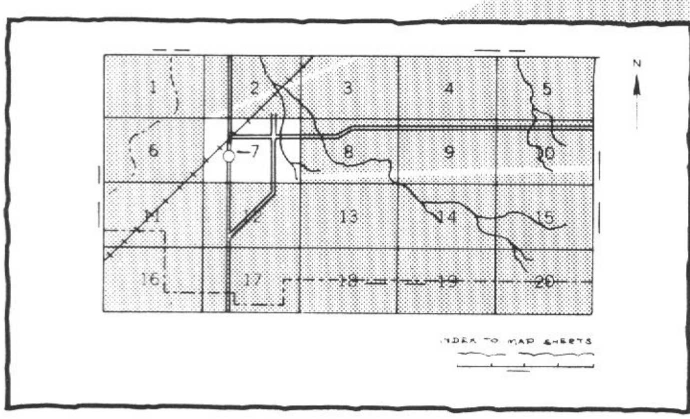
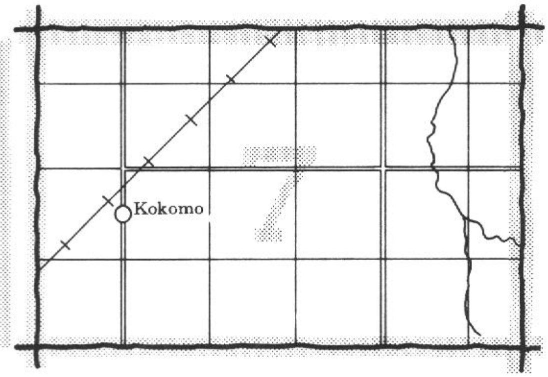
soil survey of
Franklin Parish, Louisiana

United States Department of Agriculture
Soil Conservation Service
in cooperation with
Louisiana Agricultural Experiment Station

HOW TO USE

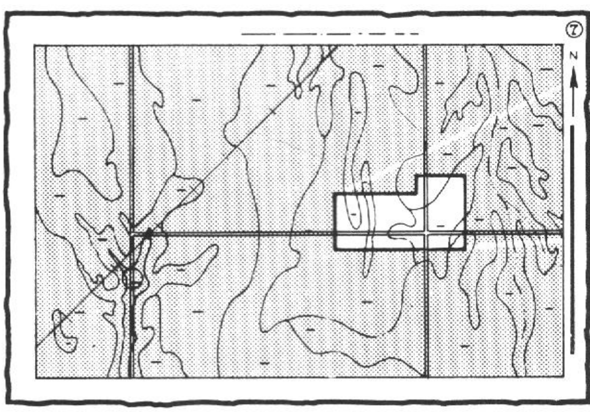
1. Locate your area of interest on the "Index to Map Sheets" (the last page of this publication).

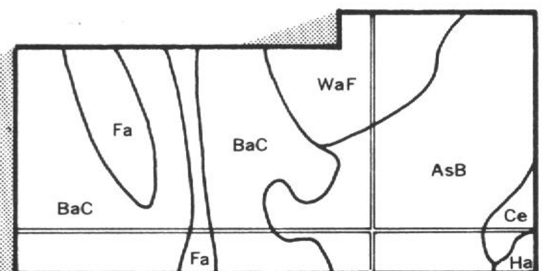




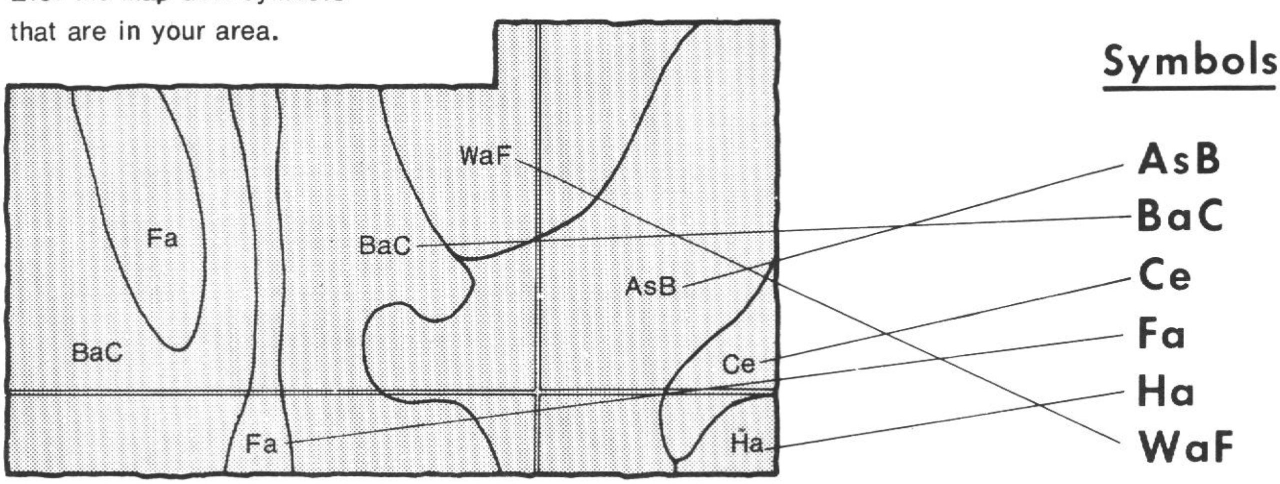
2. Note the number of the map sheet and turn to that sheet.

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



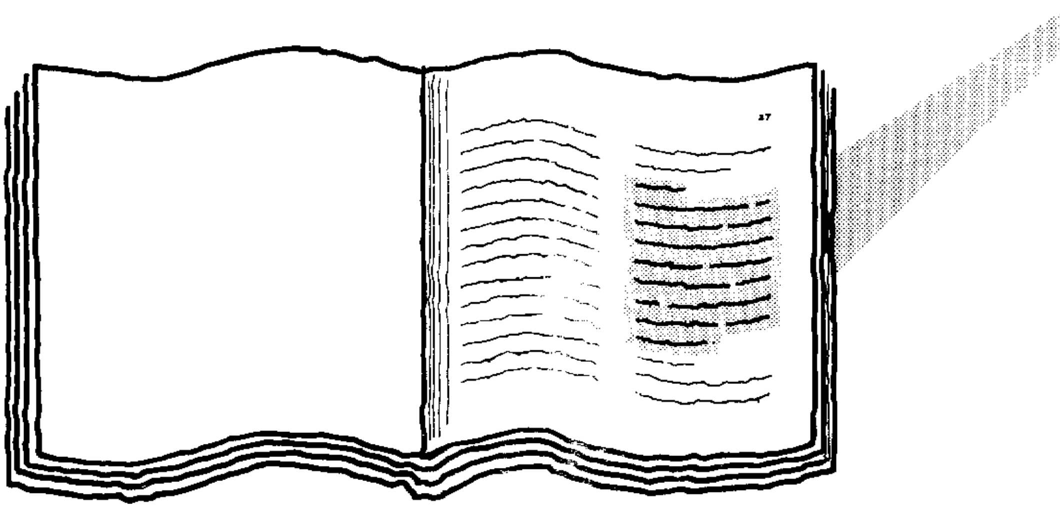


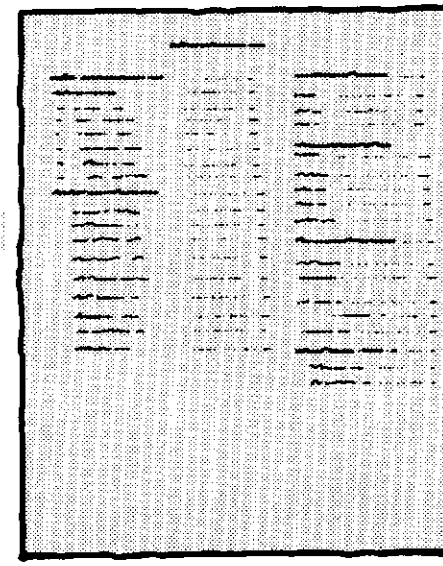
4. List the map unit symbols that are in your area.



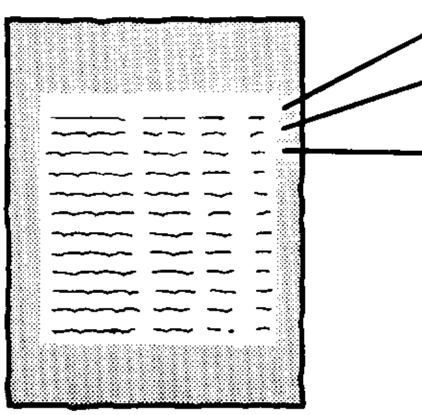
THIS SOIL SURVEY

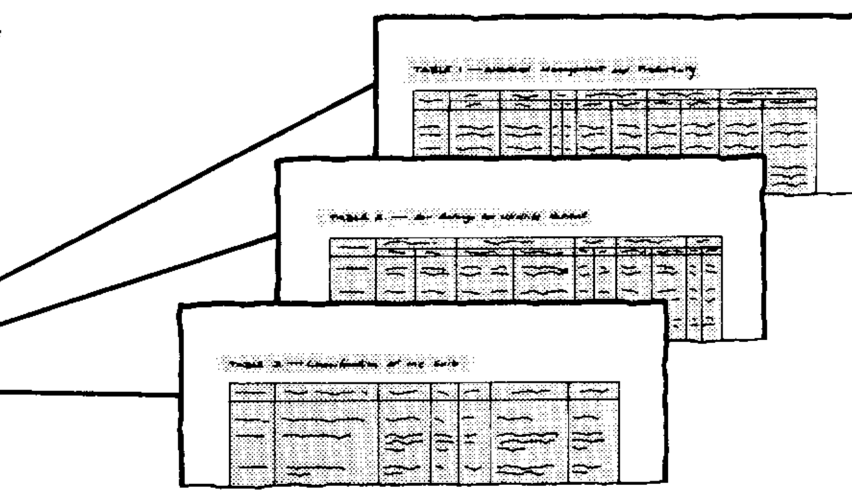
5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.





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; to specialists in wildlife management, waste disposal, or pollution control.

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Issued August 1981

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foreword

This soil survey contains information that can be used in land-planning programs in Franklin Parish. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

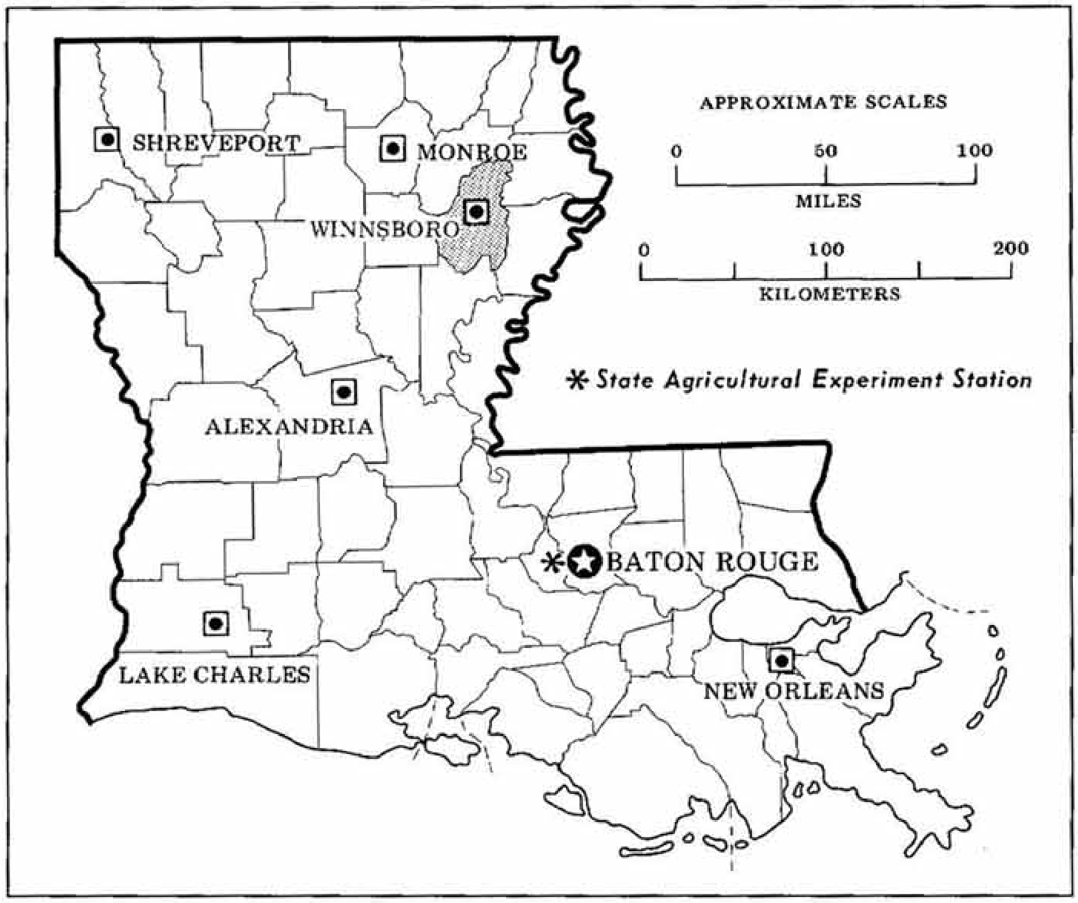
This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as 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 soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Alton Mangum

Alton Mangum
State Conservationist
Soil Conservation Service



Location of Franklin Parish in Louisiana.

soil survey of
Franklin Parish, Louisiana

By Charles E. Martin, Larry J. Trahan, and Clay T. Midkiff
Soil Conservation Service

United States Department of Agriculture
Soil Conservation Service
in cooperation with
Louisiana Agricultural Experiment Station

FRANKLIN PARISH, in northeastern Louisiana, has a total area of 414,720 acres, or 648 square miles. Elevation ranges from about 35 feet to 137 feet above sea level. In 1978, the population of the parish was about 30,100, according to an estimate by the Bureau of the Census. Winnsboro is the parish seat.

Farming is the main economic enterprise in the parish. The climate is favorable for cultivated crops and livestock. The major crops are soybeans and cotton.

The parish consists generally of two major physiographic areas. They are the level to gently undulating terrace uplands that extend from north to south through the central part of the parish and the level to gently undulating alluvial plains that extend along the eastern and western edges of the parish.

