils contain moderate amounts of bases. On the flood plains of the upland tributaries to Huggin Creek, Cane Creek, and Derrieusseaux Creek, the parent material consists of loamy recent alluvium washed from adjacent uplands. The alluvium from the Arkansas River is loamy and moderately leached on the natural levees associated with Bayou Bartholmew. Soils formed in this sediment contain moderate to high amounts of bases. The sediment is predominantly clayey in slack-water areas, is less intensely leached, and is high in content of bases, and the clay is dominantly montmorillonite.

Relief

In Jefferson and Lincoln Counties, relief influences soil formation chiefly through its effect on surface and internal drainage and on erosion.

Rolling uplands lie in the western part of each county. Within this area, slope is mainly 1 to 8 percent, but ranges from 0 to 12 percent.

Flood plains of the smaller streams are long and narrow and are level; slope is less than 1 percent. The flood plains associated with the Arkansas River and Bayou Bartholomew are predominantly level, but within it are undulating areas. These are alternating long, narrow swales and low ridges. The ridges have slope of 1 to 3 percent.

Time

The length of time required for formation of soil depends largely upon the other factors of soil formation. Generally, less time is required if the climate is warm and humid, the vegetation is luxuriant, and the parent material is loamy. Older soils usually show a greater degree of differentiation between horizons than do younger ones.

Most soils in Jefferson and Lincoln Counties have developed a B horizon. Some soils on flood plains, such as Ouachita soils, have been in place too little time to form an argillic horizon, but they have formed a cambic horizon. Other soils, such as Perry and Portland soils, formed in slack-water deposits of clays that shrink and swell. This causes mixing, which precludes the formation of an argillic horizon. Most soils in the counties have been forming long enough and in stable enough material to have developed an argillic horizon, and many have a fragipan. Generally, the soils on uplands of the Coastal Plain have been forming over a greater span of time. They have the most strongly developed argillic horizons and are the most mature soils in Jefferson and Lincoln counties.

Processes of soil formation

In this section a brief definition of the horizon nomenclature and the 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 down to the parent material that has been little altered 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: A, B, and C horizons. Very young soils do not have a B horizon.

The A horizon can be the horizon of maximum accumulation of organic matter and is called the A1 horizon or the surface layer, or it can be the horizon of maximum leaching of dissolved or suspended materials and is called the A2 horizon, or 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 materials, such as iron and clay. Commonly, the B horizon has blocky structure (*11*) and is firmer than the horizons immediately above and below it.

Beneath the B horizon is the C horizon, which has been little affected by the soil-forming processes, although 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 Jefferson and Lincoln Counties. Among these processes are the accumulation of organic matter, the leaching of calcium carbonates and bases, the reduction and transfer of iron, and the formation and translocation of silicate clay minerals. In most of the soils of these counties, more than one of these processes have 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 Jefferson and Lincoln Counties range from medium to low in content of organic matter.

Leaching of carbonates and bases has occurred to some degree in nearly all of the soils of Jefferson and Lincoln Counties. Among soil scientists, it is generally accepted that bases are leached downward in soils before silicate clay minerals begin to move. Most of the soils in these counties are moderately or strongly leached, and this is an important factor in horizon development.

Reduction and transfer of iron have 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 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 Amy, Henry, and Perry soils.

In several soils of Jefferson and Lincoln Counties, the translocation of clay minerals has contributed to the formation of horizons. In many 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 in it 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 many soils in the counties. Ruston and Rilla soils are examples of the effects of these processes.

Leaching of bases and translocation of silicate clay are among the most important processes in horizon differentiation in the soils of Jefferson and Lincoln Counties.

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Glossary

ABC soil. A soil having an A, a B, and a C horizon.

AC soil. A soil having only an A and a C horizon. Commonly such soil formed in recent alluvium or on steep rocky slopes.

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher), or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

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
Medium	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Calcareous soil. A soil containing enough calcium carbonate (commonly with magnesium carbonate) to effervesce (fizz) visibly when treated with cold, dilute hydrochloric acid. A soil having measurable amounts of calcium carbonate or magnesium carbonate.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity, but is more precise in meaning.

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.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Claypan. A slowly permeable soil horizon that contains much more clay than the horizons above it. A claypan is commonly hard when dry and plastic or stiff when wet.

Climax vegetation. The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Compressible. Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

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).

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

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.

Cutbanks cave. Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

Delta. An alluvial deposit, commonly triangular in shape, formed largely beneath water and deposited at the mouth of a river or stream.

Depth to rock. Bedrock at a depth that adversely affects the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Drainage, surface. Runoff, or surface flow of water, from an area.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

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.

Excess alkali. Excess exchangeable sodium. The resulting poor physical properties restrict the growth of plants.

Excess fines. Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime. Excess carbonates. Excessive carbonates, or lime, restrict the growth of some plants.

Excess salts. Excess water soluble salts. Excessive salts restrict the growth of most plants.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; *November-May,* for example, means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

Forb. Any herbaceous plant not a grass or a sedge.

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.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai. Typically, the microrelief of Vertisols—clayey soils having a high coefficient of expansion and contraction with changes in moisture content. Commonly a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope.

Gleyed soil. A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Green manure (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

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.

Gypsum. Hydrous calcium sulphate.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

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.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered, but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Landslide. The rapid downhill movement of a mass of soil and loose rock generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by wind.

Low strength. Inadequate strength for supporting loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is greater than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Moderately coarse textured (moderately light textured) soil. Sandy loam and fine sandy loam.

Moderately fine textured (moderately heavy textured) soil. Clay loam, sandy clay loam, and silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

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.

Neutral soil. A soil having a pH value between 6.6 and 7.3.

Nutrient, plant. Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

Pan. A compact, dense layer in a soil. A pan impedes the movement of water and the growth of roots. The word "pan" is commonly combined with other words that more explicitly indicate the nature of the layer; for example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

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.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

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).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differencees are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Piping. Moving water of subsurface tunnels or pipelike cavities in the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on exposure to repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade, whereas ironstone cannot be cut but can be broken or shattered with a spade. Plinthite is one form of the material that has been called laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Polypedon. A volume of soil having properties within the limits of a soil series, the lowest and most homogeneous category of soil taxonomy. A "soil individual."

Poorly graded. Refers to soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets. Surface or subsurface drainage outlets difficult or expensive to install.

Productivity (soil). The capability of a soil for producing a specified plant or sequence of plants under a specified system of management. Productivity is measured in terms of output, or harvest, in relation to input.

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

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock. Soil scientists regard as soil only the part of the regolith that is modified by organisms and other soil-building forces. Most engineers describe the whole regolith, even to a great depth, as "soil."

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline-alkali soil. A soil that contains a harmful concentration of salts and exchangeable sodium; contains harmful salts and is strongly alkaline; or contains harmful salts and exchangeable sodium and is very strongly alkaline. The salts, exchangeable sodium, and alkaline reaction are in the soil in such location that growth of most crop plants is less than normal.

Saline soil. A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

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.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

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.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slow intake. The slow movement of water into the soil.

Slow refill. The slow filling of ponds, resulting from restricted permeability in the soil.

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.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *very coarse sand* (2.0 millimeters to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.005 to 0.002 millimeter); and *clay* (less than 0.002 millimeter).

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.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

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).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use or management.

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.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Unstable fill. Risk of caving or sloughing in banks of fill material.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial melt water. In nonglaciated regions, alluvium deposited by heavily loaded streams emerging from hills or mountains and spreading sediments onto the lowland as a series of adjacent alluvial fans.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but the limited geographic soil area does not justify creation of a new series.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to a soil or soil material consisting of particles well distributed over a wide range in size or diameter. Such a soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Illustrations

Figure 1.—Bermudagrass hay being harvested on Calloway silt loam, 1 to 3 percent slopes.

Figure 2.—A good stand of soybeans on Coushatta silt loam.

Figure 3.—Housing development on Coushatta-Urban land complex behind a field of cotton on Coushatta silt loam.

Figure 4.—Desha clay has high potential for rice.

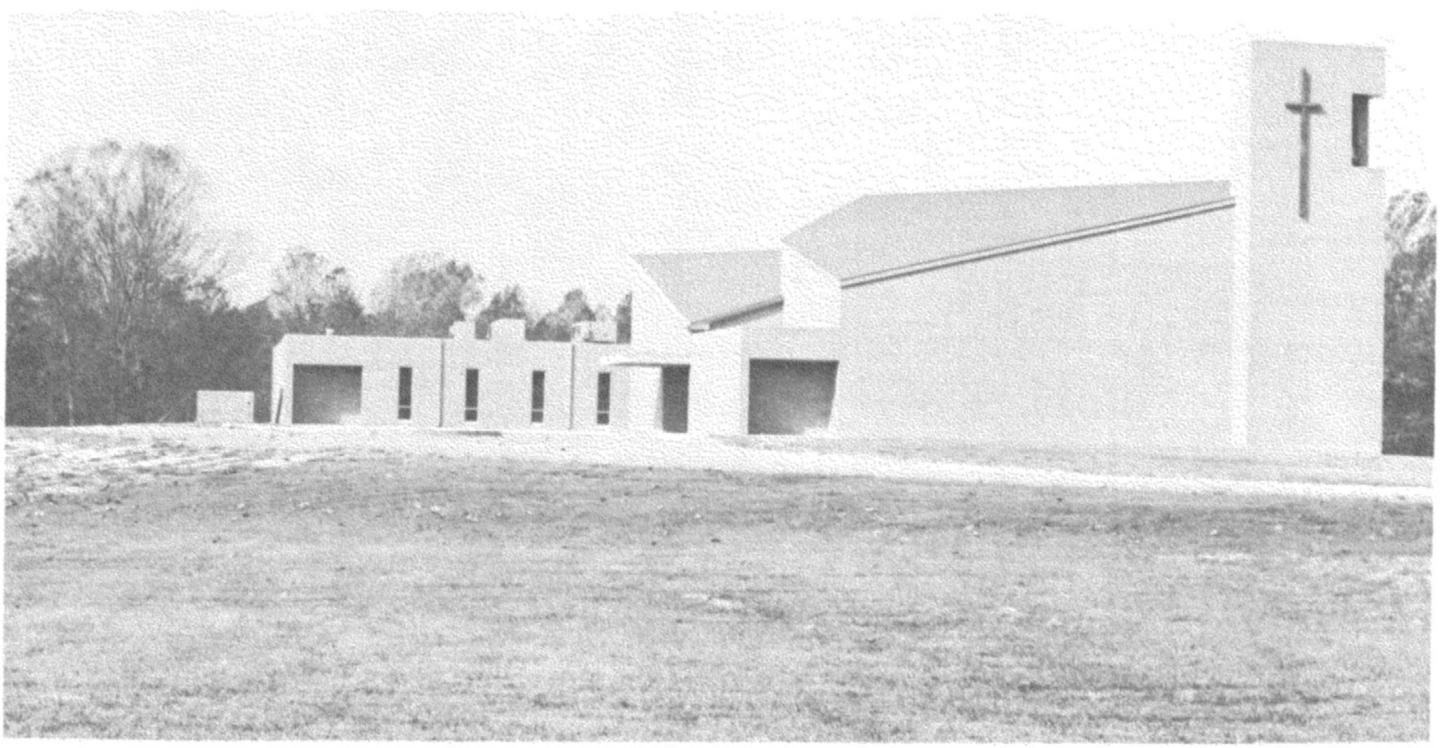

Figure 5.—This area of Ouachita soils, frequently flooded, was filled to raise it above a flood plain so the church could be built.