The terrace uplands make up nearly three-fourths of the parish. The soils are mainly loamy. They are generally low or medium in natural fertility, but crops respond well to fertilizer. Most of the acreage of these soils is used for cultivated crops. A small acreage is used for homesites, pasture, and woodland. Wetness is a limitation on many of these soils. The hazard of erosion is slight to moderate on a few of the soils.

The alluvial plains make up the remaining one-fourth of the parish. The soils range from loamy to clayey and from well drained to poorly drained. Most of the acreage is used for crops, mainly soybeans and cotton. A small acreage is used for pasture, woodland, and homesites. The fertile, loamy soils in the higher lying areas have few limitations for cropland use. The clayey soils in the lower lying areas, however, are limited by wetness. Some of these clayey soils are flooded by runoff. Drainage is needed for most crops.

Descriptions, names, and delineations of soils in this soil survey do not fully agree with those on soil maps for adjacent parishes. Differences are the result of better information on soils, modifications in series concepts, intensity of mapping, or the extent of soils within the survey.

general nature of the parish

This section gives general information concerning the parish. It discusses climate, history, agriculture, and transportation.

climate

Prepared by the National Climatic Center, Asheville, N.C.

Franklin Parish has long, hot summers because moist tropical air from the Gulf of Mexico persistently covers the area. Winters are cool and fairly short. Cold waves are rare, but when they do occur, temperatures moderate in 1 or 2 days. Precipitation is fairly heavy throughout the year, and prolonged droughts are rare; summer precipitation, mainly afternoon thundershowers, is adequate for all crops.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Winnsboro, La., from

1951 to 1973. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 49° F, and the average daily minimum temperature is 37°. The lowest temperature on record, which occurred at Winnsboro on January 12, 1962 is 1°. In summer the average temperature is 81°, and the average daily maximum temperature is 93°. The highest recorded temperature, which occurred at Winnsboro on August 31, 1951, is 109°.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50° 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.

The total annual precipitation is about 51 inches. Of this, 23 inches, or 45 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 10 inches. The heaviest 1-day rainfall during the period of record was 7.47 inches at Winnsboro on February 10, 1966. Thunderstorms occur about 70 days each year, and most occur in summer.

Average seasonal snowfall is 1.5 inches. The greatest snow depth at any one time during the period of record was 7 inches.

The average relative humidity in midafternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the south. Average windspeed is highest, 8 miles per hour, in spring.

history

Franklin Parish was established by the legislature of Louisiana in 1843. The area in which Franklin Parish was formed was first explored by Hernando DeSoto in 1542. A map of his travels shows one of his campsites along Deer Creek, at or near Gilbert.

Before the early settlers, who were of English, Scottish, and Scottish-Irish descent, came, Indians lived in the area. Unknown "mound builders" occupied the area about 500 B.C.

Until about 1811, there was little effort to settle the area. This probably was in part due to the heavy, almost impenetrable growth of a bamboo-type cane that extended through the center of the parish.

Agriculture has always been a major enterprise in the parish, and most of the working population is employed in some form of agricultural work. The number of parish residents employed in other industries, however, has increased in recent years.

agriculture

Franklin Parish is primarily an agricultural area. In 1974, there were 1,272 farms in the parish, according to the U.S. Census of Agriculture. The average size farm was about 240 acres. The number of farms in the parish is decreasing, and the average size is increasing.

Acreage of cropland has been steadily increasing and acreage of woodland and pasture is decreasing. An estimated 70,000 acres of woodland has been cleared for use as cropland during the past decade. In 1978, about 84,000 acres of woodland remained in the parish. The improvement of drainage systems throughout the parish has increased the usable acreage for agricultural products.

In 1978, 165,000 acres of soybeans and 78,000 acres of cotton were planted in the parish, according to the Louisiana Cooperative Extension Service's annual report. Also, smaller acreages of corn, rice, sweet potatoes, Irish potatoes, wheat, and oats were planted.

Agricultural marketing has been aided in recent years by good farm-to-market roads and modern grain elevators and cotton gins.

transportation

Franklin Parish has a network of paved roads, mostly state and parish highways, and a number of parish gravel roads. Several communities in the parish are served by a major railroad.

A bus company provides passenger and freight service for several communities, including Baskin, Winnsboro, Chase, Gilbert, and Wisner. A local airport has facilities for small aircraft.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. 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; and the kinds of rock. They dug many holes to study 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 plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby parishes and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management 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 can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map 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 soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The soils in the survey area vary widely in their suitability for major land uses. Table 4 shows the extent of each map unit as a percentage of the survey area. It lists the suitability of each, in relation to that of the other map units, for major land uses and shows soil properties that limit use. Soil suitability ratings are based on the practices commonly used in the survey area to overcome soil limitations. These ratings reflect the ease of overcoming the limitations. They also reflect the problems that will persist even if such practices are used.

Each map unit is rated for *cultivated crops, pasture, woodland, urban uses,* and *recreation areas*. Cultivated crops are those grown extensively in the survey area. Pasture refers to native and improved grasses for livestock. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreation areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreation areas are those used for nature study and as wilderness.

The boundaries of the general soil map units in Franklin Parish were matched, where possible, with those of the previously published survey of Tensas Parish, La. In a few places, however, the lines do not join, and the names of the map units differ. These differences resulted mainly because of changes in soil series concepts, differences in map unit design, and changes in soil patterns near the survey area boundaries.

Descriptions of the general soil map units follow.

1. Sharkey-Tensas

Clayey, level to gently undulating, somewhat poorly drained and poorly drained soils that formed in alluvium

This map unit consists of soils on broad flats and in depressional areas on alluvial plains. Slopes range from 0 to 3 percent.

This unit makes up about 16 percent of the parish. It is about 80 percent Sharkey soils, 14 percent Tensas soils, and 6 percent soils of minor extent.

Sharkey soils are mainly in the lowest positions on the landscape. They are poorly drained and have a surface layer of very dark grayish brown clay and a subsoil of gray clay. These soils have a high water table from December through April.

Tensas soils are on the back slopes of low natural levees. They are somewhat poorly drained and have a surface layer of dark grayish brown silty clay. The subsoil is grayish brown clay and silty clay loam. The underlying material is grayish brown silt loam. These soils have a high water table from December through April.

Of minor extent are the somewhat poorly drained, loamy Dundee soils in higher positions of the natural levees.

Most of the acreage of this unit has been cleared and is used for crops, mainly soybeans. Cotton, wheat, rice, and grain sorghum are also grown. The uncleared acreage is generally in mixed hardwoods. Surface drainage systems are needed on most of the cleared acreage.

This unit is moderately well suited to crops and pasture. Wetness and poor tilth are the main limitations. Generally drainage is needed for crops and pasture.

The soils in this unit are moderately well suited to southern hardwoods. Equipment use limitations and seedling mortality are the main concerns. In uncleared areas, the dominant trees are eastern cottonwood, green ash, cherrybark oak, sweetgum, water oak, pecan, and American sycamore.

This unit is poorly suited to sanitary facilities, building site development, and recreation areas. Wetness and high shrink-swell potential are the main limitations.

2. Dundee

Loamy, level to gently undulating, somewhat poorly drained soils that formed in alluvium

This map unit consists of soils in high positions of the natural levees along Bayou Macon. Slopes range from 0 to 3 percent.

This unit makes up about 5 percent of the parish. It is about 90 percent Dundee soils and 10 percent soils of minor extent.

The Dundee soils have a surface layer of dark grayish brown silt loam or silty clay loam and a subsoil of grayish brown silty clay loam and silt loam.

Of minor extent are the somewhat poorly drained, clayey Tensas soils that are in somewhat lower positions than the Dundee soils and the poorly drained, clayey Sharkey soils that are in the lowest positions.

Soils in this unit are mainly used for crops. Cotton and soybeans are the principal crops grown. Surface drainage systems are needed on most of the acreage. Wetness is the main limitation.

Soils in this unit are well suited to crops and pasture. The loamy surface layer, medium fertility, and nearly level slopes favor these uses. However, a surface drainage system and fertilizer are generally needed for crops and pasture.

This unit is well suited to southern hardwood production. In uncleared areas, the dominant trees are cherrybark oak, eastern cottonwood, water oak, sweetgum, and yellow-poplar. Wetness moderately limits the use of equipment.

This unit is poorly suited to sanitary facilities and moderately well suited to building site development. Wetness and moderate shrink-swell potential are the main limitations.

3. Calhoun-Calloway-Loring

Loamy, level to gently undulating, poorly drained to moderately well drained soils that formed in loess

This map unit consists of soils on narrow flats, knolls, and low parallel ridges and in swales on the terrace uplands. Slopes range from 0 to 3 percent.

This map unit makes up about 33 percent of the parish. It is about 36 percent Calhoun soils, 27 percent Calloway soils, 24 percent Loring soils, and 13 percent soils of minor extent.

The poorly drained Calhoun soils are on the narrow flats and in swales. These soils have a surface layer of grayish brown silt loam and a subsoil of gray silt loam and silty clay loam.

The somewhat poorly drained Calloway soils are on knolls and foot slopes of ridges. These soils have a surface layer of brown silt loam and a subsoil of yellowish brown, mottled silt loam and silty clay loam. The lower part of the subsoil is a fragipan.

The moderately well drained Loring soils are on the ridges. These soils have a surface layer of brown silt loam and a subsoil of brown silty clay loam and silt loam. The lower part of the subsoil is a fragipan.

Of minor extent are the well drained Memphis soils on ridges in the higher positions of the landscape.

Most of the acreage of this unit is used for crops. A small acreage is used for pasture. Cotton and soybeans are the main crops grown.

This unit is moderately well suited to cultivated crops and well suited to pasture. The uneven surface and wetness in the Calloway and Calhoun soils are the main limitations. A good drainage system and fertilizer are needed for crops and pasture.

This unit is well suited to southern pine and southern hardwood production. In uncleared areas, the dominant trees are loblolly pine, water oak, and sweetgum. Wetness severely limits equipment use and causes moderate seedling mortality.

This unit is poorly suited to sanitary facilities and moderately well to poorly suited to building site development. Wetness is the main limitation.

4. Gilbert-Gigger-Egypt

Loamy, level to gently undulating, poorly drained, moderately well drained, and somewhat poorly drained soils that formed in mixed loess and stream terrace deposits

This map unit consists of soils on narrow flats, knolls, and low parallel ridges and in swales on the terrace uplands. Slopes range from 0 to 3 percent.

This map unit makes up about 29 percent of the survey area. It is about 46 percent Gilbert soils, 27 percent Gigger soils, 12 percent Egypt soils, and 15 percent soils of minor extent.

Poorly drained Gilbert soils are on the narrow flats and in swales. These soils have a surface layer of brown silt loam and a subsoil of light brownish gray and grayish brown silty clay loam. The lower part of the subsoil contains concentrations of sodium salts.

Moderately well drained Gigger soils are on the ridges. These soils have a surface layer of dark brown silt loam. The upper part of the subsoil is brown silty clay loam. The lower part is a fragipan of yellowish brown silt loam.

Somewhat poorly drained Egypt soils are mostly on knolls and foot slopes of ridges. These soils have a surface layer of dark brown silt loam and a subsoil of yellowish brown, mottled silty clay loam. The lower part of the subsoil contains concentrations of sodium salts.

Of minor extent are the well drained Dexter and Liddieville soils on higher ridges, the somewhat poorly drained Deerford soils on foot slopes, and the poorly drained Foley soils in swales and on flats.

Most of the acreage of this unit is used for crops. A small acreage is in pasture and woodland. Cotton and soybeans are the principal crops grown.

This unit is moderately well suited to crops and pasture. The uneven surface and wetness in the Egypt and Gilbert soils are the main limitations. A good drainage system and fertilizer are needed for crops and pasture.

This unit is moderately well suited to woodland production. The high amounts of sodium in the subsoil of the Egypt and Gilbert soils limit tree growth. Wetness limits the use of equipment and causes moderate seedling mortality.

This unit is poorly suited to sanitary facilities and moderately well suited to building site development. Wetness is the main limitation.

5. Necessity-Foley-Deerford

Loamy, level to gently undulating, somewhat poorly drained and poorly drained soils that formed in stream terrace deposits

This map unit consists of soils on narrow flats and knolls, in swales, and on low ridges on the terrace uplands. Slopes range from 0 to 3 percent.

This map unit makes up about 8 percent of the parish. It is about 43 percent Necessity soils, 30 percent Foley soils, 25 percent Deerford soils, and 2 percent soils of minor extent.

The somewhat poorly drained Necessity soils are on knolls and low ridges. These soils have a surface layer of brown silt loam. The subsoil is yellowish brown and pale brown silty clay loam and silt loam in the upper part and brown and strong brown loam and clay loam in the lower part. The lower part of the subsoil is a fragipan.

The poorly drained Foley soils are on flats and in swales. These soils have a surface layer of brown silt loam. The subsoil is light brownish gray and grayish brown silty clay loam and silt loam. The lower part of the subsoil contains concentrations of sodium salts.

The somewhat poorly drained Deerford soils are on foot slopes of ridges and on nearly level areas. These soils have a surface layer of grayish brown silt loam and a subsoil of yellowish brown silty clay loam. The lower part of the subsoil contains concentrations of sodium salts.

Of minor extent are the well drained Dexter and Liddieville soils on higher ridges and the poorly drained Forestdale soils in low areas along some of the larger drainageways.

Most of the acreage of this unit is used for crops. A small acreage is in pasture and woodland. Cotton and soybeans are the principal crops grown.

This unit is moderately well suited to cultivated crops and pasture. Wetness and the high amounts of sodium in the lower part of the subsoil of the Deerford and Foley soils are the main limitations. A good drainage system and fertilizer are needed for crops and forage.

This unit is moderately well suited to woodland production because of wetness and high amounts of sodium in the subsoils of the Deerford and Foley soils. Dominant trees are loblolly pine, cherrybark oak, water oak, and sweetgum.

This unit is poorly suited to sanitary facilities and building site development. Wetness is the main limitation.

6. Forestdale-Sharkey

Loamy and clayey, level, poorly drained, occasionally flooded to frequently flooded soils that formed in alluvium

This map unit consists of soils on broad flats and in depressional areas of alluvial plains. These soils are subject to flooding in winter and spring.

This map unit makes up 6 percent of the parish. It is about 52 percent Forestdale soils, 46 percent Sharkey soils, and 4 percent soils of minor extent.