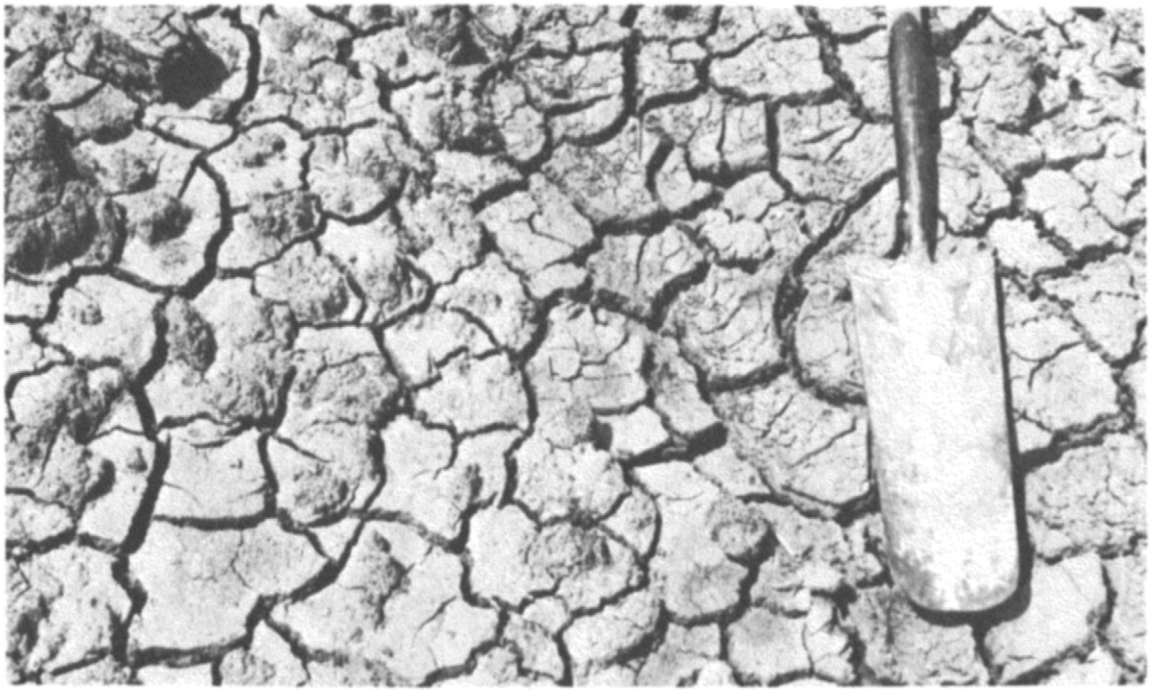

Figure 6.—Perry clay shrinks and cracks when it dries.

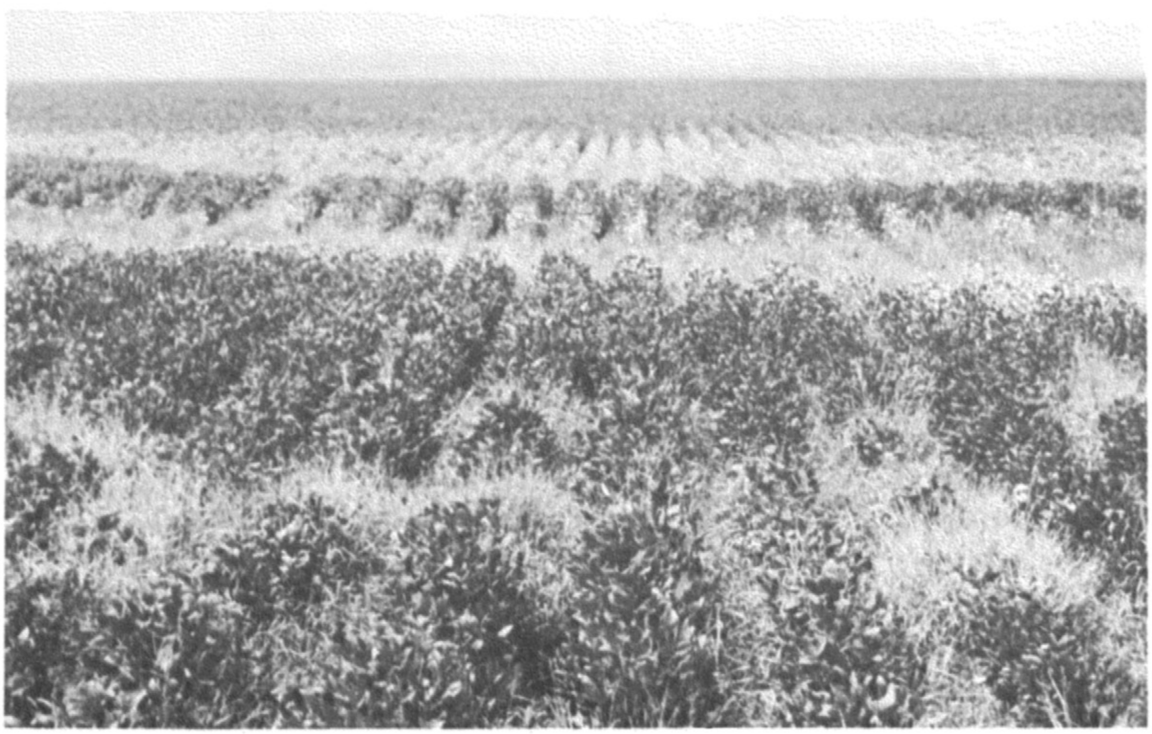

Figure 7.—These soybeans on Portland clay have been damaged by excess water.

Figure 8.—Rilla silt loam, 0 to 1 percent slopes, has high potential for cotton.

Figure 9.—Savannah fine sandy loam, 1 to 3 percent slopes, has medium potential for loblolly pine.

Tables

TABLE 1.—ACREAGE OF PRINCIPAL CROPS IN 1964 AND 1969

Crop	Jefferson County		Lincoln County	
	1964	1969	1964	1969
Soybeans (for beans)	87,363	130,387	66,104	78,604
Cotton	63,832	52,172	31,181	29,403
Wheat for grain	2,750	1,765	490	395
Other small grain (includes rice)	17,123	17,710	11,307	13,238
Corn (for all purposes)	1,310	322	415	1,021
Sorghum (for all purposes except sirup).	761	452	360	1,017
Hay (except for sorghum hay)[1]	5,432	4,248	3,048	2,256
Pasture and rangeland[1]	11,199	7,452	6,720	12,763

[1]Excludes acreage of hay and pasture on levees.

TABLE 2.—NUMBER OF LIVESTOCK IN 1964 AND 1969

Livestock	Jefferson County		Lincoln County	
	1964	1969	1964	1969
All cattle and calves	17,087	12,937	13,296	12,895
Milk cows	545	277	660	531
Hogs and pigs	2,342	5,558	2,850	1,340
Chickens[1]	55,158	117,893	140,295	122,522

[1]More than 3 months old.

TABLE 3.—TEMPERATURE AND PRECIPITATION DATA

[Recorded in the period 1951-74 at Pine Bluff, Ark.]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have— Maximum temperature higher than—	2 years in 10 will have— Minimum temperature lower than—	Average number of growing degree days[1]	Average	2 years in 10 will have— Less than—	2 years in 10 will have— More than—	Average number of days with 0.10 inch or more	Average snowfall
	F	F	F	F	F	Units	In	In	In		In
January	54.2	34.2	44.2	78	11	32	4.21	2.04	5.98	7	1.7
February	58.5	37.0	47.8	80	16	75	4.56	2.47	6.25	7	1.1
March	66.1	43.5	54.8	88	23	241	4.74	2.75	6.35	8	.5
April	76.6	53.4	65.0	90	34	450	5.38	2.56	7.68	7	0
May	83.6	61.3	72.4	94	44	694	5.45	2.52	7.83	6	0
June	90.1	68.6	79.3	99	54	879	3.04	.84	4.81	5	0
July	93.4	71.9	82.7	103	59	1,014	3.88	2.20	5.24	6	0
August	92.8	70.6	81.7	103	59	983	3.10	1.57	4.34	5	0
September	86.8	64.2	75.5	98	47	765	3.78	1.70	5.46	5	0
October	77.4	52.8	65.1	92	33	468	3.10	1.23	4.63	4	0
November	64.9	42.8	53.9	83	22	161	4.10	1.93	5.86	6	0
December	56.2	36.6	46.5	78	15	69	4.94	2.85	6.64	7	.9
Year	75.1	53.1	64.1	104	9	5,831	50.28	42.02	58.16	73	4.2

[1]A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 F).

TABLE 4.—FREEZE DATES IN SPRING AND FALL

[Recorded in the period 1951-74 at Pine Bluff, Ark.]

Probability	Temperature 24 F or lower	28 F or lower	32 F or lower
Last freezing temperature in spring:			
1 year in 10 later than—	March 18	March 24	April 3
2 years in 10 later than—	March 8	March 17	March 29
5 years in 10 later than—	February 16	March 4	March 20
First freezing temperature in fall:			
1 year in 10 earlier than—	November 11	November 3	October 26
2 years in 10 earlier than—	November 19	November 9	October 31
5 years in 10 earlier than—	December 3	November 20	November 9

TABLE 5.—GROWING SEASON LENGTH

[Recorded in the period 1951-74 at Pine Bluff, Ark.]

Probability	Daily minimum temperature during growing season: Higher than 24 F	Higher than 28 F	Higher than 32 F
	Days	Days	Days
9 years in 10	249	234	211
8 years in 10	262	243	218
5 years in 10	287	261	233
2 years in 10	314	278	248
1 year in 10	331	287	256