Forestdale soils generally are in higher positions of the landscape. They have a surface layer of dark grayish brown silty clay loam and a subsoil of gray clay, silty clay, and silty clay loam.

Sharkey soils are in low or depressional areas. They have a surface layer of very dark grayish brown clay and a subsoil of gray clay.

Of minor extent are the somewhat poorly drained Necessity and Deerford soils on knolls and low ridges and the well drained Sterlington soils in the highest positions of the natural levees.

A large acreage of this unit has been cleared for use as cropland. Most of the cleared areas are areas of the higher lying Forestdale soils. Only small areas of the Sharkey soils have been cleared. Uncleared areas are generally in mixed hardwoods.

In most years, late planted crops, such as soybeans, can be grown on the higher areas. The lower areas in this unit are very poorly suited to cultivated crops because the soils are frequently flooded.

This unit is moderately well suited to pasture. Flooding and wetness limit the period of grazing and choice of pasture plants.

The soils in this unit are suitable for the production of southern hardwoods. Sweetgum, water oak, green ash, and pecan are the main trees. Wetness severely limits the use of equipment and causes high seedling mortality.

The soils in this unit have severe limitations for most urban uses. Flooding, wetness, and very slow permeability are the main limitations.

7. Dexter-Liddieville-Necessity

Loamy, nearly level to gently undulating, well drained and somewhat poorly drained soils that formed in stream terrace deposits

This map unit consists of soils on low parallel ridges and in swales on the terrace uplands. Slopes range from 0 to 5 percent.

This map unit makes up about 3 percent of the survey area. It is about 68 percent Dexter soils, 20 percent Liddieville soils, 10 percent Necessity soils, and 2 percent soils of minor extent.

The well drained Dexter soils are on the low ridges and side slopes. These soils have a surface layer of brown silt loam. The upper part of the subsoil is mainly yellowish red silty clay loam and clay loam. In the lower part is dark brown loam and clay loam. The underlying material is mainly brown fine sandy loam.

The well drained Liddieville soils are on the higher ridges. These soils have a surface layer of brown fine sandy loam and a subsoil that is mainly yellowish red clay loam and loam.

The somewhat poorly drained Necessity soils are generally on the foot slopes and in swales. These soils have a surface layer of brown silt loam. The upper part of the subsoil is mainly yellowish brown and pale brown silty clay loam and silt loam. The lower part is a fragipan of brown and strong brown loam and clay loam.

Of minor extent are the somewhat poorly drained Deerford soils on foot slopes and the poorly drained Foley and Forestdale soils in swales.

Most of the acreage of this unit is used for crops, mainly cotton and soybeans.

This unit is well suited to crops and pasture. Slope is the main limitation. A good drainage system helps to reduce wetness in areas of the Necessity soils. Lime and fertilizer are needed.

This unit is well suited to woodland production. Suitable trees are water oak, sweetgum, and loblolly pine.

This unit is moderately well suited to urban uses. Moderate permeability is a limitation. Seepage of effluent from sewage lagoons can be a problem.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the parish area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Dundee silt loam is one of two phases in the Dundee series.

Some map units are made up of two or more major soils. These map units are called soil complexes.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Calhoun-Calloway complex is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description.

Table 5 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

Descriptions of the detailed map units follow.

Co—Calhoun silt loam. This deep, level, poorly drained soil is on broad flats and in narrow depressional areas adjacent to drainageways on the terrace uplands. Areas are irregular in shape and range from 10 to 300 acres. Slope is less than 1 percent.

Typically, the surface layer is medium acid, grayish brown silt loam about 4 inches thick. The subsurface layer, to a depth of about 13 inches, is light brownish gray, very strongly acid silt loam. The subsoil extends to 62 inches or more. The upper part of the subsoil is gray, mottled, very strongly acid silty clay loam. The middle part is light brownish gray, mottled, extremely acid silty clay loam. The lower part is light brownish gray, mottled, strongly acid silt loam.

Included with this soil in mapping are a few small areas of Calloway and Loring soils. Both soils are on knolls and low ridges and are better drained than this Calhoun soil. Also included are a few small areas of Calhoun soils that are adjacent to drainageways and are subject to shallow flooding after heavy rainfall.

This Calhoun soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow or very slow rate, and it moves through the soil at a slow rate. From December through April, water is perched on a restrictive subsoil layer at a depth of about 2 feet. During rainy periods, this water table rises to near the surface. However, the subsoil below 2 feet generally is never saturated. Plants are damaged by lack of water during dry periods in summer and fall.

Most acreage has been cleared and is used for crops. A small acreage is in pasture or used for homesites.

This soil is moderately well suited to cultivated crops, mainly cotton, corn, soybeans, and rice. This soil is friable but somewhat difficult to keep in good tilth because of surface crusting. Excessive cultivation could cause the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing improves surface drainage and permits efficient use of farm equipment. Leaving crop residue on the surface reduces runoff, helps maintain the organic matter content, and improves soil tilth. Crops respond well to lime and fertilizer.

This soil is moderately well suited to pasture. Suitable pasture plants include common bermudagrass, tall fescue, bahiagrass, white clover, and southern winterpeas. Proper grazing, weed control, and fertilizer are needed. Wetness limits the choice of plants and the period of grazing. Excessive water on the surface can be removed by surface field ditches.

This soil is well suited to water oak, sweetgum, and loblolly pine. Timber production is high in areas managed for woodland. Because of wetness, equipment use limitations are severe and seedling mortality is moderate.

This soil is poorly suited to recreation uses. It is limited mainly by wetness. Cuts and fills should be seeded or mulched. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is poorly suited to urban uses. Wetness is the main limitation. Excess water can be removed by the use of shallow ditches and by providing the proper grade. Preserving the existing plant cover during construction helps to control erosion. During cutting and filling, topsoil can be stockpiled and used to reclaim areas. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability.

This Calhoun soil is in capability subclass IIIw and in woodland group 2w9.

Cu—Calhoun-Calloway complex. This complex consists of nearly level, poorly drained Calhoun soils and somewhat poorly drained Calloway soils. Both soils are on the terrace uplands. The Calhoun soils are on narrow flats and in swales, and the Calloway soils are on low knolls and ridges. The Calhoun soils make up about 55 percent of the complex and the Calloway soils about 30 percent. Areas of these soils are so intermingled that mapping them separately was not practical at the scale selected. Areas of this complex range from 20 to 800 acres. Slopes are less than 2 percent.

Typically, the Calhoun soil has a surface layer of dark grayish brown, medium acid silt loam about 4 inches thick. The subsurface layer is gray, very strongly acid silt loam to about 17 inches. The subsoil extends to 65 inches or more. The upper part of the subsoil is grayish brown, very strongly acid silty clay loam. The lower part is grayish brown, very strongly acid silt loam.

The Calhoun soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow or very slow rate, and it moves through the soil at a slow rate. From December through April, water is perched on a restrictive subsoil layer at a depth of about 2 feet. However, the subsoil below 2 feet generally is never saturated. Plants are damaged by lack of water during dry periods in summer and fall.

Typically, the Calloway soil has a surface layer of brown, medium acid silt loam about 5 inches thick. The subsoil extends to a depth of about 60 inches. The upper part is yellowish brown, mottled, strongly acid silt loam; the middle part is a fragipan of grayish brown, strongly acid silty clay loam; and the lower part is a fragipan of yellowish brown and grayish brown, strongly acid silt loam.

The Calloway soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow rate, and it moves slowly through the fragipan. From January through April, water is perched above the fragipan, but the pan remains dry. Plants are damaged by lack of water during dry periods in summer and fall.

Included in this map unit are a few small areas of Loring soils. These areas make up about 15 percent of this map unit. They are moderately well drained and on slightly higher elevations. Also included are a few small areas of a Calhoun soil and a Calloway soil that are subject to flooding after heavy rains.

These Calhoun and Calloway soils are mainly used for crops. A small acreage is in pasture or used for homesites.

These soils are moderately well suited to cultivated crops, mainly cotton, soybeans, and corn. A tillage pan forms easily if these soils are tilled when wet. Chiseling or subsoiling can be used to break up the tillage pan. A surface drainage system is needed to remove excess water from areas of the Calhoun soil. Land smoothing improves surface drainage and permits efficient use of farm equipment. Leaving crop residue on the surface helps maintain the organic matter content and improves soil tilth. Crops respond well to lime and fertilizer.

These soils are moderately well suited to pasture. Suitable pasture plants include common bermudgrass, tall fescue, bahiagrass, white clover, and southern winterpeas. Wetness limits the choice of plants and the period of grazing. Controlled grazing, weed control, and fertilizer are needed. Excessive water on the surface can be removed by surface field ditches.

These soils are well suited to woodland. The potential for production of hardwood and pine trees is high. Suitable trees include water oak, sweetgum, and loblolly pine. Wetness is the main limitation. Equipment use limitations are moderate to severe, and seedling mortality is slight to moderate.

These soils are poorly suited to recreation uses. Wetness and slow permeability are the main limitations. Good drainage should be provided for playgrounds, picnic areas, and camp areas. Plant cover can be maintained by fertilizing and by controlling traffic.

The map unit is poorly suited to urban uses. The main limitations are wetness and slow permeability. Low strength is a limitation for local roads and streets. Drainage is needed where buildings are to be constructed. During cutting and filling, topsoil can be stockpiled and later used to reclaim areas. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability.

These Calhoun and Calloway soils are in capability subclass IIIw. Calhoun soil is in woodland group 2w9, and Calloway soil is in 2w8.

Cw—Calloway silt loam. This deep, nearly level, somewhat poorly drained soil is on low ridges and knolls on the terrace uplands. Areas are irregular in shape and range from 5 to 100 acres. Slope is less than 2 percent.

Typically, the surface layer is brown, medium acid silt loam about 5 inches thick. The subsurface layer is grayish brown, mottled, strongly acid silt loam to about 9 inches. The next layer is yellowish brown, very strongly acid silt loam. Below this is light gray, mottled, very strongly acid silt loam. The next layer is a grayish brown, mottled, very strongly acid fragipan of silty clay loam. The next layer to a depth of about 65 inches is a yellowish brown, mottled, very strongly acid fragipan of silty clay loam.

Included in this map unit are a few small areas of Calhoun, Loring, and Memphis soils. The poorly drained Calhoun soils are in swales. The moderately well drained Loring soils and well drained Memphis soils are on higher positions. Also included are a few small areas of a soil that is similar to this Calloway soil except that it does not have a fragipan within a depth of 35 inches.

This Calloway soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow rate, and it moves through the soil at a slow rate. From January through April, water is perched above the fragipan. Plants are damaged by lack of water during dry periods in summer and fall.

Most of the acreage is used for crops. A small acreage is in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, soybeans, and corn. It is limited mainly by wetness. A tillage pan forms easily if this soil is tilled when wet. Chiseling or subsoiling can be used to break up the tillage pan. Proper row arrangement, field ditches, and vegetated waterways help remove excess surface water. Land smoothing will also improve surface drainage and permit efficient use of farm equipment. Leaving crop residue on the surface reduces runoff, helps maintain the organic matter content, and improves soil tilth. Crops respond well to lime and fertilizer.

This soil is well suited to pasture. However, wetness limits the choice of plants and the period of grazing. Suitable pasture plants include common bermudagrass, improved bermudagrass, bahiagrass, dallisgrass, tall fescue, ryegrass, white clover, and southern winterpeas.

This soil is well suited to woodland. The potential for production of hardwood and pine trees is high. Suitable trees are water oak, sweetgum, and loblolly pine. Wetness moderately limits the use of equipment on this soil.

This soil is poorly suited to recreation uses. The main limitations are wetness and slow permeability. Adding loamy fill material to the soil surface can improve the suitability for playgrounds and picnic areas. Good drainage should be provided for paths and trails. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is poorly suited to urban uses. The main limitations are wetness and slow permeability. Excess water can be removed by shallow ditches. During cutting and filling, topsoil can be stockpiled and later used to reclaim areas. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability.

This Calloway soil is in capability subclass IIw and in woodland group 2w8.

Df—Deerford silt loam. This deep, nearly level, somewhat poorly drained soil is on terrace uplands. Areas are irregular in shape and range from 10 to 100 acres. Slope is dominantly less than 2 percent.

Typically, the surface layer is grayish brown, strongly acid silt loam about 4 inches thick. The subsurface layer is light brownish gray, medium acid silt loam to about 10 inches. The upper part of the subsoil is yellowish brown, mottled, very strongly acid silty clay loam. The next layer is yellowish brown, mottled, neutral silty clay loam. The underlying material to a depth of about 60 inches is yellowish brown, mottled, moderately alkaline silty clay loam.

Included in this map unit are a few small areas of Egypt, Foley, and Necessity soils. Egypt and Necessity soils are in similar positions to those of this Deerford soil, but these soils contain less sodium in the upper part of the subsoil. Foley soils are poorly drained. Also included are a few small areas of a Deerford soil that has slopes of 2 to 3 percent.

This Deerford soil has low fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow rate, and it moves through the soil at a slow rate. From December through April, water is perched on a restrictive layer at a depth of 6 to 18 inches. Plants are damaged by lack of water during dry periods in summer and fall.

Most of the acreage is used for crops. A small acreage is in pasture or used for homesites.

This soil is moderately well suited to cultivated crops, mainly cotton, soybeans, and rice. The main limitations are wetness, slow permeability, and excessive sodium in the lower part of the subsoil. A tillage pan forms easily if this soil is tilled when wet. Chiseling or subsoiling can be used to break up the tillage pan. Proper row arrangement, surface field ditches, and vegetated waterways help remove excess surface water. Land smoothing will improve surface drainage and permit efficient use of farm equipment. Deep cuttings during land grading for smoothing should not expose the subsoil, which is high in sodium content. Leaving crop residue on the surface reduces runoff, helps maintain the organic matter content, and improves soil tilth. Crops respond well to lime and fertilizer.

This soil is moderately well suited to pasture. Suitable pasture plants include common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, and tall fescue. Wetness limits the choice of plants and the period of grazing. Excessive water on the surface can be removed by surface field ditches. Fertilizer and lime are needed for grasses and legumes.

The potential for production of hardwood and pine trees is moderately high. Suitable trees include water oak, sweetgum, and loblolly pine. Equipment use limitations are moderate because of wetness. The sodium concentration in the lower part of the subsoil also limits growth of trees.