TABLE 6.—ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Jefferson County	Lincoln County	Total— Area	Total— Extent
		Acres	Acres	Acres	Pct
1	Amy silt loam	10,905	7,318	18,223	2.0
2	Amy soils, frequently flooded	8,215	4,498	12,713	1.4
3	Amy-Urban land complex	2,335	0	2,335	0.3
4	Calloway silt loam, 0 to 1 percent slopes	880	6,935	7,815	0.9
5	Calloway silt loam, 1 to 3 percent slopes	4,645	6,040	10,685	1.2
6	Calloway-Urban land complex	4,740	0	4,740	0.5
7	Caspiana silt loam, 0 to 1 percent slopes	13,080	59	13,139	1.4
8	Coushatta silt loam	7,265	5,242	12,507	1.4
9	Coushatta soils, occasionally flooded	4,365	5,700	10,065	1.1
10	Coushatta-Urban land complex	285	0	285	([1])
11	Crevasse loamy fine sand	210	22	232	([1])
12	Crevasse soils, frequently flooded	11,485	733	12,218	1.3
13	Desha clay	7,920	12,177	20,097	2.2
14	Desha clay, occasionally flooded	815	4,482	5,297	0.6
15	Grenada silt loam, 1 to 3 percent slopes	1,860	4,519	6,379	0.7
16	Grenada silt loam, 3 to 8 percent slopes	3,620	9,783	13,403	1.4
17	Grenada-Urban land complex, 1 to 3 percent slopes	1,225	0	1,225	0.1
18	Grenada-Urban land complex, 3 to 8 percent slopes	775	0	775	0.1
19	Hebert silt loam	16,145	18,320	34,465	3.8
20	Henry silt loam	2,990	6,391	9,381	1.0
21	Henry-Urban land complex	530	0	530	0.1
22	McGehee silt loam	17,460	3,101	20,561	2.2
23	McGehee silt loam, occasionally flooded	1,060	0	1,060	0.1
24	Oklared fine sandy loam, occasionally flooded	11,460	38	11,498	1.3
25	Ouachita soils, frequently flooded	13,975	12,399	26,374	2.9
26	Perry clay	81,251	63,640	144,891	15.8
27	Perry clay, occasionally flooded	18,235	97	18,332	2.0
28	Pheba silt loam, 0 to 2 percent slopes	55,005	8,073	63,078	6.9
29	Pheba-Urban land complex, 0 to 2 percent slopes	1,200	0	1,200	0.1
30	Portland clay	29,960	28,287	58,247	6.3
31	Portland clay, occasionally flooded	39,040	162	39,202	4.3
32	Portland-Urban land complex	300	0	300	([1])
33	Rilla silt loam, 0 to 1 percent slopes	40,540	36,150	76,690	8.3
34	Rilla silt loam, undulating	16,685	9,966	26,651	2.9
35	Roxana silt loam	13,520	1,920	15,440	1.7
36	Roxana silt loam, occasionally flooded	3,790	2,950	6,740	0.7
37	Roxana-Urban land complex	955	0	955	0.1
38	Ruston fine sandy loam, 1 to 3 percent slopes	800	1,715	2,515	0.3
39	Sacul fine sandy loam, 1 to 3 percent slopes	4,045	5,188	9,233	1.0
40	Sacul fine sandy loam, 3 to 8 percent slopes	16,150	7,971	24,121	2.6
41	Savannah fine sandy loam, 1 to 3 percent slopes	14,540	17,387	31,927	3.5
42	Savannah fine sandy loam, 3 to 8 percent slopes	19,460	11,530	30,990	3.4
43	Savannah-Urban land complex, 1 to 3 percent slopes	830	0	830	0.1
44	Savannah-Urban land complex, 3 to 8 percent slopes	310	0	310	([1])
45	Sawyer silt loam, 1 to 3 percent slopes	6,410	6,531	12,941	1.4
46	Sawyer silt loam, 3 to 8 percent slopes	10,215	4,708	14,923	1.6
47	Smithdale fine sandy loam, 3 to 8 percent slopes	5,945	21,565	27,510	3.0
48	Smithdale fine sandy loam, 8 to 12 percent slopes	250	9,335	9,585	1.0
49	Wabbaseka-Latanier complex, undulating	7,430	928	8,358	0.9
50	Wabbaseka-Latanier complex, occasionally flooded	6,780	2,060	8,840	1.0
51	Yorktown silty clay	3,345	3,036	6,381	0.7
	Water	13,420	9,044	22,464	2.4
	Total	558,656	360,000	918,656	100.0

[1]Less than 0.1 percent.

TABLE 7.--YIELDS PER ACRE OF CROPS AND PASTURE

[All yields were estimated for a high level of management in 1975. Absence of a yield figure indicates the crop is seldom grown or is not suited. Soils mapped in an urban complex were not rated in this table]

Soil name and map symbol	Cotton lint	Soybeans	Rice	Wheat	Bahiagrass	Improved bermudagrass	Tall fescue
	Lb	Bu	Bu	Bu	AUM[1]	AUM[1]	AUM[1]
Amy:							
1	450	25	---	---	7.5	7.0	6.0
[2]2	---	---	---	---	7.5	7.0	6.0
Calloway:							
4	650	35	120	35	---	9.0	8.0
5	650	35	120	---	---	9.0	8.5
Caspiana:							
7	875	40	---	---	---	12.0	9.0
Coushatta:							
8	850	40	---	---	---	12.0	9.0
[2]9	800	35	---	---	---	12.0	8.0
Crevasse:							
[3]11	---	---	---	---	---	6.0	---
[2]12	---	---	---	---	---	6.0	---
Desha:							
[3]13	575	35	130	35	---	9.0	9.0
14	500	30	90	---	---	9.0	8.0
Grenada:							
15	600	35	---	---	---	9.5	8.0
16	550	30	---	---	---	8.0	7.5
Hebert:							
19	700	35	---	---	---	12.0	9.0
Henry:							
20	500	30	---	---	---	---	8.0
McGehee:							
[3]22	700	35	120	---	---	11.0	9.0
23	---	30	---	---	---	12.0	7.0
Oklared:							
24	650	---	---	---	---	8.0	7.0
Ouachita:							
[2]25	---	30	---	---	7.0	9.0	---
Perry:							
[3]26	575	35	130	---	---	---	8.5
27	475	30	130	---	---	---	7.5
Pheba:							
28	575	30	---	---	8.0	8.5	7.0
Portland:							
[3]30	600	35	130	---	---	9.0	9.0
31	500	30	130	---	---	8.0	8.5
Rilla:							
33	900	40	---	---	---	12.0	9.0

See footnotes at end of table.

TABLE 7.—YIELDS PER ACRE OF CROPS AND PASTURE—Continued

Soil name and map symbol	Cotton lint	Soybeans	Rice	Wheat	Bahiagrass	Improved bermudagrass	Tall fescue
	Lb	Bu	Bu	Bu	AUM[1]	AUM[1]	AUM[1]
Rilla:							
34	800	35	---	---	---	12.0	9.0
Roxana:							
35	800	40	---	---	---	13.0	---
36	800	35	---	---	---	13.0	---
Ruston:							
38	650	30	---	---	9.5	10.0	7.0
Sacul:							
39	---	25	---	---	7.5	---	5.0
40	---	---	---	---	7.5	---	5.0
Savannah:							
41	650	30	---	---	7.5	8.5	8.0
42	600	30	---	---	7.5	8.0	7.5
Sawyer:							
45	550	30	---	---	---	9.0	7.0
46	500	25	---	---	---	9.0	7.0
Smithdale:							
47	600	25	---	---	---	9.0	7.0
48	400	20	---	---	---	9.0	7.0
Wabbaseka:							
[2]49	700	35	---	---	---	11.4	9.0
[2]50	700	35	130	---	---	---	---
Yorktown:							
51	---	---	---	---	---	---	---

[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]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.
[3]Yields are for areas protected from flooding.

TABLE 8.--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	Woodland suitability group	Management concerns-- Erosion hazard	Equipment limitation	Seedling mortality	Potential productivity-- Important trees	Site index	Trees to plant
Amy:							
1	2w9	Slight	Severe	Severe	Loblolly pine	90	Loblolly pine, sweetgum.
					Shortleaf pine	80	
					Sweetgum	90	
[1]2	2w9	Slight	Severe	Severe	Loblolly pine	90	Loblolly pine, sweetgum, eastern cottonwood, green ash, American sycamore, Nuttall oak.
					Sweetgum	90	
					Water oak	90	
Calloway:							
4, 5	3w8	Slight	Moderate	Slight	Cherrybark oak	80	Loblolly pine, shortleaf pine, sweetgum, water oak.
					Loblolly pine	80	
					Shortleaf pine	70	
					Sweetgum	80	
					Water oak	80	
Caspiana:							
7	2o4	Slight	Slight	Slight	Green ash	---	Eastern cottonwood, sweetgum, American sycamore, cherrybark oak.
					Eastern cottonwood	90	
					Cherrybark oak	90	
					Pecan	---	
					Sweetgum	90	
					American sycamore	---	
Coushatta:							
8, [1]9	1o4	Slight	Slight	Slight	Eastern cottonwood	110	Eastern cottonwood, American sycamore, cherrybark oak, sweetgum.
					Pecan	---	
					Sweetgum	100	
					American sycamore	---	
					Cherrybark oak	---	
					Water oak	---	
Crevasse:							
11, [1]12	3s6	Slight	Moderate	Severe	---	---	American sycamore, eastern cottonwood.
					---	---	
					---	---	
					Eastern cottonwood	100	
					American sycamore	---	
Desha:							
13	2w6	Slight	Severe	Moderate	Green ash	---	Green ash, eastern cottonwood, cherrybark oak, Nuttall oak, water oak, willow oak, sweetgum, Shumard oak.
					Eastern cottonwood	90	
					Cherrybark oak	90	
					Nuttall oak	90	
					Water oak	90	
					Willow oak	90	
					Sweetgum	90	
14	3w6	Slight	Severe	Severe	Green ash	---	Eastern cottonwood, sweetgum.
					Eastern cottonwood	90	
					Water oak	90	
					Water hickory	---	
					Sweetgum	90	
Grenada:							
15, 16	3o7	Slight	Slight	Slight	Cherrybark oak	85	Cherrybark oak, Shumard oak, loblolly pine, sweetgum, shortleaf pine.
					Southern red oak	80	
					Loblolly pine	80	
					Shortleaf pine	70	
					Sweetgum	80	

See footnote at end of table.

TABLE 8.—WOODLAND MANAGEMENT AND PRODUCTIVITY—Continued

Soil name and map symbol	Woodland suitability group	Management concerns— Erosion hazard	Equipment limitation	Seedling mortality	Potential productivity— Important trees	Site index	Trees to plant
Hebert:							
19	2w5	Slight	Moderate	Slight	Green ash	---	Eastern cottonwood, American sycamore.
					Eastern cottonwood	90	
					Cherrybark oak	95	
					Nuttall oak	90	
					Sweetgum	90	
					Pecan	---	
					Water oak	90	
					American sycamore	---	
Henry:							
20	3w9	Slight	Severe	Severe	Sweetgum	80	Sweetgum, water oak, loblolly pine.
					Loblolly pine	80	
					Willow oak	80	
					Water oak	80	
McGehee:							
22, 23	2w5	Slight	Moderate	Slight	Green ash	75	Green ash, yellow-poplar, eastern cottonwood, cherrybark oak, Nuttall oak, water oak, willow oak, sweetgum.
					Eastern cottonwood	100	
					Cherrybark oak	95	
					Nuttall oak	90	
					Water oak	90	
					Willow oak	95	
					Sweetgum	95	
Oklared:							
24	2o4	Slight	Slight	Slight	Eastern cottonwood	90	Eastern cottonwood, American sycamore, pecan, black walnut, sweetgum.
					Pecan	75	
					Hackberry	75	
Ouachita:							
[1]25	1w8	Slight	Moderate	Slight	Loblolly pine	100	Loblolly pine, sweetgum, Nuttall oak, yellow-poplar, American sycamore, eastern cottonwood, cherrybark oak.
					Sweetgum	100	
					Eastern cottonwood	100	
Perry:							
26, 27	2w6	Slight	Severe	Moderate	Pecan	---	Eastern cottonwood, sweetgum, American sycamore.
					Eastern cottonwood	90	
					Green ash	72	
					Sweetgum	92	
					Water oak	90	
Pheba:							
28	2w8	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, shortleaf pine.
					Shortleaf pine	80	
					Sweetgum	90	
Portland:							
30, 31	2w6	Slight	Severe	Moderate	Green ash	80	Green ash, eastern cottonwood, sweetgum.
					Eastern cottonwood	90	
					Sweetgum	90	
Rilla:							
33, 34	2o4	Slight	Slight	Slight	Eastern cottonwood	100	Eastern cottonwood, American sycamore, cherrybark oak, sweetgum, pecan.
					Cherrybark oak	100	
					Nuttall oak	85	
					Sweetgum	100	
					Pecan	---	
					American sycamore	---	