This soil is poorly suited to recreation uses. Limitations are mainly wetness and excess sodium. Good drainage should be provided for intensively used recreation acres. Plant cover can be maintained by fertilizing and by controlling traffic.

This map unit is poorly suited to urban uses. The main limitations are wetness and slow permeability. Low strength limits local roads and streets. Excess water can be removed by shallow ditches. Mulching and fertilizing land-graded areas help to establish plants. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability.

This Deerford soil is in capability subclass IIIw and in woodland group 3w9.

Dh—Dexter silt loam, 1 to 3 percent slopes. This deep, very gently sloping, well drained soil is on convex ridges on terrace uplands. Areas are long and narrow and range from 5 to 50 acres.

Typically, the surface layer is brown, medium acid silt loam about 4 inches thick. The subsoil is dark brown, strongly acid silt loam in the upper part; yellowish red, very strongly acid silty clay loam in the middle part; and yellowish red and dark brown, very strongly acid clay loam in the lower part. The next layer is dark brown, strongly acid loam. The underlying material to a depth of about 80 inches is brown and light yellowish brown fine sandy loam and loamy fine sand.

Included in this map unit are small areas of Deerford, Gigger, Liddieville, and Necessity soils. The somewhat poorly drained Deerford soils are on lower side slopes. The moderately well drained Gigger soils have a fragipan in the lower part of the subsoil. The well drained Liddieville soils are on higher ridges and have more sand than this Dexter soil. The somewhat poorly drained Necessity soils are in lower positions and have a fragipan in the lower part of the subsoil.

This Dexter soil has medium fertility. Water runs off the surface at a medium rate and moves through this soil at a moderate rate. Adequate water is available to plants in most years. This soil dries quickly after rains.

Most of the acreage is used for crops. A small acreage is in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, corn, and soybeans. This soil is friable and is easy to keep in good tilth. It can be worked over a wide range of moisture content. Traffic pans develop easily, but they can be broken up by chiseling or deep plowing. Slope is a limitation. Erosion can be reduced if fall grain is seeded early, conservation tillage is used, and tillage and seeding are on the contour. Also, waterways should be shaped and seeded to perennial grass. Crops respond well to lime and fertilizer.

This soil is well suited to pasture. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, crimson clover, white clover, ball clover, ryegrass, wheat, oats, and tall fescue. Fertility generally is sufficient for sustained production of high quality nonirrigated pasture. Seedbed preparation should be on the contour or across the slope to control runoff and erosion. Grasses and legumes respond well to fertilizer. Use of proper stocking rates, pasture rotation, and restricted grazing during wet periods helps to keep the pasture and the soil in good condition.

This soil is well suited to woodland. The potential for hardwood and pine trees is very high. Suitable trees are water oak, sweetgum, and loblolly pine.

This soil is well suited for recreation uses. Slope is the main limitation. Adequate plant cover helps control erosion and sedimentation. Plant cover can be maintained by fertilizing and by controlling traffic.

This map unit is moderately well suited to urban uses. Seepage can be a problem where sewage lagoons are constructed. Moderate permeability is a limitation for septic tanks. This limitation can be overcome by increasing the size of the absorption field. Seepage from sewage lagoons can be reduced by sealing the bottom and sides of the lagoon. During cutting and filling, topsoil can be stockpiled and later used to reclaim areas. Revegetating disturbed areas around construction sites as soon as possible helps control soil erosion.

This Dexter soil is in capability subclass IIe and in woodland group 1o7.

Dk—Dexter-Foley complex, gently undulating. This complex consists of well drained Dexter soils and poorly drained Foley soils. Both soils are on the terrace uplands. The Dexter soils are on low ridges that are from 100 to 300 feet in width, and the Foley soils are in swales that are from 100 to 200 feet in width. The Dexter soils make up about 45 percent of the complex and the Foley soils about 30 percent. Areas of these soils are so intermingled that mapping them separately was not practical at the scale selected. Areas of this complex range from 10 to 800 acres. Slopes range from 0 to 3 percent.

Typically, the Dexter soil has a surface layer of brown, medium acid silt loam about 5 inches thick. The subsoil is dark brown, strongly acid silt loam in the upper part; dark brown, very strongly acid silty clay loam in the middle part; and dark brown to brown, very strongly acid clay loam in the lower part. The next layer is reddish brown, strongly acid loam. The underlying material to a depth of about 82 inches is brown, strongly acid loamy fine sand.

This Dexter soil has medium fertility. Water runs off the surface at a medium rate and moves through this soil at a moderate rate. This soil dries quickly after rains. Effective rooting depth is 60 inches or more. Adequate water is available to plants in most years.

Typically, the Foley soil has a surface layer of brown, medium acid silt loam about 4 inches thick. The subsurface layer is light brownish gray, mottled, medium acid silt loam about 6 inches thick. The upper part of the subsoil is grayish brown, mottled, medium acid to neutral silty clay loam. The lower part is light brownish gray, mottled, moderately alkaline silty clay loam and silt loam.

This Foley soil has low fertility. Water runs off the surface at a slow rate and moves through this soil at a very slow rate. Effective rooting depth is limited by concentrations of sodium at a depth of about 27 inches. The subsoil generally remains dry even in wet periods. A high water table is perched above the subsoil. This water table fluctuates between a depth of about 1 foot and the surface from December through April. The surface layer of this soil remains wet for long periods after heavy rainfall. Plants generally suffer from a lack of water during dry periods in summer and fall.

Included with these soils are a few small areas of somewhat poorly drained Deerford soils on toe slopes, moderately well drained Gigger soils on side slopes, and well drained Liddieville soils on slightly higher elevations. Also included are a few small areas of a Dexter soil that has slopes of more than 3 percent. Some of the soil in the swales is subject to shallow flooding after heavy rains. Included soils make up about 25 percent of this map unit.

Most of the acreage of these Dexter and Foley soils is used for crops. A small acreage is in pasture or used for homesites.

These soils are moderately well suited to cultivated crops, mainly soybeans, cotton, and corn. The limitations include wetness and excess sodium salts in the Foley soil. Erosion is a slight problem on the Dexter soil. Irregular slopes hinder tillage. Land smoothing improves surface drainage and permits efficient use of farm equipment. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Leaving crop residue on or near the surface reduces runoff and helps maintain soil tilth and the organic matter content. Traffic pans develop easily but can be broken up by chiseling or deep plowing. Runoff and erosion can be reduced by plowing in fall, fertilizing, and seeding to a cover crop. Crops respond well to lime and fertilizer.

These soils are moderately well suited to pasture. The main limitation is wetness. The high concentration of sodium in the subsoil of the Foley soil limits the choice of plants suitable for pasture. Plants that can tolerate the sodium salts include common bermudagrass, bahiagrass, dallisgrass, ryegrass, wheat, tall fescue, and white clover.

These soils are well suited to moderately well suited to woodland. The Dexter soil has a very high potential for hardwood trees and pine trees, and the Foley soil has a moderately high potential. Suitable trees include water oak, sweetgum, and loblolly pine. Wetness in the Foley soil severely limits equipment use and causes moderate seedling mortality. Sodium salts in the Foley soil also limit tree growth.

These soils are poorly to moderately well suited to recreation uses. The main limitations of the Foley soil are wetness, excess sodium, and very slow permeability. The Dexter soil has few limitations for this use. Good drainage should be provided. Cuts and fills should be seeded or mulched. Plant cover can be maintained by fertilizing and by controlling traffic.

These soils are moderately well suited to urban uses. The main limitations are wetness and moderate to very slow permeability. Low strength is a limitation for local roads and streets. The Dexter soil has fewer limitations for urban uses than the Foley soil. Where possible, homesites should be located on areas of the Dexter soil. Drainage should be provided to lower the water table where buildings are to be constructed on areas of the Foley soil. Excess water can be removed by constructing shallow ditches and by providing the proper grade. Septic tank absorption fields do not function properly during rainy periods because of wetness and moderate to very slow permeability.

These Dexter and Foley soils are in capability subclass IIIw. Dexter soil is in woodland group 1o7, and Foley soil is in 3w9.

Dn—Dundee silt loam. This deep, level, somewhat poorly drained, loamy soil is on the highest positions of the natural levees on the alluvial plain. Areas are irregular in shape and range from 5 to 300 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown, medium acid silt loam about 5 inches thick. The upper part of the subsoil is grayish brown, mottled, strongly acid silty clay loam. The lower part is dark grayish brown to grayish brown, mottled, strongly acid silty clay loam. The underlying material to a depth of about 80 inches is grayish brown, mottled, strongly acid silt loam.

Included in this map unit are a few small areas of Sharkey and Tensas soils. Both soils are in lower positions and are more clayey than this Dundee soil. Also included are a few small areas of Dundee silty clay loam and a Dundee soil that has 1 to 3 percent slopes.

This Dundee soil has medium fertility. Water runs off the surface at a slow rate, and it moves through this soil at a moderately slow rate. The surface layer of this soil remains wet for long periods after heavy rainfall. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Most of the acreage is used for crops. A small acreage is in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, soybeans, and corn (fig. 1). Wetness is a limitation. This soil is friable and is easy to keep in good tilth. It can be worked over a wide range of moisture content. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing improves surface drainage and permits efficient use of farm equipment. Minimum tillage and returning crop residue to the soil or adding other organic matter improves fertility and helps maintain soil tilth and the content of organic matter. Crops respond well to lime and fertilizer.

This soil is well suited to pasture. Suitable pasture plants include common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, dallisgrass, white clover, wheat, and tall fescue. Excessive water on the surface can be removed by surface field ditches.

This soil is well suited to woodland. The potential for production of hardwood trees is high. Suitable trees include eastern cottonwood, cherrybark oak, water oak, sweetgum, and yellow-poplar. Wetness limits the use of equipment unless drainage is provided.

This soil is moderately well suited to recreation uses. It is limited mainly by wetness. Plant cover can be maintained by controlling traffic. Drainage needs to be provided for such intensively used areas as playgrounds.

This soil is moderately well suited to urban uses. The main limitations are wetness and moderate shrink-swell potential. Low strength is a limitation for local roads and streets. Excess water can be removed by constructing shallow ditches and by providing the proper grade. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential.

This Dundee soil is in capability subclass IIw and in woodland group 2w5.

Dr—Dundee silty clay loam. This deep, level, somewhat poorly drained soil is on the natural levees of the alluvial plain. Areas are irregular in shape and range from 5 to 300 acres. Slopes are dominantly less than 1 percent.

Typically, the surface layer is brown, neutral silty clay loam about 5 inches thick. The subsoil is grayish brown, strongly acid or medium acid silty clay loam in the upper

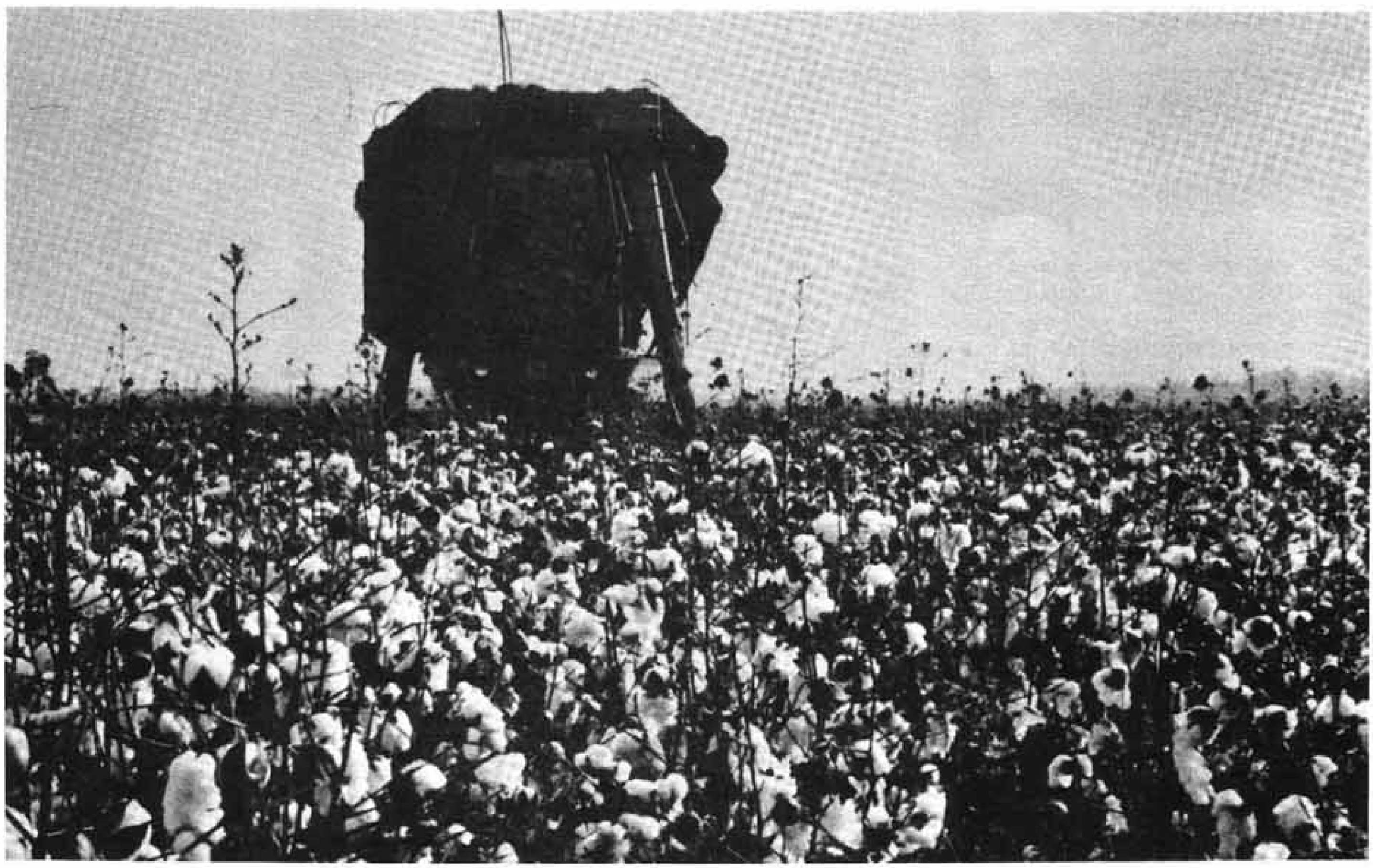


Figure 1.—Harvesting cotton grown on Dundee silt loam.

part; grayish brown, neutral silt loam in the middle part; and grayish brown, neutral loam in the lower part.

Included in this map unit are a few small areas of Sharkey and Tensas soils. These soils are on lower positions and contain more clay than the Dundee soils. Also included are a few small areas of Dundee silt loam and a Dundee soil that has 1 to 3 percent slopes.

This Dundee soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water stands in low places for short periods. Water runs off the surface at a slow rate, and it moves through the soil at a moderately slow rate. Plants are damaged by lack of water during dry periods in summer and fall in some years.

Most of the acreage of this soil is used for crops. A small acreage is in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, soybeans, grain sorghum, wheat, corn, and oats. Management concerns are maintaining soil tilth and reducing wetness. This soil is sticky when wet and hard when dry, and it becomes cloddy if farmed when too wet or too dry. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing helps improve surface drainage and permits efficient use of farm equipment. Conservation tillage and returning all crop residue to the soil or adding other organic matter improves fertility and helps maintain tilth and the content of organic matter. Crops respond well to lime and fertilizer.

This soil is well suited to pasture, mainly common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, dallisgrass, white clover, wheat, and tall fescue. Livestock grazing when the soil is wet can result in some compaction of the surface layer and can damage plants. Excessive water on the surface can be removed by constructing surface field ditches and by providing the proper grade.

This soil is well suited to the production of eastern cottonwood, cherrybark oak, water oak, sweetgum, and yellow-poplar. Wetness limits the use of equipment somewhat; drainage is needed.

This soil is moderately well suited to recreation uses. Wetness is the main limitation. Good drainage should be provided for such intensively used areas as playgrounds. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is moderately well suited to urban uses. The main limitations are wetness and moderate shrink-swell potential. Excess water can be removed by constructing shallow ditches and by providing the proper grade. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. The use of this soil as septic tank absorption fields is limited by moderately slow permeability and the seasonal high water table.

This Dundee soil is in capability subclass IIw and in woodland group 2w5.

Ds—Dundee-Sharkey complex, gently undulating. This complex consists of somewhat poorly drained Dundee soil and poorly drained Sharkey soils. These soils are on the alluvial plain. The Dundee soils are on low parallel ridges that are from 100 to 250 feet in width, and the Sharkey soils are in concave swales that are from 25 to 200 feet in width. The Dundee soils make up about 55 percent of the complex and the Sharkey soils about 35 percent. Areas of these soils are so intermingled that mapping them separately was not practical at the scale selected. Areas of this complex range from 10 to 300 acres. Slopes range from 0 to 3 percent.

Typically, the Dundee soil has a surface layer of dark grayish brown, medium acid silt loam about 4 inches thick. The upper part of the subsoil is grayish brown, mottled, strongly acid silt loam. The lower part is grayish brown, mottled, medium acid clay loam. The underlying material to a depth of about 60 inches is grayish brown, medium acid very fine sandy loam.

This Dundee soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a medium rate, and it moves through the soil at a moderately slow rate. From January through April, a high water table is at a depth of 1 1/2 to 3 1/2 feet. Plants are damaged by lack of water during dry periods in summer and fall in some years.

Typically, the Sharkey soil has a surface layer of very dark grayish brown, medium acid clay about 4 inches thick. The upper part of the subsoil is dark gray and gray, mottled, medium acid clay. The lower part is dark gray, mottled, neutral clay.

This Sharkey soil has high fertility. After heavy rainfall, the surface layer of this soil remains wet and ponds in low places for long periods. Water runs off the surface at a slow or very slow rate, and it moves through the soil at a very slow rate. From December through April, a high water table fluctuates between a depth of 2 feet and the surface. This soil has very high shrink-swell potential. Adequate water is available to plants in most years.

Included in mapping are a few small areas of poorly drained Tensas soils on side slopes. Also included are a few small areas of a Dundee soil on slopes greater than 3 percent. Some of the soil in the swales is subject to shallow flooding after heavy rainfall. Included soils make up about 10 percent of this map unit.

Most of the acreage of these Dundee and Sharkey soils is used for crops. A small acreage is in pasture and woodland.

These soils are well suited to cultivated crops, mainly cotton, soybeans, corn, wheat, and oats. The main limitations are wetness and the uneven landscape. Erosion is a slight problem on the Dundee soil. The Dundee soil is friable and is easy to keep in good tilth. The Sharkey soil is sticky when wet, hard when dry, and difficult to keep in good tilth. Good drainage is needed for most cultivated crops and pasture plants. Land smoothing improves surfaçe drainage and permits efficient use of farm equipment. In most cases, however, a large amount of earth needs to be moved. Leaving crop residue on the surface reduces runoff and helps maintain soil tilth and the organic matter content. Most crops, other than legumes, respond well to nitrogen fertilizer. Lime and fertilizer may be needed.

This unit is well suited to pasture. The main limitation is wetness. The uneven landscape interferes with operations which require the use of equipment. The main pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, dallisgrass, white clover, tall fescue, and ryegrass. Use of proper stocking rates, pasture rotation, and restricted grazing during wet periods helps keep the pasture and the soil in good condition.

These soils are well suited to water oak, sweetgum, eastern cottonwood, and green ash. Because of wetness, the main concerns in producing and harvesting timber are equipment use limitations and seedling mortality.

These soils are poorly suited to recreation uses. The main limitations are wetness, a clayey surface layer, and moderately slow to very slow permeability. Drainage is needed for intensively used areas. Stickiness of the surface layer can be overcome by adding loamy fill material.

These soils are moderately well suited to urban uses. Wetness, moderately slow and very slow permeability, and very high shrink-swell potential are limitations for most uses. Low strength is a limitation for local streets and roads. The Dundee soil is better suited to homesites than the Sharkey soil. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Because of wetness, septic tank absorption fields do not function properly during rainy periods.

These Dundee and Sharkey soils are in capability subclass IIIw. The Dundee soil is in woodland group 2w5, and the Sharkey soil is in 2w6.

Eg—Egypt silt loam. This deep, level, somewhat poorly drained soil is on low ridges and knolls on the terrace uplands. Areas are irregular in shape and range from 5 to 100 acres. Slope is 0.5 to 1.0 percent.

Typically, the surface layer is dark brown, medium acid silt loam about 5 inches thick. The subsurface layer, to about 16 inches, is brown, mottled, strongly acid silt loam. The upper part of the subsoil is yellowish brown, mottled, strongly acid silty clay loam. The lower part is yellowish brown and dark brown, neutral and strongly alkaline silty clay loam.

Included in mapping are a few small areas of the somewhat poorly drained Deerford soils on toe slopes, the poorly drained Foley and Gilbert soils in lower positions, and the well drained Dexter soils and the moderately well drained Gigger soils on the higher ridges.

This Egypt soil has low fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow rate, and it moves through the soil at a slow rate. From December through April, a high water table is perched between 1/2 foot and 2 feet below the surface. The high concentration of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants suffer from lack of water during dry periods in summer and fall.

Most of the acreage of this soil is used for crops. A small acreage is in pasture or used for homesites.

This soil is moderately well suited to cultivated crops, mainly cotton, corn, rice, and soybeans. Wetness is a limitation. The sodium in the lower part of the subsoil restricts plant growth. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Conservation tillage and leaving crop residue on the soil or adding other organic matter improves fertility and helps maintain soil tilth and the content of organic matter. Land smoothing will improve surface drainage and increase the efficiency of farm equipment; however, deep cutting may expose the lower part of the subsoil, which is high in sodium. Crops respond well to lime and fertilizer.

This soil is moderately well suited to pasture. The main limitation is wetness. The sodium in the lower part of the subsoil also limits the growth of pasture plants. Plants that can tolerate the sodium include common bermudagrass, improved bermudagrass, bahiagrass, tall fescue, and ryegrass. Livestock grazing when the soil is wet can result in some compaction of the surface layer and can damage plants. Excessive water on the surface can be removed by surface field ditches.

This soil is moderately well suited to sweetgum, water oak, and loblolly pine. Most areas have been cleared and are used as cropland or pastureland. Wetness limits planting and harvesting; drainage is needed.

This soil is poorly suited to recreation uses. The main limitation is wetness. Good drainage should be provided for intensively used areas. Cuts and fills should be seeded or mulched. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is poorly suited to urban uses. The main limitations are wetness and slow permeability. Excess water can be removed by shallow ditches and providing the proper grade. Because of wetness and slow permeability, septic tank absorption fields do not function properly during rainy periods.

This Egypt soil is in capability subclass IIw and in woodland group 3w9.

Fo—Foley silt loam. This deep, level, poorly drained soil has high concentrations of sodium in the lower part of the subsoil. This soil is on level to depressional areas on the terrace uplands. Areas are irregular in shape and 5 to 80 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is brown, strongly acid silt loam about 5 inches thick. The subsurface layer is light brownish gray, medium acid silt loam about 7 inches thick. The subsoil extends to a depth of about 65 inches. It is light brownish gray, strongly acid silty clay loam in the upper part; grayish brown, neutral silty clay loam in the middle part; and grayish brown, mildly alkaline silty clay loam and silt loam in the lower part.

Included in mapping are a few small areas of Deerford, Forestdale, and Gilbert soils. The somewhat poorly drained Deerford soils are in higher positions. The poorly drained Forestdale and Gilbert soils are in similar positions to those of this Foley soil, and they contain less sodium. Also included is a Foley soil, adjacent to some drainageways, that is subject to shallow flooding after heavy rainfall.

This Foley soil has low fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow rate, and it moves through the soil at a very slow rate. From December through April, water is perched above the subsoil. The high amount of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants suffer from a lack of water during dry periods in summer and fall.

Most of the acreage is used for crops. A small acreage is in pasture or used for homesites.

This soil is moderately well suited to cultivated crops, mainly cotton and soybeans. The main limitations are wetness and excess sodium in the lower part of the subsoil. A tillage pan forms easily if this soil is tilled when wet. Chiseling or subsoiling can be used to break up the tillage pan. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing will improve surface drainage and permit efficient use of farm equipment. Deep cutting during land smoothing should be avoided to prevent the exposure of the subsoil that is high in sodium. Leaving crop residue on the surface reduces runoff and helps maintain soil tilth and the organic matter content. Crops respond to lime and fertilizer.

This soil is moderately well suited to pasture (fig. 2). The concentration of sodium in the lower part of the subsoil limits the choice and production of pasture plants. Plants tolerant of the sodium include common bermudagrass and ryegrass. Excessive water on the surface can be removed by surface field ditches and by providing the proper grade. Use of proper stocking rates, pasture rotation, and restricted grazing during wet

Figure 2.—Permanent pasture of native grasses on Foley silt loam.

periods helps to keep the pasture and the soil in good condition.

This soil is moderately well suited to sweetgum, water oak, and loblolly pine. Wetness severely limits the use of equipment. Concentrations of sodium salts in the lower part of the subsoil also limit tree growth.

This soil is poorly suited to recreation uses. The main limitations are wetness, very slow permeability, and excess sodium. Good drainage should be provided for intensive recreation uses. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is poorly suited to urban uses. The main limitations are wetness and very slow permeability. Drainage should be provided around homesites. Excess water can be removed by shallow ditches and providing the proper grade. Because of wetness and very slow permeability of this soil, septic tank absorption fields do not function properly during rainy periods. During cutting and filling, topsoil can be stockpiled and later used to reclaim areas. Establishing and maintaining plant cover are possible by proper fertilizing, seeding, and mulching.

This Foley soil is in capability subclass IIIw and in woodland group 3w9.

Fs—Forestdale silty clay loam, occasionally flooded. This deep, poorly drained soil is on level and in depressional areas on the alluvial plain. Areas range from 10 to 400 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown, medium acid silty clay loam about 4 inches thick. The subsoil extends to a depth of 60 inches or more. It is gray, mottled, medium acid and strongly acid clay or silty clay in the upper part; gray, mottled, medium acid and slightly acid silty clay loam in the middle part; and light brownish gray, mottled, neutral silty clay loam in the lower part.

Included in this map unit are a few small areas of the poorly drained Foley soils in higher positions, the somewhat poorly drained Necessity soils on low ridges and knolls, and the poorly drained Sharkey soils in lower positions. Also included are small areas of a Forestdale soil that has a silty clay surface layer and that has a slope of more than 1 percent.

This Forestdale soil has medium fertility. Water runs off the surface at a slow to very slow rate. Water and air move through the subsoil at a very slow rate. This soil is subject to long periods of flooding from January through March. A high water table is at a depth of 1/2 foot to 2 feet from January to April. The soil has high swelling and shrinking when wet and when dry.

Most of the acreage is used for crops. A small acreage is in woodland and pasture.

This soil is poorly suited to cultivated crops, mainly soybeans. Flooding and wetness are the main limitations. This soil is difficult to keep in good tilth because it becomes cloddy if farmed when it is too wet or too dry. It can be worked only within a narrow range of moisture content. A drainage system is needed for most cultivated crops and pasture plants. Land smoothing will improve surface drainage and permit efficient use of farm equipment. Conservation tillage and returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps maintain soil tilth and the content of organic matter. Crops respond well to lime and fertilizer.

This soil is poorly suited to pasture. The main limitations are flooding and wetness. The main suitable pasture plants are common bermudagrass and dallisgrass. Use of proper stocking rates, pasture rotation, and restricted grazing during wet periods helps to keep the pasture and the soil in good condition. During flooding periods, cattle need to be moved to pasture on higher elevations.

This soil is moderately well suited to water oak, sweetgum, and green ash. The main concerns in producing and harvesting timber are flooding and wetness, which limit equipment use and cause moderate seedling mortality.

This soil is unsuited to urban and recreation uses. The limitations are flooding, high shrink-swell potential, and wetness.

This Forestdale soil is in capability subclass IVw and in woodland group 1w6.

Gd—Gigger silt loam, 1 to 3 percent slopes. This deep, very gently sloping, moderately well drained soil is on low ridges on the terrace uplands. Areas generally are long and narrow and range from 5 to 100 acres.

Typically, the surface layer is dark brown, medium acid silt loam about 6 inches thick. The subsoil extends to 65 inches or more. It is dark brown and brown, very strongly acid silt loam in the upper part. A fragipan of yellowish brown and brown, very strongly acid silt loam is in the middle part. The lower part of the subsoil is brown, strongly acid loam.