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Woodland suitability group	Management concerns-- Erosion hazard	Equipment limitation	Seedling mortality	Potential productivity-- Important trees	Site index	Trees to plant
Roxana:							
35, 36	1o4	Slight	Slight	Slight	Eastern cottonwood	110	Eastern cottonwood, American sycamore, cherrybark oak, sweetgum.
					Sweetgum	110	
					Pecan	---	
					American sycamore	---	
					Water oak	---	
					Cherrybark oak	---	
Ruston:							
38	3o1	Slight	Slight	Slight	Loblolly pine	80	Loblolly pine, shortleaf pine.
					Shortleaf pine	75	
Sacul:							
39, 40	3c2	Moderate	Slight	Slight	Loblolly pine	80	Loblolly pine, shortleaf pine.
					Shortleaf pine	70	
Savannah:							
41, 42	3o7	Slight	Slight	Slight	Loblolly pine	80	Loblolly pine, shortleaf pine.
					Shortleaf pine	70	
					Southern red oak	75	
Sawyer:							
45, 46	2w8	Slight	Moderate	Slight	Loblolly pine	90	Loblolly pine, shortleaf pine.
					Southern red oak	80	
Smithdale:							
47, 48	3o1	Slight	Slight	Slight	Loblolly pine	80	Loblolly pine, shortleaf pine.
					Shortleaf pine	70	
Wabbaseka:							
[1]49, 50:							
Wabbaseka part	2w5	Slight	Moderate	Moderate	Green ash	80	Eastern cottonwood, American sycamore, sweetgum.
					Cherrybark oak	90	
					Water oak	90	
					Pecan	---	
					Sweetgum	90	
					Eastern cottonwood	110	
					American sycamore	---	
Latanier part	2w5	Slight	Moderate	Moderate	Green ash	80	Eastern cottonwood, American sycamore, sweetgum.
					Cherrybark oak	90	
					Water oak	90	
					Pecan	---	
					Sweetgum	90	
					Eastern cottonwood	110	
					American sycamore	---	
Yorktown:							
51	4w6	Slight	Severe	Severe	Baldcypress	70	Baldcypress, water tupelo.
					Water tupelo	---	
					Water hickory	---	

[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.--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"]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Amy:					
1, [1]3	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
[1]2	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.
Calloway:					
4, 5, [1]6	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, corrosive.	Moderate: wetness, shrink-swell.
Caspiana:					
7	Slight	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.
Coushatta:					
8, [1]10	Slight	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.	Moderate: low strength, shrink-swell.
[1]9	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Crevasse:					
11	Moderate: wetness.	Slight	Moderate: wetness.	Slight	Slight.
[1]12	Severe: floods, too sandy.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Desha:					
13	Severe: wetness, too clayey.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: low strength, shrink-swell.
14	Severe: floods, wetness, too clayey.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, shrink-swell, low strength.	Severe: floods, low strength, shrink-swell.
Grenada:					
15, 16, [1]17, [1]18	Moderate: wetness.	Moderate: wetness, low strength.	Moderate: wetness, low strength.	Moderate: corrosive, wetness, low strength.	Moderate: low strength, wetness.
Hebert:					
19	Severe: wetness.	Moderate: wetness, shrink-swell, low strength.	Severe: wetness.	Moderate: wetness, shrink-swell, low strength.	Moderate: wetness, shrink-swell, low strength.
Henry:					
20, [1]21	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, low strength.	Severe: wetness, low strength.

See footnote at end of table.

TABLE 9.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
McGehee:					
22	Severe: wetness, too clayey.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: wetness, low strength, shrink-swell.	Severe: low strength, shrink-swell.
23	Severe: floods, wetness, too clayey.	Severe: floods, low strength, shrink-swell.	Severe: floods, low strength, shrink-swell.	Severe: floods, low strength, shrink-swell.	Severe:, floods, low strength, shrink-swell.
Oklared:					
24	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: low strength, floods.
Ouachita:					
[1]25	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Perry:					
26	Severe: wetness, too clayey.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.	Severe: wetness, shrink-swell, low strength.
27	Severe: wetness, too clayey, floods.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: wetness, shrink-swell, floods.
Pheba:					
28, [1]29	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, corrosive.	Moderate: low strength, wetness.
Portland:					
30, [1]32	Severe: too clayey, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell.
31	Severe: floods, too clayey, wetness.	Severe: floods, low strength, shrink-swell.	Severe: floods, low strength, shrink-swell.	Severe: floods, low strength, shrink-swell.	Severe: floods, low strength, shrink-swell.
Rilla:					
33, 34	Slight	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: shrink-swell, low strength.	Moderate: low strength, shrink-swell.
Roxana:					
35, [1]37	Slight	Slight	Moderate: wetness.	Slight	Moderate: low strength.
36	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Ruston:					
38	Slight	Slight	Slight	Slight	Moderate: low strength.
Sacul:					
39, 40	Severe: too clayey.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell.

See footnote at end of table.

TABLE 9.—BUILDING SITE DEVELOPMENT—Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets
Savannah:					
41, [1]43	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, corrosive.	Moderate: wetness.	Moderate: low strength.
42, [1]44	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope, corrosive.	Moderate: low strength.
Sawyer:					
45, 46	Severe: too clayey.	Severe: low strength, shrink-swell.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell, wetness.	Severe: low strength, shrink-swell.
Smithdale:					
47	Slight	Slight	Slight	Moderate: slope.	Slight.
48	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.
Wabbaseka:					
[1]49:					
Wabbaseka part	Moderate: wetness.	Slight	Moderate: wetness.	Moderate: wetness.	Moderate: shrink-swell.
Latanier part	Severe: wetness, too clayey.	Severe: shrink-swell, wetness, low strength.	Severe: shrink-swell, wetness, low strength.	Severe: shrink-swell, wetness, low strength.	Severe: shrink-swell, low strength.
[1]50:					
Wabbaseka part	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Latanier part	Severe: floods, wetness, too clayey.	Severe: floods, shrink-swell, wetness.	Severe: floods, shrink-swell, wetness.	Severe: floods, shrink-swell, wetness.	Severe: shrink-swell, low strength.
Yorktown:					
51	Severe: floods, wetness, too clayey.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.

[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.—SANITARY FACILITIES

["Percs slowly" 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," and other terms used to rate soils]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Amy:					
1, [1]3	Severe: percs slowly, wetness.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
[1]2	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Calloway:					
4	Severe: percs slowly, wetness.	Slight	Moderate: wetness, percs slowly.	Moderate: wetness.	Good.
5, [1]6	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: wetness, percs slowly.	Moderate: wetness.	Good.
Caspiana:					
7	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
Coushatta:					
8, [1]10	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
[1]9	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Fair: too clayey.
Crevasse:					
11	Slight	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Fair: too sandy.
[1]12	Severe: floods.	Severe: floods, seepage.	Severe: floods, seepage, too sandy.	Severe: floods, seepage.	Poor: seepage, too sandy.
Desha:					
13	Severe: percs slowly, wetness.	Slight	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey.
14	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, too clayey, wetness.	Severe: floods, wetness.	Poor: too clayey.
Grenada:					
15, 16, [1]17, [1]18	Severe: percs slowly.	Moderate: slope.	Moderate: wetness.	Moderate: wetness.	Good.
Hebert:					
19	Severe: percs slowly, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey.
Henry:					
20, [1]21	Severe: percs slowly, wetness.	Slight	Severe: percs slowly, wetness.	Severe: wetness.	Poor: wetness.

See footnote at end of table.

TABLE 10.--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
McGehee:					
22	Severe: wetness, percs slowly.	Slight	Severe: too clayey.	Severe: wetness.	Poor: too clayey.
23	Severe: floods, wetness, percs slowly.	Severe: floods.	Severe: floods, too clayey.	Severe: floods, wetness.	Poor: too clayey.
Oklared:					
24	Severe: wetness, floods.	Severe: wetness, seepage, floods.	Severe: seepage, floods.	Severe: floods, seepage.	Good.
Ouachita:					
[1]25	Severe: floods, percs slowly.	Severe: floods.	Severe: floods.	Severe: floods.	Fair: too clayey.
Perry:					
26	Severe: percs slowly, wetness.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: wetness, too clayey.
27	Severe: percs slowly, wetness, floods.	Severe: floods.	Severe: wetness, too clayey, floods.	Severe: wetness, floods.	Poor: wetness, too clayey.
Pheba:					
28, [1]29	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Fair: thin layer.
Portland:					
30, [1]32	Severe: percs slowly, wetness.	Slight	Severe: too clayey, wetness.	Severe: wetness.	Poor: too clayey.
31	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, too clayey, wetness.	Severe: floods, wetness.	Poor: too clayey.
Rilla:					
33, 34	Moderate: percs slowly, wetness.	Moderate: seepage.	Moderate: too clayey.	Slight	Fair: too clayey.
Roxana:					
35, [1]37	Slight	Moderate: seepage.	Slight	Slight	Good.
36	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Good.
Ruston:					
38	Slight	Moderate: seepage, slope.	Slight	Slight	Good.
Sacul:					
39, 40	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Poor: too clayey.
Savannah:					
41, 42, [1]43, [1]44	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.

See footnote at end of table.

TABLE 10.—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
Sawyer: 45, 46	Severe: percs slowly.	Moderate: slope.	Severe: too clayey.	Slight	Fair: too clayey, thin layer.
Smithdale: 47	Slight	Severe: seepage, slope.	Slight	Slight	Good.
48	Moderate: slope.	Severe: seepage, slope.	Slight	Moderate: slope.	Fair: slope.
Wabbaseka: [1]49: Wabbaseka part	Slight	Severe: seepage.	Moderate: wetness.	Slight	Poor: too clayey.
Latanier part	Severe: percs slowly, wetness.	Slight	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey.
[1]50: Wabbaseka part	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Poor: too clayey.
Latanier part	Severe: floods, percs slowly, wetness.	Severe: floods.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey.
Yorktown: 51	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: too clayey, 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.--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," and "poor"]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Amy: 1, [1]2, [1]3	Poor: wetness.	Unsuited	Unsuited	Poor: wetness.
Calloway: 4, 5, [1]6	Fair: wetness, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Caspiana: 7	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Coushatta: 8, [1]10	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
[1]9	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Crevasse: 11, [1]12	Good	Good	Unsuited	Poor: too sandy.
Desha: 13, 14	Poor: low strength, shrink-swell.	Unsuited	Unsuited	Poor: too clayey.
Grenada: 15, 16, [1]17, [1]18	Fair: wetness, low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Hebert: 19	Fair: low strength, shrink-swell, wetness.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Henry: 20, [1]21	Poor: wetness.	Unsuited	Unsuited	Poor: wetness.
McGehee: 22, 23	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Oklared: 24	Fair: low strength.	Unsuited	Unsuited	Good.
Ouachita: [1]25	Fair: low strength.	Unsuited	Unsuited	Good.
Perry: 26, 27	Poor: wetness, low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: wetness, too clayey.

See footnote at end of table.