Included in mapping are a few small areas of well drained Dexter soils on higher ridges, somewhat poorly drained Egypt soils on foot slopes, and poorly drained Gilbert soils in lower lying positions. Also included are a few small areas of a Gigger soil that has a slope of more than 3 percent.

This Gigger soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a medium rate, and it moves through the soil at a slow rate. From January through March, water is perched above the fragipan. Plants suffer from lack of water during dry periods in summer and fall.

Most of the acreage of this soil is used for crops. A small acreage is in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn, oats, sweetpotatoes, grain sorghum, truck crops, and wheat. Maintaining fertility and controlling erosion are concerns of management. This soil is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Traffic pans develop easily, but these can be broken up by chiseling or deep plowing. Crop residue left on the surface helps reduce runoff and helps maintain soil tilth, fertility, and organic matter content. Erosion can be reduced if fall grain is seeded early, conservation tillage is used, and tillage and seeding are on the contour or across the slope. Also, waterways should be shaped and then seeded to perennial grass. Most crops respond well to fertilizer.

This soil is well suited to pasture. The main suitable pasture plants are common bermudagrass, improved bermudagrass, tall fescue, ryegrass, crimson clover, bahiagrass, ball clover, and white clover. This soil has few limitations. Seedbed preparation should be on the contour or across the slope, where practical, to control runoff.

This soil is well suited to sweetgum, cherrybark oak, water oak, and loblolly pine. Potential for woodland production is high. Management problems are slight.

This soil is moderately well suited to recreation uses. The main limitations are wetness and slow permeability. Good drainage should be provided for intensively used recreation areas. Cuts and fills should be seeded or mulched. Adequate plant cover helps control erosion and sedimentation. Plant cover can be maintained by adding fertilizer and by controlling traffic.

This map unit is moderately well suited to urban uses. The main limitations are wetness and slow permeability. Preserving the existing plant cover during construction helps to control erosion. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability.

This Gigger soil is in capability subclass IIe and in woodland group 2o7.

Gh—Gigger-Gilbert complex, gently undulating. This complex consists of moderately well drained Gigger soils and poorly drained Gilbert soils. These soils are on the terrace uplands. The Gigger soils are on low ridges that are 200 to 300 feet in width, and the Gilbert soils are in swales that are 100 to 300 feet in width. The Gigger soils make up 45 percent of this complex and the Gilbert soils about 35 percent. Areas of these soils are so intermingled that mapping them separately was not practical at the scale selected. Areas of this complex range from 20 to 800 acres. Slopes range from 0 to 3 percent.

Typically, the Gigger soil has a surface layer of brown, strongly acid silt loam about 5 inches thick. The subsoil is strong brown, very strongly acid silty clay loam in the upper part; strong brown, mottled, very strongly acid silty clay loam in the middle part; and a strong brown, very strongly acid fragipan of silty clay loam in the lower part. The underlying material to a depth of about 65 inches is strong brown, strongly acid loam.

The Gigger soil has medium fertility. Water runs off the surface at a medium rate. Water and air move through the subsoil at a slow rate. Water is perched above the fragipan during January through March. Plants generally suffer from a lack of water during dry periods in summer and fall.

Typically, the Gilbert soil has a surface layer of grayish brown, strongly acid silt loam about 6 inches thick. The subsurface layer is light brownish gray, strongly acid silt loam about 9 inches thick. The upper part of the subsoil is light brownish gray, mottled, strongly acid silty clay loam. The lower part to a depth of about 70 inches is light brownish gray and grayish brown, mottled, moderately alkaline silty clay loam.

The Gilbert soil has low fertility. After heavy rainfall the surface layer of this soil remains wet for long periods. Water runs off the surface at a very slow rate, and it moves through this soil at a very slow rate. Water is perched above the subsoil from December through April. The high amount of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants generally suffer from a lack of water during dry periods in summer and fall.

Included in this map unit are a few small areas of Dexter and Egypt soils. The well drained Dexter soils are in higher positions. The somewhat poorly drained Egypt soils are on the foot slopes. Also included are a few small areas of a Gigger soil that has a slope of more than 3 percent. Some of the soil in the swales is subject to shallow flooding after heavy rains. Included soils make up about 20 percent of this map unit.

Most of these Gigger and Gilbert soils are used for crops. A small acreage is in pasture and woodland. A few small areas are used for homesites.

These soils are moderately well suited to cultivated crops. The main limitations are the uneven surface of the landscape and wetness of the soil in the swales. Erosion is also a hazard on areas of the Gigger soil. These soils are friable and easy to keep in good tilth, but surface crusting is a minor problem. Commonly grown crops are cotton, corn, oats, sweetpotatoes, soybeans, and wheat. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing helps improve surface drainage and permits efficient use of farm equipment. However, in most cases a large amount of earth will have to be moved. Where the land is smoothed, the fragipan of the Gigger soil and the subsoil layers of the Gilbert soil that is high in sodium are exposed in places. Crop growth will be reduced in areas where these subsoil layers are exposed. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Leaving crop residue on the surface reduces runoff and helps maintain soil tilth and the organic matter content. Erosion can be reduced if fall grain is seeded early, conservation tillage is used, and tillage and seeding are on the contour or across the slope.

These soils are well suited to pasture. The main limitations are wetness of the soil in the swales and the uneven surface. The main suitable pasture plants are common bermudagrass, bahiagrass, tall fescue, ryegrass, white clover, and southern winterpeas. A surface drainage system is needed to remove excess surface water from the swales. Livestock grazing when the soil is wet can result in some compaction of the surface layer and can damage plants. Periodic mowing and clipping help to maintain uniform growth, discourage selective grazing, and reduce clumpy growth. Fertilizer and limeare needed for grasses and legumes.

These soils are well suited to moderately well suited to woodland. The potential of pine and hardwood trees is high for the Gigger soil and moderately high for the Gilbert soil. Suitable trees are cherrybark oak, water oak, sweetgum, and loblolly pine. Management problems are only slight on the Gigger soil. In areas of the Gilbert soil, wetness severely limits the use of equipment limitations and causes moderate seedling mortality.

These soils are moderately well suited to recreation uses. The main limitations are the very slow permeability and slow permeability and wetness of the soil in the swales. Surface drainage should be provided for intensive use. Plant cover can be maintained by fertilizing and by controlling traffic.

These soils are moderately well suited to urban uses. The main limitations are wetness and slow permeability and very slow permeability. Drainage is needed where buildings are to be constructed. Wetness can be reduced by drainage tile around footings. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability or very slow permeability.

These Gigger and Gilbert soils are in capability subclass IIIw. Gigger soil is in woodland group 2o7, and Gilbert soil is in 3w9.

Gr—Gilbert silt loam. This deep, level, poorly drained soil is on broad flats and in narrow depressional areas adjacent to drainageways on the terrace uplands. Areas are irregular in shape and range from 5 to 200 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is brown, medium acid silt loam about 4 inches thick. The subsurface layer is grayish brown, strongly acid silt loam about 8 inches thick. The subsoil is light brownish gray, very strongly acid silty clay loam in the upper part; light brownish gray, very strongly acid silty clay loam in the middle part; and grayish brown, strongly acid silty clay loam in the lower part. The underlying material to a depth of 70 inches or more is grayish brown, mildly alkaline silty clay loam.

Included in this map unit are a few small areas of Dexter, Egypt, Foley, and Gigger soils. Dexter and Gigger soils are on low ridges and are better drained than this Gilbert soil. The somewhat poorly drained Egypt soils are in higher positions. Foley soils are on similar positions to this Gilbert soil and contain high concentrations of sodium salts in the upper part of the subsoil.

This Gilbert soil has low fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a very slow rate, and it moves through the soil at a very slow rate. From December through April, water is perched above the subsoil. The high concentration of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants are damaged by lack of water during dry periods in summer and fall in some years.

Most of the acreage of this soil is used for crops. A small acreage is in pasture and woodland.

This soil is moderately well suited to cultivated crops, mainly cotton, corn, rice, and soybeans. The main limitations are wetness and very slow permeability. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing will improve surface drainage and permit efficient use of farm equipment; however, deep cutting may expose the lower part of the subsoil, which is high in sodium. Leaving crop residue on or near the surface helps maintain soil tilth and the organic matter content. Crops respond well to lime and fertilizer.

This soil is moderately well suited to pasture. Wetness limits the choice of plants and the period of grazing. The main suitable pasture plants are common bermudagrass, bahiagrass, ryegrass, tall fescue, white clover, and southern winterpeas. Excessive water on the surface can be removed by surface field ditches and providing the proper grade. Fertilizer and lime are needed for grasses and legumes.

This soil is moderately well suited to sweetgum, water oak, and loblolly pine. Wetness severely limits the use of equipment and causes moderate seedling mortality.

This soil is poorly suited to recreation uses. Wetness and very slow permeability are the main limitations. Good drainage should be provided for intensively used areas. Cuts and fills should be seeded or mulched. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is poorly suited to urban uses. The main limitations are wetness and very slow permeability. Drainage should be provided where buildings are to be constructed to lower the seasonal high water table. Excess surface water can be removed by using shallow ditches and providing the proper grade. Septic tank absorption fields do not function properly during rainy periods because of wetness and very slow permeability.

This Gilbert soil is in capability subclass IIIw and in woodland group 3w9.

Gt—Gilbert silt loam, occasionally flooded. This deep, poorly drained soil is on level to depressional areas adjacent to narrow drainageways on the terrace uplands. This soil is subject to flooding from brief to long periods. Areas are long and narrow and range from 10 to 300 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown, medium acid silt loam about 4 inches thick. The subsurface layer is light gray, strongly acid silt loam about 9 inches thick. The subsoil extends to a depth of 70 inches or more. It is gray, very strongly acid silty clay loam in the upper part; light brownish gray, strongly acid silty clay loam in the middle part; and grayish brown, mildly alkaline silty clay loam in the lower part.

Included in this map unit are a few small areas of Egypt, Foley, Forestdale, and Gigger soils. Egypt and Gigger soils are in higher positions and are better drained than this Gilbert soil. Foley soils are in similar positions to this Gilbert soil, but they contain high concentrations of sodium salts in the upper part of the subsoil. Forestdale soils are more clayey and in lower positions.

This Gilbert soil has low fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a very slow rate, and it moves through the soil at a very slow rate. From December through April, water is perched above the subsoil. The high amount of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. This soil is subject to flooding from brief to long periods from December through May. Plants are damaged by lack of water during dry periods in summer and fall of some years.

In most areas this soil is used for pasture. In a few areas it is used as woodland and cropland.

Unless this soil is protected from flooding, it is poorly suited to most cultivated crops. However, late planted crops, such as soybeans and grain sorghum, can be grown in most years. Wetness from flooding and a seasonal high water table are the main limitations. Flooding can be controlled by the use of levees. Proper row arrangement, surface field ditches, and vegetated waterways help to remove excess surface water. Leaving crop residue on the surface helps maintain soil tilth and the organic matter content. Crops respond well to lime and fertilizer.

This soil is moderately well suited to pasture. The main limitations are wetness from flooding and a seasonal high water table. Flooding and wetness limit the choice of plants and the period of grazing. Suitable pasture plants are common bermudagrass, bahiagrass, and dallisgrass. Except during flooding periods, excessive water on the surface can be removed by surface field ditches.

This soil is moderately well suited to sweetgum, water oak, and loblolly pine. The main concerns in producing and harvesting timber are seedling mortality and equipment use limitations.

This soil has severe limitations for recreation and most urban uses. It is limited mainly by flooding and wetness.

This Gilbert soil is in capability subclass IVw and in woodland group 3w9.

Gy—Gilbert-Egypt complex. This complex consists of poorly drained Gilbert soils and somewhat poorly drained Egypt soils. These soils are on the terrace uplands. The Gilbert soils are on the level areas between the low ridges and knolls, and the Egypt soils are on the low ridges and knolls. Gilbert soils make up 55 percent of the complex and Egypt soils about 30 percent. Areas of these soils are so intermingled that mapping them separately was not practical at the scale used. Areas of this complex range from 20 to 800 acres. Slope is dominantly less than 2 percent.

Typically, the Gilbert soil has a surface layer of dark grayish brown, medium acid silt loam about 5 inches thick. The subsurface layer is light brownish gray, strongly acid silt loam about 9 inches thick. The upper part of the subsoil is grayish brown, mottled, very strongly acid and strongly acid silty clay loam. The lower part is grayish brown, mottled, neutral and moderately alkaline silty clay loam.

The Gilbert soil has low fertility. After heavy rainfall the surface layer of this soil remains wet for long periods. Water runs off the surface at a very slow rate, and it moves through this soil at a very slow rate. Water is perched above the subsoil from December through April. The high amount of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Typically, the Egypt soil has a surface layer of brown, medium acid silt loam about 6 inches thick. The subsurface layer is light brownish gray, mottled, strongly acid silt loam about 8 inches thick. The subsoil extends to a depth of about 70 inches or more. It is pale brown, mottled, strongly acid silty clay loam in the upper part; brown, mottled, strongly acid silty clay loam in the middle part; and brown, moderately alkaline, compact silty clay loam in the lower part.

The Egypt soil has low fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow rate and moves through this soil at a slow rate. The high amount of sodium in the lower part of the subsoil restricts root development and limits the amount of water available to plants. The high water table is perched between depths of 1/2 foot and 2 feet from December through April. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Included with these soils in mapping are a few small areas of the well drained Dexter soils and the moderately well drained Gigger soils. These soils are in lower positions than either the Gilbert or Egypt soils. Also included in mapping are a few small areas of a soil that is similar to the Gilbert soil except that it is subject to flooding during heavy rainstorms.

These Gilbert and Egypt soils are used mainly for crops. They are also used for pasture, woodland, or homesites.

These soils are moderately well suited to cultivated crops, mainly cotton, corn, oats, sweetpotatoes, soybeans, and wheat. They are limited mainly by the uneven surface and wetness of the soil in the swales. These soils are friable and easy to keep in good tilth, but surface crusting is a minor problem. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing will improve surface drainage and permit efficient use of farm equipment. In areas that are smoothed the lower parts of the subsoil should not be exposed. Leaving crop residue on the surface helps maintain soil tilth and the organic matter content.

These soils are moderately well suited to pasture. Wetness is the main limitation. In addition, the sodium in the subsoil limits the choice of plants suitable for pasture. Plants that are tolerant to the sodium include common bermudagrass, tall fescue, and ryegrass. Livestock grazing when the soil is wet can result in some compaction of the surface layer and can damage the plants. Excessive water on the surface can be removed by surface field ditches and providing the proper grade.

These soils are moderately well suited to sweetgum, water oak, and loblolly pine. Because of wetness, the main concerns in producing and harvesting timber are seedling mortality and equipment use limitations.

These soils are poorly suited to recreation uses. The main limitation is wetness. Good drainage should be provided for intensive use. Cuts and fills should be seeded or mulched. Plant cover can be maintained by fertilizing and by controlling traffic.

These soils are poorly suited to urban uses. The main limitation is wetness. Drainage is needed where buildings are to be constructed. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability or very slow permeability.

These Gilbert and Egypt soils are in capability subclass IIIw. Gilbert soil is in woodland group 3w9, and Egypt soil is in 3w8.

Ld—Liddieville fine sandy loam, 2 to 5 percent slopes. This deep, gently sloping, well drained soil is on narrow convex ridges on the terrace uplands. Areas are elongated in shape and range from 5 to 100 acres.

Typically, the surface layer is brown, neutral fine sandy loam about 9 inches thick. The subsoil is dark brown, slightly acid loam in the upper part; yellowish red, medium acid clay loam in the middle part; and yellowish red, slightly acid clay loam in the lower part. The next layer is strong brown, slightly acid clay loam. The underlying material to a depth of 76 inches or more is strong brown, neutral fine sandy loam.

Included with this soil in mapping are a few small areas of well drained Dexter soils and somewhat poorly drained Necessity soils in lower positions than this Liddieville soil. Also included are a few small areas of a Liddieville soil that has slopes of less than 2 percent.

This soil has medium fertility. Water runs off the surface at a medium rate and moves through this soil at a moderate rate. Plants are damaged by lack of water during dry periods in summer and fall of some years. This soil dries quickly after rains.

Most of the acreage of this soil is used for crops. A small acreage is in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, soybeans, wheat, oats, grain sorghum, sweetpotatoes, and corn. Slope is the main limitation. This soil is friable and is easy to keep in good tilth. It can be worked over a wide range of moisture content. Traffic pans develop easily but can be broken up by chiseling or deep plowing. Crop residue left on the surface helps conserve moisture, maintain tilth, and control erosion. Erosion can be reduced if fall grain is seeded early, conservation tillage is practiced, and tillage and seeding are on the contour or across the slope. Also, waterways should be shaped and then seeded to perennial grass. Crops respond well to lime and fertilizer.

This soil is well suited to pasture. It has few limitations. Suitable pasture plants include common bermudagrass, improved bermudagrass, bahiagrass, tall fescue, white clover, ryegrass, and crimson clover. Tillage for seedbed preparation should be on the contour or across the slope. Proper grazing practices, weed control, and fertilizer are needed.

This soil is well suited to loblolly pine, eastern cottonwood, cherrybark oak, Nuttall oak, and sweetgum. Potential production is high under good management.

This soil is well suited to recreation uses. Cuts and fills should be seeded or mulched as soon as possible. Adequate plant cover helps control erosion and sedimentation. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is moderately well suited to urban uses. The main limitations are moderate permeability, low strength, and seepage. In addition, cutbanks are not stable and are subject to slumping. Where septic tanks are installed, the limitation of moderate permeability can be overcome by increasing the size of the absorption field. Seepage can be a problem where this soil is used for sewage lagoons. This can be overcome by sealing the sides and bottom of the lagoon with clayey materials. Plans for homesite development should include the preservation of as many trees as possible. During cutting and filling, topsoil can be stockpiled and later used to reclaim areas.

This Liddieville soil is in capability subclass IIe and in woodland group 2o7.

Lo—Loring silt loam, 1 to 3 percent slopes. This deep, very gently sloping, moderately well drained soil is on low ridges on the terrace uplands. Areas are elongated and range from 5 to 200 acres.

Typically, the surface layer is brown, medium acid silt loam about 6 inches thick. The subsoil is brown, very strongly acid silty clay loam in the upper part. The lower part is a fragipan of brown and yellowish brown, very strongly acid and strongly acid silt loam. The underlying material to a depth of 84 inches is brown, strongly acid silt loam.

Included with this soil in mapping are a few small areas of Calhoun, Calloway, and Memphis soils. Also included are a few small areas of a Loring soil that has a slope of more than 3 percent or that has a slope of less than 1 percent.

This Loring soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a medium rate and moves through this soil at a moderately slow rate. Water is perched above the fragipan from December through March. Plant roots easily penetrate the soil above the fragipan. The fragipan restricts root penetration somewhat. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Most of the acreage of this soil is used for crops and pasture. A small acreage is in truck crops or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, corn, soybeans, oats, sweetpotatoes, grain sorghum, truck crops, and wheat. Slope is the main limitation. This soil is friable and easy to keep in good tilth. It can be worked over a wide range of moisture content. Traffic pans develop easily but can be broken up by chiseling or deep plowing. Tillage should be on the contour or across the slope to control runoff (fig. 3). Erosion can also be reduced if fall grain is seeded early, conservation tillage is used, and tillage is on the contour or across the slope. Also, waterways should be shaped and then seeded to perennial grass. Crops respond well to lime and fertilizer.

This soil is well suited to pasture. It has few limitations. Suitable pasture plants are common bermudagrass, improved bermudagrass, crimson clover, bahiagrass, ryegrass, and tall fescue. Tillage for seedbed preparation should be on the contour or across the slope. Use of proper stocking rates and pasture rotation helps to keep the pasture and the soil in good condition. Fertilizer and lime are needed for vigorous grasses and legumes.

This soil is well suited to loblolly pine, cherrybark oak, water oak, and sweetgum. Potential timber production is high under good management.

This soil is moderately well suited to urban uses. Wetness is a limitation if this soil is used for septic tank absorption fields, sanitary landfills, and homesites. The

Figure 3.—Farming on the contour helps control erosion in this area of Loring silt loam, 1 to 3 percent slopes.

load supporting capacity of the soil can be improved by strengthening or replacing the base material. Wetness can be reduced by drainage tile around footings of buildings. Preserving the existing plant cover during construction helps control erosion.

This soil is moderately well suited to recreation uses. The main limitations are wetness and the hazard of erosion. Surface drainage should be provided in intensively used areas. Cuts and fills should be seeded or mulched. Plant cover can be maintained by fertilizing and controlling traffic.

This Loring soil is in capability subclass IIe and in woodland group 2o7.

Lr—Loring-Calhoun complex, gently undulating. This complex consists of moderately well drained Loring soils and poorly drained Calhoun soils. These soils are on the terrace uplands. The Loring soils are on low ridges that are from 200 to 300 feet in width, and the Calhoun soils are in swales that are from 100 to 200 feet in width. Loring soils make up 45 percent of this complex and Calhoun soils about 35 percent. Areas of these soils are so intermingled that mapping them separately was not practical at the scale used. Areas of this complex range from 10 to 800 acres. Slopes range from 0 to 3 percent.

Typically, the Loring soil has a surface layer of brown, medium acid silt loam about 6 inches thick. The upper part of the subsoil is brown and strong brown, mottled, very strongly acid silty clay loam and silt loam. The lower part is a fragipan of dark yellowish brown, mottled, strongly acid silty clay loam. The next layer to a depth of 62 inches or more is yellowish brown, mottled, very strongly acid silty clay loam.

The Loring soil has medium fertility. Water runs off the surface at a medium rate, and it moves through this soil at a moderately slow rate. Water is perched above the fragipan from December through March. Plants generally suffer from a lack of water during dry periods in summer and fall.

Typically, the Calhoun soil has a surface layer of dark grayish brown, medium acid silt loam about 4 inches thick. The subsurface layer is light brownish gray, strongly acid silt loam to about 15 inches. The upper part of the subsoil is grayish brown, mottled, very strongly acid silty clay loam. The lower part is grayish brown, mottled, very strongly acid silt loam. The underlying material to a depth of 72 inches or more is yellowish brown, strongly acid silt loam.

The Calhoun soil has medium fertility. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water runs off the surface at a slow to very slow rate, and it moves through this soil at a slow rate. Water is perched above the subsoil from December through April. This soil generally is never saturated below a depth of 2 feet. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Included in mapping are a few small areas of Calloway and Memphis soils. The somewhat poorly drained Calloway soils are on lower side slopes. The well drained Memphis soils are on the higher lying ridges and do not have a fragipan. Also included are a few small areas of a Loring soil that has a slope of more than 3 percent. Some areas of soils in the swales are subject to shallow flooding after heavy rainfall. Included soils make up about 15 percent of this map unit.

Most of the acreage of these Loring and Calhoun soils is used for crops. A small acreage is in pasture or used for homesites.

These soils are moderately well suited to cultivated crops, mainly cotton, corn, oats, sweet potatoes, soybeans, and wheat. The main limitations are the uneven surface of the landscape and the wetness of the soil in the swales. Erosion is a minor problem on some areas of the Loring soil. These soils are friable and are easy to keep in good tilth, but surface crusting is a minor problem. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing will improve surface drainage and permit efficient use of farm equipment. In most cases, a large yardage of earth will have to be moved. Crop growth can be affected in areas where the fragipan of the Loring soil becomes exposed by land grading operations. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Leaving crop residue on the surface reduces runoff and helps maintain soil tilth and the organic matter content. Erosion can be reduced if fall grain is seeded early, stubble-mulch tillage is used, and tillage and seeding are on the contour or across the slope. Also, waterways should be shaped and then seeded to perennial grass.

These soils are well suited to pasture. The main limitations are wetness of the soil in the swales and the uneven surface that can interfere with equipment use. Suitable pasture plants include common bermudagrass, bahiagrass, ryegrass, and tall fescue. A surface drainage system is needed to remove excess surface water from the swales. Livestock grazing when the soil is wet can result in some compaction of the surface layer and can damage the plants. Mowing and clipping help maintain uniform growth, discourage selective grazing, and reduce clumpy growth. Fertilizer and lime are needed for grasses and legumes.

These soils are well suited to pine and hardwood trees, mainly cherrybark oak, water oak, sweetgum, and loblolly pine. No problems of management exist on the Loring soil. On the Calhoun soil, equipment use limitations are severe and seedling mortality is moderate.

These soils are moderately well suited to recreation uses. Wetness is a limitation. Good drainage should be provided for intensively used areas. Plant cover can be maintained by fertilizing and by controlling traffic.

These soils are moderately well suited to urban uses. The main limitations are wetness and slow to moderately slow permeability. Drainage is needed where buildings are to be constructed. Erosion is a hazard on the more sloping areas. Only the soil at the construction site should be disturbed. Establishing and maintaining plant cover can be achieved by shaping the slopes, fertilizing, seeding, and mulching. Septic tank absorption fields do not function properly during rainy periods because of wetness and moderately slow permeability to slow permeability.

These Loring and Calhoun soils are in capability subclass IIIw. Loring soil is in woodland group 2o7, and Calhoun soil is in 2w9.

Me—Memphis silt loam, 2 to 5 percent slopes. This deep, gently sloping, well drained soil is on ridges on the terrace uplands. Slopes are short and convex. Areas are long and narrow and range from 5 to 100 acres.

Typically, the surface layer is dark brown, medium acid silt loam about 3 inches thick. The subsoil is dark brown, very strongly acid silty clay loam. The underlying material to a depth of 80 inches or more is dark brown, strongly acid silt loam.

Included in mapping are a few small areas of poorly drained Calhoun soils in low areas, somewhat poorly drained Calloway soils on foot slopes, and moderately well drained Loring soils on low ridges. Also included are a few small areas of Memphis soils that have slopes of more than 5 percent.

This Memphis soil has medium fertility. Water runs off the surface at a medium rate, and it moves through this soil at a moderate rate. Effective rooting depth is 60 inches or more. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Most areas of this soil are used for pasture. A few areas are in crops or used for homesites.

This soil is moderately well suited to cultivated crops, mainly cotton, soybeans, oats, corn, sweetpotatoes, truck crops, grain sorghum, and wheat. Slope is the main limitation. Tillage should be on the contour or across the slope where possible. Conservation tillage and returning crop residue to the soil or regularly adding other organic matter improves fertility, helps maintain the content of organic matter, and controls erosion. This soil is friable and is easy to keep in good tilth. It can be worked over a wide range of moisture content. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Crops respond well to lime and fertilizer.

This soil is well suited to pasture. It has few limitations for this use. Suitable pasture plants are common bermudagrass, improved bermudagrass, crimson clover, ball clover, white clover, bahiagrass, ryegrass, and tall fescue. Livestock grazing when the soil is too wet can result in some compaction of the surface layer and poor tilth. Tillage for seedbed preparation should be on the contour or across the slope. Controlled grazing, weed control, and fertilizer are needed for vigorous forage plants.

This soil is well suited to cherrybark oak, water oak, sweetgum, and loblolly pine.

This soil is well suited to recreation uses. It is limited mainly by slope. Adequate plant cover helps control erosion and sedimentation. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is well suited to urban uses. It has few limitations. The hazard of erosion is increased if the soil is left exposed during site development. Establishing and maintaining plant cover can be achieved by shaping of the slopes, fertilizing, seeding, and mulching. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies by seepage.

This Memphis soil is in capability subclass IIe and in woodland group 1o7.

Mm—Memphis silt loam, 5 to 8 percent slopes. This deep, sloping, well drained soil is on long, narrow ridges on the terrace uplands. Slopes generally are short. Areas range from about 5 to 300 acres.

Typically, the surface layer is dark brown, neutral silt loam about 4 inches thick. The upper part of the subsoil is dark brown, very strongly acid and strongly acid silty clay loam and silt loam. The lower part is dark brown, strongly acid silt loam.

Included in mapping are a few small areas of somewhat poorly drained Calloway soils and moderately well drained Loring soils. Both of these soils have a fragipan. Also included are a few small areas of Memphis soils that have a slope of more than 8 percent.

This Memphis soil has medium fertility. Water runs off the surface at a medium rate, and it moves through this soil at a moderate rate. Plant roots penetrate the soil easily. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Most of the acreage of this soil is used for pasture. A small acreage is in crops or used for homesites.