TABLE 11.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Pheba:				
28, [1]29	Fair: low strength, wetness.	Unsuited	Unsuited	Good.
Portland:				
30, 31, [1]32	Poor: low strength, shrink-swell.	Unsuited	Unsuited	Poor: too clayey.
Rilla:				
33, 34	Fair: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Roxana:				
35, 36, [1]37	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Ruston:				
38	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: thin layer.
Sacul:				
39, 40	Poor: low strength, shrink-swell.	Unsuited	Unsuited	Poor: thin layer, too clayey.
Savannah:				
41, 42, [1]43, [1]44	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Good.
Sawyer:				
45, 46	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Fair: too clayey.
Smithdale:				
47	Good	Unsuited: excess fines.	Unsuited: excess fines.	Good.
48	Good	Unsuited: excess fines.	Unsuited: excess fines.	Fair: slope.
Wabbaseka:				
[1]49:				
Wabbaseka part	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Latanier part	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
[1]50:				
Wabbaseka part	Fair: low strength.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Latanier part	Poor: low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey.
Yorktown:				
51	Poor: wetness, low strength, shrink-swell.	Unsuited: excess fines.	Unsuited: excess fines.	Poor: too clayey, 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.--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"]

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
Amy:							
1, [1]3	Slight	Moderate: compressible, low strength, piping.	Severe: no water.	Percs slowly, wetness.	Slow intake, percs slowly, wetness.	Percs slowly, wetness.	Percs slowly, wetness.
[1]2	Slight	Moderate: compressible, low strength, piping.	Severe: no water.	Floods, percs slowly, wetness.	Slow intake, percs slowly, wetness.	Percs slowly, wetness.	Percs slowly, wetness.
Calloway:							
4, 5, [1]6	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.
Caspiana:							
7	Moderate: seepage.	Slight	Severe: no water.	Favorable	Favorable	Not needed	Favorable.
Coushatta:							
8, [1]10	Moderate: seepage.	Slight	Severe: no water.	Favorable	Favorable	Not needed	Favorable.
[1]9	Moderate: seepage.	Slight	Severe: no water.	Floods	Favorable	Not needed	Favorable.
Crevasse:							
11, [1]12	Severe: seepage.	Severe: compressible, seepage, piping.	Severe: deep to water.	Floods	Fast intake, seepage.	Piping	Erodes easily, droughty.
Desha:							
13	Slight	Severe: unstable fill, compressible, low strength.	Severe: no water.	Percs slowly, wetness.	Slow intake	Wetness, percs slowly.	Wetness, percs slowly.
14	Slight	Severe: unstable fill, compressible, low strength.	Severe: no water.	Floods, wetness, percs slowly.	Floods, slow intake.	Wetness, percs slowly.	Wetness, percs slowly.
Grenada:							
15, 16, [1]17, [1]18	Slight	Moderate: piping, low strength.	Severe: deep to water.	Not needed	Slow intake, erodes easily.	Erodes easily, slope.	Erodes easily, slope.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Hebert: 19	Moderate: seepage.	Slight	Severe: no water.	Favorable	Favorable	Not needed	Favorable.
Henry: 20, [1]21	Slight	Moderate: piping.	Severe: no water.	Percs slowly, poor outlets.	Rooting depth	Not needed	Not needed.
McGehee: 22, 23	Slight	Moderate: unstable fill, compressible.	Severe: no water.	Wetness, percs slowly.	Wetness	Wetness, percs slowly.	Wetness, percs slowly.
Oklared: 24	Severe: seepage.	Moderate: unstable fill, piping.	Moderate: deep to water.	Not needed	Floods	Not needed	Not needed.
Ouachita: [1]25	Moderate: seepage.	Moderate: compressible, piping.	Severe: no water.	Not needed	Floods	Not needed	Not needed.
Perry: 26	Slight	Moderate: shrink-swell, low strength, compressible.	Severe: no water.	Percs slowly	Slow intake, wetness, percs slowly.	Not needed	Wetness.
27	Slight	Moderate: shrink-swell, low strength, compressible.	Severe: no water.	Floods, percs slowly.	Floods, slow intake, wetness.	Not needed	Wetness.
Pheba: 28, [1]29	Moderate: seepage.	Moderate: compressible, piping.	Severe: deep to water.	Wetness, percs slowly.	Slow intake, wetness.	Not needed	Favorable.
Portland: 30, 31, [1]32	Slight	Moderate: compressible, low strength, unstable fill.	Severe: no water.	Percs slowly, wetness.	Slow intake, wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Rilla: 33	Moderate: seepage.	Slight	Severe: no water.	Favorable	Favorable	Not needed	Favorable.
34	Moderate: seepage.	Slight	Severe: no water.	Complex slope	Complex slope	Not needed	Favorable.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Roxana:							
35, [1]37	Moderate: seepage.	Moderate: erodes easily, seepage, piping.	Severe: no water.	Not needed	Favorable	Not needed	Erodes easily.
36	Moderate: seepage.	Moderate: erodes easily, seepage, piping.	Severe: no water.	Not needed	Floods	Not needed	Erodes easily.
Ruston:							
38	Moderate: seepage.	Slight	Severe: no water.	Not needed	Slope	Favorable	Favorable.
Sacul:							
39, 40	Slight	Moderate: compressible, low strength.	Severe: no water.	Not needed	Erodes easily, slow intake, slope.	Slope, erodes easily, percs slowly.	Erodes easily, percs slowly, slope.
Savannah:							
41, 42, [1]43, [1]44	Moderate: seepage.	Moderate: low strength, piping.	Severe: deep to water.	Percs slowly, slope.	Percs slowly	Percs slowly, erodes easily.	Percs slowly.
Sawyer:							
45, 46	Slight	Moderate: low strength, compressible.	Severe: no water.	Not needed	Slow intake, slope.	Favorable	Favorable.
Smithdale:							
47	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Fast intake, seepage, complex slope.	Favorable	Favorable.
48	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Fast intake, seepage, complex slope.	Slope, erodes easily.	Slope, erodes easily.
Wabbaseka:							
[1]49:							
Wabbaseka part	Severe: seepage.	Moderate: erodes easily.	Severe: deep to water.	Not needed	Complex slope, slow intake.	Not needed	Favorable.
Latanier part	Slight	Moderate: shrink-swell, low strength, compressible.	Severe: no water.	Percs slowly	Slow intake	Not needed	Favorable.
[1]50:							
Wabbaseka part	Severe: seepage.	Moderate: erodes easily.	Severe: deep to water.	Wetness, floods.	Wetness, floods.	Not needed	Wetness.

See footnote at end of table.

TABLE 12.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Wabbaseka: Latanier part	Slight	Moderate: shrink-swell, low strength, compressible.	Severe: no water.	Floods	Floods	Not needed	Favorable.
Yorktown: 51	Slight	Moderate: shrink-swell, low strength.	Severe: deep to water.	Floods, wetness.	Floods, slow intake, wetness.	Not needed	Not needed.

[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.--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
Amy:				
1, [1]3	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
[1]2	Severe: floods, wetness.	Severe: wetness.	Severe: floods, wetness.	Severe: wetness.
Calloway:				
4, 5, [1]6	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Caspiana:				
7	Slight	Slight	Slight	Slight.
Coushatta:				
8, [1]10	Slight	Slight	Slight	Slight.
[1]9	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Crevasse:				
11, [1]12	Severe: floods, too sandy.	Severe: too sandy.	Severe: floods, too sandy.	Severe: floods, too sandy.
Desha:				
13, 14	Severe: wetness, percs slowly, too clayey.	Severe: too clayey.	Severe: wetness, percs slowly, too clayey.	Severe: too clayey.
Grenada:				
15, 16, [1]17, [1]18	Moderate: percs slowly, wetness.	Moderate: wetness.	Moderate: percs slowly, wetness.	Slight.
Hebert:				
19	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Henry:				
20, [1]21	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
McGehee:				
22, 23	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.
Oklared:				
24	Severe: floods.	Moderate: floods.	Moderate: floods.	Slight.
Ouachita:				
[1]25	Severe: floods.	Moderate: floods.	Severe: floods.	Moderate: floods.
Perry:				
26	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.	Severe: wetness, percs slowly, too clayey.	Severe: wetness, too clayey.

See footnote at end of table.

TABLE 13.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Perry:				
27	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.	Severe: floods, wetness, too clayey.
Pheba:				
28, [1]29	Moderate: percs slowly.	Moderate: wetness.	Moderate: wetness, percs slowly.	Moderate: wetness.
Portland:				
30, [1]32	Severe: percs slowly, too clayey, wetness.	Severe: too clayey.	Severe: percs slowly, too clayey, wetness.	Severe: too clayey.
31	Severe: percs slowly, too clayey, wetness.	Severe: floods, too clayey.	Severe: percs slowly, too clayey. wetness.	Severe: too clayey.
Rilla:				
33	Slight	Slight	Slight	Slight.
34	Slight	Slight	Moderate: slope.	Slight.
Roxana:				
35, [1]37	Slight	Slight	Slight	Slight.
36	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Ruston:				
38	Slight	Slight	Moderate: slope.	Slight.
Sacul:				
39, 40	Moderate: percs slowly.	Slight	Moderate: slope, percs slowly.	Slight.
Savannah:				
41, [1]43	Slight	Slight	Moderate: slope.	Slight.
42, [1]44	Slight	Slight	Severe: slope.	Slight.
Sawyer:				
45, 46	Moderate: percs slowly.	Slight	Moderate: slope, percs slowly.	Slight.
Smithdale:				
47	Slight	Slight	Severe: slope.	Slight.
48	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Wabbaseka:				
[1]49:				
Wabbaseka part	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.
Latanier part	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.	Severe: too clayey.

See footnote at end of table.

TABLE 13.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
Wabbaseka:				
[1]50:				
Wabbaseka part	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Latanier part	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.
Yorktown:				
51	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 14.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates the soil was not rated. Soils mapped in an urban complex were not rated in this table]

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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Amy:												
1	Poor	Fair	Good	Good	Fair	---	Good	Good	Fair	Good	Good	---
[1]2	Poor	Fair	Good	Good	Fair	---	Good	Poor	Fair	Good	Fair	---
Calloway:												
4	Fair	Good	Good	Good	Good	---	Fair	Good	Good	Good	Fair	---
5	Fair	Good	Good	Good	Good	---	Poor	Fair	Good	Good	Poor	---
Caspiana:												
7	Good	Good	Good	Good	---	---	Poor	Poor	Good	Good	Poor	---
Coushatta:												
8	Good	Good	Good	Good	---	---	Poor	Very poor.	Good	Good	Poor	---
[1]9	Good	Good	Good	Good	---	---	Poor	Very poor.	Good	Good	Poor	---
Crevasse:												
11, [1]12	Poor	Fair	Fair	Poor	Poor	---	Poor	Very poor.	Fair	Poor	Very poor.	---
Desha:												
13	Good	Good	Good	Good	Poor	---	Good	Good	Good	Good	Good	---
14	Fair	Fair	Fair	Good	Poor	---	Fair	Fair	Good	Good	Fair	---
Grenada:												
15, 16	Good	Good	Good	Good	Good	---	Poor	Fair	Good	Good	Very poor.	---
Hebert:												
19	Good	Good	Good	Good	---	---	Fair	Fair	Good	Good	Fair	---
Henry:												
20	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
McGehee:												
22, 23	Good	Good	Good	Good	Fair	---	Fair	Fair	Good	Good	Fair	---
Oklared:												
24	Good	Good	Good	Good	Good	---	Poor	Very poor	Good	Good	Very poor.	---
Ouachita:												
[1]25	Poor	Fair	Fair	Good	Poor	---	Good	Fair	Fair	Good	Fair	---
Perry:												
26	Fair	Fair	Fair	Good	---	---	Good	Good	Fair	Good	Good	---
27	Poor	Fair	Fair	Fair	---	---	Fair	Good	Fair	Fair	Fair	---
Pheba:												
28	Fair	Good	Good	Good	---	---	Fair	Fair	Good	Good	Fair	---
Portland:												
30, 31	Fair	Fair	Fair	Good	---	---	Good	Good	Fair	Good	Good	---
Rilla:												
33, 34	Good	Good	Good	Good	---	---	Poor	Very poor.	Good	Good	Very poor.	---

See footnote at end of table.

TABLE 14.--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	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife	Rangeland wildlife
Roxana:												
35, 36	Good	Good	Good	Good	---	---	Poor	Very poor.	Good	Good	Very poor.	---
Ruston:												
38	Good	Good	Good	---	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
Sacul:												
39	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
40	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
Savannah:												
41	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
42	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
Sawyer:												
45	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
46	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
Smithdale:												
47, 48	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
Wabbaseka:												
[1]49:												
Wabbaseka part	Fair	Fair	Fair	Good	---	---	Poor	Poor	Fair	Good	Poor	---
Latanier part	Fair	Fair	Fair	Good	---	---	Good	Good	Fair	Good	Good	---
[1]50:												
Wabbaseka part	Fair	Fair	Fair	Good	---	---	Poor	Fair	Fair	Good	Poor	---
Latanier part	Fair	Fair	Fair	Good	---	---	Good	Good	Fair	Good	Good	---
Yorktown:												
51	Very poor.	Very poor.	Very poor.	Poor	Poor	---	Poor	Good	Very poor.	Very poor.	Fair	---

[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.--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: Unified	Classification: AASHTO	Fragments > 3 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct					Pct	
Amy: 1, [1]2, [1]3	0-24	Silt loam	ML, CL-ML	A-4	0	100	95-100	90-100	70-95	<30	NP-5
	24-40	Silt loam, silty clay loam.	CL	A-4, A-6	0	100	95-100	95-100	85-95	25-40	8-20
	40-72	Fine sandy loam, silt loam, silty clay loam.	ML, SM, CL-ML, CL	A-4, A-6	0	100	95-100	80-95	40-90	<35	NP-20
Calloway: 4, 5, [1]6	0-21	Silt loam	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
	21-75	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-95	30-40	12-20
Caspiana: 7	0-5	Silt loam	CL-ML, ML	A-4	0	100	100	100	85-100	<27	NP-7
	5-36	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	100	85-100	32-43	11-20
	36-68	Silt loam, very fine sandy loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	80-100	23-37	4-15
Coushatta: 8, [1]9, [1]10	0-15	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	70-100	<30	NP-10
	15-30	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-100	28-40	12-20
	30-62	Silt loam, silty clay loam, very fine sandy loam.	ML, CL, CL-ML	A-4, A-6	0	100	100	100	70-100	<40	NP-20
Crevasse: 11, [1]12	0-9	Loamy fine sand	SM	A-2	0	100	95-100	60-100	15-30	---	NP
	9-65	Sand, loamy sand	SP-SM, SM	A-2, A-3	0	100	95-100	50-100	5-20	---	NP
Desha: 13, 14	0-5	Clay	CH	A-7	0	100	100	95-100	95-100	55-80	35-60
	5-65	Silty clay, clay	CH	A-7	0	100	100	95-100	95-100	60-85	40-65
Grenada: 15, 16, [1]17, [1]18	0-4	Silt loam	ML	A-4	0	100	100	100	90-100	27-31	4-6
	4-29	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-100	35-40	13-15
	29-72	Silt loam	CL-ML, CL	A-4	0	100	100	100	90-100	20-30	5-10
Hebert: 19	0-7	Silt loam	ML, CL-ML	A-4	0	100	100	100	65-100	<27	NP-7
	7-34	Loam, silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	100	85-100	31-45	11-22
	34-66	Stratified very fine sandy loam to silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	90-100	60-100	22-40	3-18

See footnote at end of table.

TABLE 15.—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	
Henry:											
20, [1]21	0-28	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	<34	NP-9
	28-52	Silt loam, silty clay loam.	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	26-40	3-15
	52-72	Silty clay loam, silt loam.	ML, CL	A-4, A-6, A-7	0	100	100	95-100	90-100	30-42	9-16
McGehee:											
22, 23	0-7	Silt loam	ML, CL, CL-ML	A-4	0	100	100	90-100	70-90	<30	NP-10
	7-14	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	85-100	35-45	15-25
	14-30	Silty clay loam	CL	A-7, A-6	0	100	100	95-100	85-100	35-45	15-25
	30-60	Silty clay, clay	CH	A-7	0	100	100	95-100	90-100	55-75	30-45
Oklared:											
24	0-32	Fine sandy loam, loam.	SM, SC, ML, CL	A-4	0	100	98-100	94-100	36-60	<30	NP-10
	32-70	Fine sandy loam, very fine sandy loam, loamy fine sand.	SM, SC, ML, CL	A-2, A-4	0	100	98-100	90-100	15-60	<30	NP-10
Ouachita:											
[1]25	0-33	Silt loam	ML, CL, CL-ML	A-4, A-6	0	100	100	85-100	75-95	<30	NP-12
	33-56	Silt loam, loam, silty clay loam.	CL, CL-ML	A-4, A-6	0	100	100	85-100	80-100	25-40	5-20
	56-76	Fine sandy loam, silt loam, loamy fine sand.	SM, ML, CL-ML, SM-SC	A-4, A-2	0	100	100	50-95	20-75	<30	NP-5
Perry:											
26, 27	0-34	Clay	CH, CL	A-7	0	100	100	100	95-100	45-75	22-45
	34-72	Clay	CH, CL	A-7	0	90-100	85-100	75-100	70-100	45-80	22-50
Pheba:											
28, [1]29	0-29	Silt loam	ML, CL, CL-ML	A-4	0	100	100	85-100	55-90	<25	NP-8
	29-72	Silt loam, loam, silty clay loam.	CL	A-6, A-4	0	100	100	90-100	75-95	30-40	11-16
Portland:											
30, 31, [1]32	0-16	Clay	CH	A-7	0	100	100	95-100	95-100	55-80	35-55
	16-30	Clay	CH	A-7	0	100	100	95-100	95-100	60-90	40-60
	30-72	Clay	CH	A-7	0	100	98-100	95 100	95-100	60-90	40-60
Rilla:											
33, 34	0-9	Silt loam	ML, CL-ML, CL	A-4	0	100	100	100	90-100	<31	NP-10
	9-15	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	0	100	100	100	90-100	28-40	8-17
	15-42	Loam, silty clay loam, silt loam.	CL-ML, CL, ML	A-4, A-6, A-7	0	100	100	100	75-100	23-45	4-21

See footnote at end of table.

TABLE 15.--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	
Roxana:											
35, 36, [1]37	0-10	Silt loam	ML, CL-ML	A-4	0	100	100	85-100	50-75	<27	NP-7
	10-72	Silt loam, very fine sandy loam, silty clay loam.	ML, CL-ML	A-4	0	100	100	85-100	50-85	<27	NP-7
Ruston:											
38	0-9	Fine sandy loam	SM, ML	A-4, A-2	0	85-100	78-100	65-100	30-75	<20	NP-3
	9-46	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
	46-55	Fine sandy loam, sandy loam.	SM, ML, CL-ML, SM-SC	A-4, A-2	0	85-100	78-100	65-100	30-75	<27	NP-7
	55-80	Sandy clay loam, loam, clay loam.	SC, CL	A-6	0	85-100	78-100	70-100	36-75	30-40	11-18
Sacul:											
39, 40	0-7	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	80-100	40-65	<20	NP-3
	7-36	Clay, silty clay	CH, CL	A-7	0	95-100	95-100	95-100	80-95	45-70	20-40
	36-72	Silty clay loam, silt loam.	CL, CH	A-6, A-7	0	95-100	95-100	95-100	80-95	30-55	12-32
Savannah:											
41, 42, [1]43, [1]44	0-9	Fine sandy loam	SM, ML CL-ML	A-2 A-4	0	100	100	60-85	30-55	<25	NP-4
	9-24	Sandy clay loam, clay loam, loam.	CL, SC, CL-ML	A-4, A-6	0	100	100	80-100	40-80	23-40	7-19
	24-72	Loam, sandy loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6, A-7	0	100	100	80-100	40-80	23-43	7-19
Sawyer:											
45, 46	0-12	Silt loam	ML, CL-ML	A-4	0	100	95-100	85-95	60-90	<25	NP-7
	12-36	Silty clay loam, loam, silt loam.	CL	A-6, A-4	0	100	95-100	85-95	70-90	30-40	10-20
	36-80	Silty clay, clay	CH, CL	A-7	0	100	95-100	90-100	80-90	45-60	20-35
Smithdale:											
47, 48	0-13	Fine sandy loam	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	13-34	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	34-80	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
Wabbaseka:											
[1]49:											
Wabbaseka part	0-18	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	44-75	22-45
	18-42	Loam, silt loam, fine sandy loam.	CL-ML, ML, CL, SC	A-2, A-4, A-6	0	100	95-100	85-95	30-90	<30	NP-11
	42-80	Loamy fine sand, loamy sand.	SM, SM-SC SC	A-2	0	100	95-100	50-75	15-30	<40	NP-7
Latanier part	0-21	Clay, silty clay	CH	A-7-6	0	100	100	100	95-100	51-75	26-45
	21-60	Loam, silty clay loam, very fine sandy loam.	CL-ML, CL, ML	A-4, A-6	0	100	100	100	80-100	<40	NP-17

See footnote at end of table.

TABLE 15.--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	
Wabbaseka:											
[1]50:											
Wabbaseka part	0-18	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	44-75	22-45
	18-42	Loam, silt loam, fine sandy loam.	CL-ML, ML, CL, SC	A-2, A-4, A-6	0	100	95-100	85-95	30-90	<30	NP-11
	42-80	Loamy fine sand, loamy sand.	SM, SM-SC SC	A-2	0	100	95-100	50-75	15-30	<40	NP-7
Latanier part	0-21	Clay, silty clay	CH	A-7	0	100	100	100	95-100	51-75	26-45
	21-60	Loam, silty clay loam, very fine sandy loam.	CL-ML, CL, ML	A-4, A-6	0	100	100	100	80-100	<40	NP-17
Yorktown:											
51	0-8	Silty clay	MH, CH, OH	A-7	0	100	100	100	95-100	55-75	22-45
	8-42	Clay	CH	A-7	0	100	100	100	95-100	60-80	32-50
	42-60	Clay	CH	A-7	0	100	100	95-100	90-100	60-80	32-50

[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 AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than. The erosion tolerance factor (T) is for the entire profile. Absence of an entry means data were not available or were not estimated]

Soil name and map symbol	Depth	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete	Erosion factors: K	Erosion factors: T	Wind erodi- bility group
	In	In/hr	In/in	pH	Mmhos/cm						
Amy:											
1, [1]2, [1]3	0-24	0.6-2.0	0.13-0.24	4.5-5.5	<2	Low	High	Moderate	0.43	5	---
	24-40	0.06-0.2	0.16-0.24	4.5-5.5	<2	Low	High	Moderate	0.43		
	40-72	0.6-2.0	0.11-0.24	4.5-5.5	<2	Low	High	Moderate	---		
Calloway:											
4, 5, [1]6	0-21	0.6-2.0	0.20-0.23	4.5-6.0	<2	Low	High	Moderate	0.49	3	---
	21-75	0.06-0.2	0.09-0.12	4.5-6.0	<2	Moderate	High	Moderate	0.43		
Caspiana:											
7	0-5	0.6-2.0	0.21-0.23	5.6-8.4	<2	Low	Low	Low	0.37	5	---
	5-36	0.6-2.0	0.20-0.22	5.6-8.4	<2	Moderate	Moderate	Low	0.32		
	36-68	0.6-2.0	0.15-0.23	6.1-8.4	<2	Low	Moderate	Low	0.32		
Coushatta:											
8, [1]9, [1]10	0-15	0.6-2.0	0.18-0.23	5.6-7.8	<2	Low	Moderate	Low	0.37	5	---
	15-30	0.6-2.0	0.18-0.23	6.1-8.4	<2	Moderate	Moderate	Low	0.32		
	30-62	0.6-2.0	0.14-0.23	6.6-8.4	<2	Low	Moderate	Low	0.37		
Crevasse:											
11, [1]12	0-9	6.0-20	0.08-0.08	5.6-8.4	<2	Low	Low	Moderate	0.15	5	---
	9-65	6.0-20	0.02-0.10	5.6-8.4	<2	Low	Low	Moderate	0.15		
Desha:											
13, 14	0-5	<0.2	0.12-0.18	6.1-7.8	<2	High	High	Low	0.32	5	---
	5-65	<0.06	0.12-0.18	6.1-7.8	<2	High	High	Low	0.28		
Grenada:											
15, 16, [1]17, [1]18	0-4	0.6-2.0	0.20-0.23	4.5-6.0	<2	Low	Moderate	Moderate	0.43	3	---
	4-29	0.6-2.0	0.20-0.23	4.5-6.0	<2	Low	Moderate	Moderate	0.43		
	29-72	0.6-2.0	0.20-0.23	4.5-6.0	<2	Low	Moderate	Moderate	0.37		
Hebert:											
19	0-7	0.6-2.0	0.21-0.23	5.1-6.0	<2	Low	High	Moderate	0.37	4	---
	7-34	0.2-0.6	0.18-0.22	4.5-6.5	<2	Moderate	High	Moderate	0.32		
	34-66	0.6-2.0	0.13-0.22	5.1-7.8	<2	Low	High	Moderate	0.37		
Henry:											
20, [1]21	0-28	0.6-2.0	0.20-0.23	4.5-5.5	<2	Low	High	Moderate	0.43	3	---
	28-52	0.6-2.0	0.20-0.23	4.5-5.5	<2	Low	High	Moderate	0.43		
	52-72	0.06-0.2	0.14-0.17	4.5-5.5	<2	Low	High	Moderate	0.49		
McGehee:											
22, 23	0-7	0.6-2.0	0.13-0.24	5.1-6.0	<2	Low	High	Moderate	0.43	5	---
	7-14	0.2-0.6	0.16-0.24	5.1-6.0	<2	Moderate	High	Moderate	0.37		
	14-30	0.2-0.6	0.16-0.24	5.1-6.0	<2	High	High	Moderate	0.37		
	30-60	0.06-0.2	0.14-0.20	5.1-8.4	<2	High	High	Moderate	0.32		
Oklared:											
24	0-32	2.0-6.0	0.12-0.16	7.4-8.4	<2	Low	Low	Low	0.32	5	---
	32-70	2.0-20	0.07-0.20	7.4-8.4	<2	Low	Low	Low	0.32		
Ouachita:											
[1]25	0-33	0.6-2.0	0.15-0.24	4.5-6.0	<2	Low	Low	Moderate	0.37	5	---
	33-56	0.2-0.6	0.15-0.24	4.5-5.5	<2	Low	Moderate	Moderate	0.32		
	56-76	0.6-6.0	0.07-0.24	4.5-5.5	<2	Low	Low	Moderate	0.24		
Perry:											
26, 27	0-34	<0.06	0.12-0.20	4.5-6.0	<2	Very high	High	Moderate	0.24	5	---
	34-72	<0.06	0.12-0.20	6.1-8.4	<2	Very high	High	Low	0.28		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Risk of corrosion		Erosion factors		Wind erodi-bility group
							Uncoated steel	Concrete	K	T	
	In	In/hr	In/in	pH	Mmhos/cm						
Pheba:											
28, [1]29	0-29	0.6-2.0	0.16-0.22	4.0-5.5	<2	Low	High	High	0.49	3	---
	29-72	0.2-0.6	0.05-0.10	4.0-5.5	<2	Low	High	High	0.43		
Portland:											
30, 31, [1]32	0-16	<0.06	0.12-0.18	4.5-5.5	<2	High	High	Moderate	0.32	5	---
	16-30	<0.06	0.12-0.18	4.5-5.5	<2	High	High	Moderate	0.32		
	30-72	<0.06	0.12-0.18	6.1-8.4	<2	High	High	Low	0.32		
Rilla:											
33, 34	0-9	0.6-2.0	0.21-0.23	4.5-7.3	<2	Low	Low	Moderate	0.37	5	---
	9-15	0.6-2.0	0.20-0.22	3.6-5.5	<2	Moderate	Moderate	High	0.32		
	15-42	0.6-2.0	0.18-0.22	4.5-8.4	<2	Low	Moderate	Moderate	0.32		
Roxana:											
35, 36, [1]37	0-10	0.6-2.0	0.16-0.21	6.1-8.4	<2	Low	Low	Low	0.37	5	---
	10-72	0.6-2.0	0.10-0.19	6.6-8.4	<2	Low	Low	Low	0.37		
Ruston:											
38	0-9	0.6-2.0	0.09-0.16	5.1-6.5	<2	Low	Low	Moderate	0.32	5	---
	9-46	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low	Moderate	Moderate	0.28		
	46-55	0.6-2.0	0.12-0.15	4.5-6.0	<2	Low	Low	Moderate	0.32		
	55-80	0.6-2.0	0.12-0.17	4.5-6.0	<2	Low	Moderate	Moderate	0.28		
Sacul:											
39, 40	0-7	0.6-2.0	0.10-0.20	4.5-5.5	<2	Low	Low	Moderate	0.32	3	---
	7-36	0.06-0.2	0.12-0.18	4.5-5.5	<2	High	High	Moderate	0.37		
	36-72	0.2-0.6	0.16-0.24	4.5-5.5	<2	Moderate	High	Moderate	0.37		
Savannah:											
41, 42, [1]43, [1]44	0-9	0.6-2.0	0.10-0.15	4.0-5.5	<2	Low	Moderate	High	0.37	3	---
	9-24	0.6-2.0	0.13-0.20	4.0-5.5	<2	Low	Moderate	High	0.28		
	24-72	0.2-0.6	0.05-0.10	4.0-5.5	<2	Low	Moderate	High	0.28		
Sawyer:											
45, 46	0-12	0.6-2.0	0.15-0.24	4.5-5.5	<2	Low	Moderate	High	0.43	3	---
	12-36	0.2-0.6	0.15-0.24	4.5-5.5	<2	Moderate	Moderate	High	0.37		
	36-80	0.06-0.2	0.12-0.18	4.5-5.5	<2	High	High	High	0.32		
Smithdale:											
47, 48	0-13	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low	Low	Moderate	0.28	5	---
	13-34	0.6-2.0	0.15-0.17	4.5-5.5	<2	Low	Low	Moderate	0.24		
	34-80	2.0-6.0	0.14-0.16	4.5-5.5	<2	Low	Low	Moderate	0.24		
Wabbaseka:											
[1]49:											
Wabbaseka part	0-18	<0.06	0.12-0.18	6.6-7.8	<2	High	Moderate	Low	0.37	5	---
	18-42	2.0-6.0	0.11-0.20	6.1-8.4	<2	Low	Low	Low	0.37		
	42-80	6.0-20	0.06-0.11	6.1-8.4	<2	Low	Low	Low	0.28		
Latanier part	0-21	<0.06	0.18-0.20	6.6-8.4	<2	High	High	Low	0.32	5	---
	21-60	0.06-2.0	0.11-0.22	6.6-8.4	<2	Low	High	Low	0.37		
[1]50:											
Wabbaseka part	0-18	<0.06	0.12-0.18	6.6-7.8	<2	High	Moderate	Low	0.37	5	---
	18-42	2.0-6.0	0.11-0.20	6.1-8.4	<2	Low	Low	Low	0.37		
	42-80	6.0-20	0.06-0.11	6.1-8.4	<2	Low	Low	Low	0.28		
Latanier part	0-21	<0.06	0.18-0.20	6.6-8.4	<2	High	High	Low	0.32	5	---
	21-60	0.06-2.0	0.11-0.22	6.6-8.4	<2	Low	High	Low	0.37		
Yorktown:											
51	0-8	<0.06	0.12-0.18	5.6-7.3	<2	High	High	Moderate	0.37	5	---
	8-42	<0.06	0.12-0.18	5.6-7.3	<2	High	High	Moderate	0.37		
	42-60	<0.06	0.12-0.18	7.4-8.4	<2	High	High	Low	0.37		

[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 17.—SOIL AND WATER FEATURES

[Absence of an entry indicates the feature is not a concern. See text for descriptions of symbols. The symbol > means greater than]

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Cemented pan	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Depth	Hardness
					Ft			In		In	
Amy: 1, [1]2, [1]3	D	None to common.	Brief to very long.	Dec-May	0-1.0	Perched	Dec-Apr	>60	---	---	---
Calloway: 4, 5, [1]6	C	None	---	---	1.0-2.0	Perched	Jan-Apr	>60	---	---	---
Caspiana: 7	B	None	---	---	>4.0	Apparent	Dec-Apr	>60	---	---	---
Coushatta: 8, [1]9, [1]10	B	None to occasional.	Brief to long.	Dec-Jun	4.0-6.0	Apparent	Dec-Apr	>60	---	---	---
Crevasse: 11, [1]12	A	None to frequent.	Brief	Oct-Mar	3.5-6.0	Apparent	Nov-Mar	>60	---	---	---
Desha: 13, 14	D	None to occasional.	Long to very long.	Dec-Jun	0-1.0	Perched	Dec-May	>60	---	---	---
Grenada: 15, 16, [1]17, [1]18	C	None	---	---	2.0-2.5	Perched	Jan-Mar	>60	---	---	---
Hebert: 19	C	None	---	---	1.5-3.0	Apparent	Dec-Apr	>60	---	---	---
Henry: 20, [1]21	D	None to rare	---	---	1.0-1.5	Perched	Dec-Apr	>60	---	---	---
McGehee: 22, 23	C	None to occasional.	Brief to long.	Dec-May	0-1.0	Perched	Dec-Apr	>60	---	---	---
Oklared: 24	B	Occasional	Very brief	Mar-Aug	3.0-4.0	Apparent	Mar-May	>60	---	---	---
Ouachita: [1]25	C	Common	Long to very long.	Dec-May	>6.0	---	---	>60	---	---	---
Perry: 26, 27	D	None to occasional.	Brief to very long.	Dec-Jun	0-2.0	Apparent	Dec-Apr	>60	---	---	---
Pheba: 28, [1]29	C	None	---	---	1.5-2.0	Perched	Jan-Mar	>60	---	---	---
Portland: 30, 31, [1]32	D	None to occasional.	Brief to very long.	Dec-May	0-1.0	Perched	Dec-May	>60	---	---	---
Rilla: 33, 34	B	None	---	---	4.0-6.0	Apparent	Dec-Apr	>60	---	---	---
Roxana: 35, 36, [1]37	B	None to occasional.	Brief to long.	Dec-Jun	4.0-6.0	Apparent	Dec-Apr	>60	---	---	---
Ruston: 38	B	None	---	---	>6.0	---	---	>60	---	---	---

See footnote at end of table.

TABLE 17.—SOIL AND WATER FEATURES—Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Cemented pan	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hard-ness	Depth	Hard-ness
					Ft			In		In	
Sacul:											
39, 40	C	None	—	—	>6.0	—	—	>60	—	—	—
Savannah:											
41, 42, [1]43, [1]44	C	None	—	—	1.5-3.0	Perched	Jan-Mar	>60	—	—	—
Sawyer:											
45, 46	C	None	—	—	2.0-3.0	Perched	Dec-Apr	>60	—	—	—
Smithdale:											
47, 48	B	None	—	—	>6.0	—	—	>60	—	—	—
Wabbaseka:											
[1]49:											
Wabbaseka part	D	None	—	—	—	—	—	>60	—	—	—
Latanier part	D	None	—	—	—	—	—	>60	—	—	—
[1]50:											
Wabbaseka part	D	None to occasional.	Brief	Nov-Apr	>6.0	—	—	>60	—	—	—
Latanier part	D	None to occasional.	Brief	Nov-Jul	1.0-3.0	Apparent	Dec-Apr	>60	—	—	—
Yorktown:											
51	D	Common	Very long	Oct-Aug	>5-0.5	Apparent	Oct-Aug	>60	—	—	—

[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 18.—PHYSICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Particle-size distribution (percent less than 2.0 mm)					
			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
	In							
Ouachita silt loam: S-72-Ark-35-4-(1-7)	0-8	Ap	1	11	20	32	58	10
	8-22	B21	1	7	14	22	60	18
	22-33	B22	0	8	15	23	54	23
	33-47	B23	0	16	19	35	44	21
	47-56	B24	0	18	20	38	41	21
	56-68	B25	4	40	19	63	23	14
	68-76	C	4	41	20	65	25	10
Sacul fine sandy loam: S-71-Ark-35-1-(1-8)	0-3	A1	1	40	21	62	33	5
	3-7	A2	1	44	22	67	28	5
	7-18	B21t	1	21	8	30	16	54
	18-25	B22t	1	10	5	16	26	58
	25-36	B23t	0	6	4	10	34	56
	36-47	B24t	0	10	31	41	21	38
	47-56	B25t	0	12	29	41	29	30
	56-72	C	0	7	14	21	42	37
Savannah fine sandy loam: S-72-Ark-35-6-(1-6)	0-9	Ap	5	28	26	59	38	3
	9-24	B2t	2	15	18	35	45	20
	24-35	Bx1	3	14	17	34	43	23
	35-46	Bx2	5	22	18	45	37	18
	46-59	Bx3	28	37	11	76	12	12
	59-72	B3	39	25	11	75	12	13
Sawyer silt loam: S-71-Ark-35-3-(1-8)	0-5	A1	2	9	11	22	63	15
	5-12	B21t	2	10	10	22	55	23
	12-20	B22t	3	7	8	18	52	30
	20-29	B23t	2	8	8	18	52	30
	29-36	B24t	2	6	7	15	46	39
	36-52	B25t	1	7	8	16	42	42
	52-68	B26t	3	8	8	19	34	47
	68-80	B27t	1	9	9	19	32	49

TABLE 19.—CHEMICAL ANALYSES OF SELECTED SOILS

Soil name and sample number	Depth	Horizon	Extractable bases Ca	Mg	Na	K	Extractable acidity	Base saturation	Reaction (1:1 soil-water)	Organic matter	Available phosphorus
	In		Meq/100 g	Meq/100 g	Meq/100 g	Meq/100 g	Meq/100 g	Pct	pH	Pct	P/m
Ouachita silt loam: S-72-Ark-35-4-(1-7)	0-8	Ap	1.3	0.3	0.2	0.1	7.2	21	5.0	1.7	7
	8-22	B21	1.3	0.3	0.2	0.2	6.2	24	5.0	0.7	7
	22-23	B22	1.0	0.4	0.2	0.2	12.5	13	4.7	0.4	4
	33-47	B23	0.8	0.4	0.2	0.2	11.2	13	4.7	0.3	6
	47-56	B24	0.5	0.4	0.2	0.2	11.1	10	4.6	0.4	6
	56-68	B25	0.3	0.3	0.2	0.2	9.3	10	4.6	0.4	8
	68-76	C	0.3	0.2	0.2	0.1	7.6	10	4.6	0.3	4
Sacul fine sandy loam: S-71-Ark-35-1-(1-8)	0-3	A1	2.4	0.6	0.2	0.1	6.5	34	5.3	3.1	5
	3-7	A2	1.2	0.3	0.2	0.1	4.1	31	5.1	1.6	5
	7-18	B21t	1.7	2.1	0.2	0.3	29.3	13	4.7	1.0	1
	18-25	B22t	0.9	2.2	0.2	0.3	35.8	9	4.6	0.8	1
	25-36	B23t	0.5	2.1	0.3	0.3	37.4	8	4.4	0.4	1
	36-47	B24t	0.3	1.3	0.2	0.2	24.2	8	4.5	0.3	1
	47-56	B25t	0.3	1.2	0.2	0.2	22.6	8	4.4	0.3	1
	56-72	C	0.6	1.4	0.2	0.2	29.0	8	4.5	0.3	1
Savannah fine sandy loam: S-72-Ark-35-6-(1-6)	0-9	Ap	1.5	0.5	0.3	0.2	2.2	53	5.3	1.5	5
	9-24	B2t	0.9	1.8	0.2	0.2	7.2	30	5.0	0.7	1
	24-35	Bx1	0.3	2.8	0.3	0.2	10.3	26	4.9	0.3	1
	35-46	Bx2	0.3	2.2	0.2	0.2	8.7	25	5.1	0.3	2
	46-59	Bx3	0.3	1.5	0.2	0.2	5.5	29	5.0	0.3	2
	59-72	B3	0.3	1.8	0.2	0.2	6.2	29	4.9	0.2	3
Sawyer silt loam: S-71-Ark-35-3-(1-8)	0-5	A1	2.8	1.1	0.1	0.3	10.1	30	4.7	3.3	5
	5-12	B21t	1.1	1.1	0.2	0.3	12.3	18	4.5	1.7	4
	12-20	B22t	0.6	1.0	0.2	0.2	14.7	12	4.4	0.6	3
	20-29	B23t	0.8	1.2	0.3	0.2	14.4	15	4.9	0.9	3
	29-36	B24t	0.5	1.5	0.5	0.3	20.9	12	4.7	0.6	2
	36-52	B25t	0.8	2.0	0.6	0.3	22.3	14	4.5	0.7	3
	52-68	B26t	1.3	2.4	0.7	0.3	25.8	15	4.4	0.5	3
	68-80	B27t	1.8	3.2	0.9	0.3	25.1	20	4.1	0.5	2

TABLE 20.--ENGINEERING TEST DATA

[Tests performed by Arkansas State Highway Department, in cooperation with the Bureau of Public Roads, U.S. Department of Commerce, in accordance with standard procedures of the American Association of State Highway and Transportation Officials (AASHTO)(1)]

Soil name and location	Parent material	Arkansas State Highway Laboratory Nos. S-71-Ark-69	Depth from surface	Moisture density[1]		Mechanical analysis[2] Percentage passing sieve--			Liquid limit	Plasticity index	Classification	
				Maximum dry density	Optimum moisture	No. 10	No. 40	No. 200			AASHTO[3]	Unified[4]
			In	Lb/cu ft	Pct				Pct			
Amy silt loam: NW1/4SW1/4SW1/4 sec. 12, T. 6 S., R. 11 W.	Unconsolidated loamy Coastal Plain deposits on uplands.	2-1	0-3	103	17	100	98	84		NP	A-4(3)	ML
		2-4	24-40	108	18	100	98	88	28	9	A-4(7)	CL
		2-6	56-72	107	18	100	98	84	37	13	A-6(10)	CL
Ouachita silt loam: SW1/4SE1/4SW1/4 sec. 12, T. 6 S., R. 10 W.	Unconsoliated loamy sediments on floods plains.	4-1	0-8	107	16	100	100	76	24	2	A-4(0)	ML
		4-3	22-33	112	16	100	98	57	29	9	A-4(3)	CL
		4-7	68-76	120	12	100	100	35		NP	A-2-3(0)	SM
Sacul fine sandy loam: SE1/4NW1/4SE1/4 sec. 15, T. 6 S., R. 11 W.	Unconsolidated loamy and clayey Coastal Plain deposits on uplands.	1-1	0-3	106	16	100	100	44	--	NP	A-4(0)	SM
		1-3	7-18	94	25	100	99	62	50	26	A-7-6(15)	CH
		1-8	56-72	94	26	100	96	70	46	20	A-7-6(14)	CL
Sawyer silt loam: SE1/4NE1/4SE1/4 sec, 26, T. 7 S., R. 10 W.	Unconsolidated loamy Coastal Plain deposits on uplands.	3-1	0-5	103	18	99	98	82	28	4	A-4(2)	ML
		3-2	5-12	108	18	99	97	83	30	11	A-6(8)	CL
		3-8	68-80	97	25	100	99	84	53	23	A-7-6(22)	MH

[1]Based on AASHTO Designation: T 99-57, Method A (1).

[2]Mechanical analyses according to the AASHTO Designation T 88-57 (1). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-sized fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-sized fractions. The mechanical analyses used in this table are not suitable for use in naming textural classes for soil.

[3]Based on AASHTO Designation M 145-66I (1).

[4]Based on ASTM Designation D2487-66T (2).

TABLE 21.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Amy	Fine-silty, siliceous, thermic Typic Ochraquults
Calloway	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Caspiana	Fine-silty, mixed, thermic Typic Argiudolls
Coushatta	Fine-silty, mixed, thermic Fluventic Eutrochrepts
Crevasse	Mixed, thermic Typic Udipsamments
Desha	Very-fine, mixed, thermic Vertic Hapludolls
Grenada	Fine-silty, mixed, thermic Glossic Fragiudalfs
Hebert	Fine-silty, mixed, thermic Aeric Ochraqualfs
Henry	Coarse-silty, mixed, thermic Typic Fragiaqualfs
Latanier	Clayey over loamy, mixed, thermic Vertic Hapludolls
McGehee	Fine-silty, mixed, thermic Aeric Ochraqualfs
Oklared	Coarse-loamy, mixed (calcareous), thermic Typic Udifluvents
Ouachita	Fine-silty, siliceous, thermic Fluventic Dystrochrepts
Perry	Very-fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Pheba	Coarse-silty, siliceous, thermic Glossaquic Fragiudults
Portland	Very-fine, mixed, nonacid, thermic Vertic Haplaquepts
Rilla	Fine-silty, mixed, thermic Typic Hapludalfs
Roxana	Coarse-silty, mixed, nonacid, thermic Typic Udifluvents
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Sacul	Clayey, mixed, thermic Aquic Hapludults
Savannah	Fine-loamy, siliceous, thermic Typic Fragiudults
Sawyer	Fine-silty, siliceous, thermic Aquic Paleudults
Smithdale	Fine-loamy, siliceous, thermic Typic Paleudults
Wabbaseka	Clayey over loamy, mixed, thermic Fluventic Hapludolls
Yorktown	Very-fine, montmorillonitic, nonacid, thermic Typic Fluvaquents

☆U.S. GOVERNMENT PRINTING OFFICE: 1980-232-397/41

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