This soil is well suited to pasture. Erosion is a problem where the soil is left without a vegetative cover. Suitable pasture plants include common bermudagrass, improved bermudagrass, crimson clover, ball clover, white clover, bahiagrass, ryegrass, and tall fescue. Seedbed preparation should be on the contour or across the slope. Use of proper stocking rates and pasture rotation helps to keep the pasture in good condition. Fertilizer and lime are needed for grasses and legumes.

This soil is moderately well suited for cultivated crops, mainly cotton, corn, oats, grain sorghum, sweetpotatoes, truck crops, and wheat. The main management concern is controlling erosion. This soil is friable and is easy to keep in good tilth. It can be worked over a wide range of moisture content. Traffic pans develop easily, but they can be broken up by chiseling or deep plowing. Seeding early in the fall; conservation tillage; and construction of terraces, diversions, and grassed waterways help control erosion. Most crops, other than legumes, respond well to nitrogen fertilizer. Lime and fertilizer are needed.

This soil is well suited to cherrybark oak, water oak, sweetgum, and loblolly pine. Management that minimizes the risk of erosion is important in harvesting timber.

This soil is moderately well suited to recreation uses. Slope is the main limitation. Adequate plant cover helps control erosion and sedimentation.

This soil is well suited to urban uses. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies by seepage. Preserving the existing plant cover during construction helps to control erosion.

This Memphis soil is in capability subclass IIIe and in woodland group 1o7.

Ne—Necessity silt loam. This deep, nearly level, somewhat poorly drained soil is on low ridges and knolls on the terrace uplands. Areas are irregular in shape and range from 5 to 200 acres. Slopes range from 0.5 to 2 percent.

Typically, the surface layer is brown, medium acid silt loam about 6 inches thick. The upper part of the subsoil is yellowish brown and pale brown, mottled, strongly acid silty clay loam and silt loam. The next layer is light brownish gray, strongly acid silt loam. The lower part of the subsoil is a fragipan of brown and strong brown, very strongly acid loam. The next layer to a depth of about 67 inches is brown, strongly acid clay loam.

Included in mapping are a few small areas of somewhat poorly drained Deerford soils in lower positions, well drained Dexter and Liddieville soils in higher positions, and poorly drained Foley soils in the lowest positions.

This Necessity soil has medium fertility. Water runs off the surface at a slow rate and moves through this soil at a slow rate. After heavy rainfall, the surface layer of this soil remains wet for long periods. Water is perched above the fragipan from December to March. Plant roots penetrate the soil easily to a depth of about 2 feet, but their development is restricted below this depth by the fragipan. Plants are damaged by lack of water during dry periods in summer and fall of some years.

Most of the acreage of this soil is used for crops. A few acres are in pasture or used for homesites.

This soil is moderately well suited to cultivated crops, mainly cotton, corn, soybeans, sweetpotatoes, wheat, oats, grain sorghum, and truck crops. It is limited mainly by wetness. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Leaving crop residue on the surface helps maintain soil tilth and the organic matter content. Crops respond well to lime and fertilizer.

This soil is moderately well suited to pasture. Wetness limits the choice of plants and the period of grazing. Suitable pasture plants are common bermudagrass, improved bermudagrass, dallisgrass, bahiagrass, ryegrass, tall fescue, white clover, and southern winterpeas. Livestock grazing when the soil is wet can result in some compaction of the surface layer and can damage plants. Controlled grazing, weed control, and fertilizer are needed for vigorous forage plants.

This soil is well suited to loblolly pine, cherrybark oak, water oak, and sweetgum. Potential production of these trees is high under good management. Wetness moderately limits the use of equipment.

This soil is poorly suited to intensive recreation uses. The main limitations are wetness and slow permeability. Good drainage should be provided for intensively used areas. Plant cover can be maintained by fertilizing and by controlling traffic.

This soil is poorly suited for urban uses. The main limitation is wetness. Excess water can be removed by shallow ditches and providing the proper grade. During cutting and filling, topsoil can be stockpiled and later used to reclaim areas. Septic tank absorption fields do not function properly during rainy periods because of wetness and slow permeability.

This Necessity soil is in capability subclass IIw and in woodland group 2w8.

Sh—Sharkey clay. This level, poorly drained clayey soil is on the lower part of natural levees and in depressional areas on the alluvial plain. Areas of this soil range from about 10 to 3,000 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is very dark grayish brown, neutral clay about 4 inches thick. The upper part of the subsoil is gray, mottled, neutral and mildly alkaline clay. The lower part is gray, mottled, moderately alkaline clay. The underlying material to a depth of about 60 inches is gray, mottled, moderately alkaline clay.

Included in mapping are a few small areas of somewhat poorly drained Dundee and Tensas soils. Also included are a few small areas of a Sharkey soil that has slopes of 1 to 3 percent.

This Sharkey soil has high fertility. The surface layer of this soil is sticky when wet and hard when dry. Water and air move through this soil at a very slow rate. Water runs off the surface at a very slow rate and stands in low places for long periods after heavy rainfall. A high water table fluctuates between a depth of 2 feet and the soil surface from December through April. The soil has very high shrink-swell potential. Adequate water is available to plants during most years.

Most of the acreage of this soil is used for crops. A small acreage is in woodland and pasture.

This soil is well suited to cultivated crops, mainly soybeans, rice, cotton, grain sorghum, wheat, and oats. The main limitations are wetness and clayey texture. This soil is sticky when wet and hard when dry, and it becomes cloddy if tilled when too wet or too dry. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing will improve surface drainage and permit efficient use of farm equipment. Leaving crop residue on the surface helps maintain soil tilth and the organic matter content. Most crops, other than legumes, respond well to nitrogen fertilizer. Lime generally is not needed.

This soil is well suited to pasture. The main limitations are wetness and the clayey surface. Grazing when the soil is wet can compact the surface layer and damage the plants. Suitable pasture plants are common bermudagrass, improved bermudagrass, white clover, wheat, oats, and tall fescue. Use of proper stocking rates, pasture rotation, and restricted grazing during wet periods helps to keep the pasture and the soil in good condition.

This soil is well suited to green ash, water oak, sweetgum, and pecan. Because of wetness, the main concerns in managing and harvesting timber are equipment use limitations and seedling mortality.

This soil is poorly suited to recreation uses. The main limitations are wetness and the clayey surface. Drainage needs to be improved for most recreation uses. Spreading loamy fill material on the surface can improve areas used for playgrounds.

This soil is poorly suited to urban uses. Wetness is a limitation where this soil is used for septic tank absorption fields, sanitary landfills, and homesites. The very high shrink-swell potential is a limitation where this soil is used for homesites and local roads and streets. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. Excess water can be removed by constructing shallow ditches and by providing the proper grade.

This Sharkey soil is in capability subclass IIIw and in woodland group 2w6.

Sk—Sharkey clay, frequently flooded. This level, poorly drained soil is in depressional areas on the alluvial plain. Areas of this soil range from 10 to 600 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown, medium acid clay about 4 inches thick. The upper part of the subsoil is gray, mottled, slightly acid and neutral clay. The lower part is dark gray, mottled, mildly alkaline clay.

Included in mapping are a few small areas of poorly drained Forestdale soils and somewhat poorly drained Tensas soils. Also included are a few small areas of soils similar to Sharkey except that they have reddish material between depths of 36 and 60 inches. A few small areas of the Sharkey soil are not so frequently flooded.

This Sharkey soil has high fertility. The surface layer of this soil is sticky when wet and hard when dry. Water runs off the surface at a very slow rate, and it moves through this soil at a very slow rate. This soil is subject to long periods of flooding from December to June. This soil has very high shrink-swell potential.

Most of the acreage of this soil is used for woodland. A small acreage is in crops and pasture.

This soil is moderately well suited to hardwood trees, mainly green ash, water oak, and sweetgum. The main concerns in managing and harvesting timber are the severe equipment use limitations and seedling mortality.

This soil generally is not suited to cultivated crops. It is subject to flooding, and this is the main limitation.

Where this soil is used as pasture, flooding limits the choice of plants and the period of grazing. Suitable pasture plants are common bermudagrass and dallisgrass. This soil provides good habitat for many wildlife species.

This soil generally is unsuitable for urban and recreation uses. Flooding is the main limitation. Very high shrink-swell potential is a limitation where the soil is used for foundations and construction materials.

This Sharkey soil is in capability subclass Vw and in woodland group 3w6.

St—Sterlington silt loam. This deep, level, well drained soil is on the highest part of natural levees on the alluvial plain. Areas are irregular in shape and range from 5 to 100 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is brown, strongly acid silt loam about 6 inches thick. The subsurface layer is brown, strongly acid very fine sandy loam about 6 inches thick. The subsoil extends to a depth of about 60 inches. It is yellowish red, strongly acid loam in the upper part; yellowish red, strongly acid very fine sandy loam in the middle part; and brown, strongly acid loam in the lower part.

Included in mapping are a few small areas of poorly drained Forestdale soils in lower positions. Also included are a few small areas of a Sterlington soil that has slopes from 1 to 3 percent.

This Sterlington soil has medium fertility. Water runs off the surface at a slow rate, and it moves through this soil at a moderate rate. This soil dries quickly after rains. Adequate water is available to plants in most years.

Most of the acreage of this soil is used for crops. A small acreage is in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, soybeans, corn, oats, wheat, and grain sorghum. It has few limitations. This soil is friable and is easy to keep in good tilth. It can be worked over a wide range of moisture content. Conservation tillage and returning all crop residue to the soil or regularly adding other organic matter improves fertility and helps maintain soil tilth and the content of organic matter. Crops respond well to lime and fertilizer.

This soil is well suited to pasture. Suitable pasture plants are common bermudagrass, improved bermudagrass, crimson clover, ball clover, bahiagrass, ryegrass, and tall fescue. Controlled grazing, weed control, and fertilizer are needed for vigorous forage plants.

The potential is high for eastern cottonwood, green ash, cherrybark oak, water oak, pecan, and sweetgum trees.

This soil is well suited to recreation uses. Plant cover can be maintained by fertilizing and by controlling traffic.

This map unit is well suited to urban uses. If the density of housing is high, community sewage systems are needed to prevent contamination of water supplies by seepage. Establishing and maintaining plant cover can be achieved by proper shaping of the slopes, fertilizing, seeding, and mulching.

This Sterlington soil is in capability subclass I and in woodland group 2o4.

Te—Tensas silty clay. This level, somewhat poorly drained soil is on the lower part of natural levees on the alluvial plain. Areas are irregular in shape and range from 5 to 300 acres. Slope is dominantly less than 1 percent.

Typically, the surface layer is dark grayish brown, medium acid silty clay about 4 inches thick. The upper part of the subsoil is grayish brown, mottled, strongly acid clay. The lower part is grayish brown, mottled, medium acid silty clay loam. The underlying material to a depth of about 61 inches is grayish brown, mottled, medium acid and slightly acid silt loam.

Included in this map unit are a few small areas of Dundee and Sharkey soils. The somewhat poorly drained Dundee soils are in higher positions and have a more loamy subsoil than this Tensas soil. The poorly drained Sharkey soils are in lower positions and are more clayey in the lower part of the subsoil and underlying layers. Also included are a few small areas of Tensas silty clay loam and a Tensas soil that has slopes from 1 to 3 percent.

This Tensas soil has medium fertility. The surface layer of this soil is sticky when wet and hard when dry. Water runs off the surface at a medium rate and stands in low places for short periods after heavy rainfall. Water moves through this soil at a very slow rate. A high water table fluctuates between depths of 1 and 3 feet from December through April. The soil has very high shrink-swell potential. Adequate water is available to plants in most years.

Most areas of this soil are used for crops. A few areas are in pasture or used for homesites.

This soil is well suited to cultivated crops, mainly cotton, soybeans, rice, grain sorghum, wheat, and oats. Wetness and poor tilth are the main limitations. This soil is sticky when wet and hard when dry, and becomes cloddy when farmed if too wet or too dry. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Land smoothing will improve surface drainage and permit efficient use of farm equipment. Conservation tillage and returning crop residue to the soil or regularly adding other organic matter improves fertility and helps maintain soil tilth and the content of organic matter. Crops respond to lime and fertilizer.

This soil is well suited to pasture. The main limitation is wetness. Suitable pasture plants are common bermudagrass, improved bermudagrass, dallisgrass, white clover, southern winterpeas, wheat, and tall fescue. Livestock grazing when the soil is wet can result in some compaction of the surface layer and can damage plants. Excessive water on the surface can be removed by using shallow ditches and providing the proper grade. Fertilizer and lime are needed for vigorous grasses and legumes.

The potential is high for eastern cottonwood, green ash, water oak, sweetgum, and pecan trees. Wetness severely limits the use of equipment and causes moderate seedling mortality.

This soil is poorly suited to recreation uses. It is limited mainly by wetness, a clayey surface, and very slow permeability. Good drainage should be provided for intensively used areas. Plant cover can be maintained by fertilizing and by controlling traffic. Spreading loamy fill material on the surface can improve areas used as playgrounds.

This soil is poorly suited to urban uses. The main limitations are wetness, a clayey surface, very slow permeability, and very high shrink-swell potential. Excess water can be removed by using shallow ditches and providing the proper grade. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential.

This Tensas soil is in capability subclass IIIw and in woodland group 2w6.

Ts—Tensas-Sharkey complex, gently undulating. This complex consists of somewhat poorly drained Tensas soils and poorly drained Sharkey soils. These soils are on the Mississippi River alluvial plain. The Tensas soils are on low parallel ridges that range from 1 to 3 feet in height and from 50 to 150 feet in width. The Sharkey soils are in swales between the ridges. The Tensas soils make up about 55 percent of the complex and the Sharkey about 35 percent. Areas of these soils are so intermingled that mapping them separately was not practical at the scale used. Areas of this complex range from 10 to 600 acres. Slopes range from 0 to 3 percent.

Typically, the Tensas soil has a surface layer of dark grayish brown, medium acid silty clay about 4 inches thick. The upper part of the subsoil is grayish brown, strongly acid clay. The lower part is grayish brown, medium acid silty clay loam. The underlying material to a depth of 60 inches or more is grayish brown, mottled, slightly acid silt loam.

This Tensas soil has medium fertility. Water moves through this soil at a very slow rate, and it runs off the surface at a medium rate. Plants are damaged by lack of water during dry periods in summer and fall of some years. This soil has very high shrink-swell potential in the upper part of the subsoil.

Typically, the Sharkey soil has a surface layer of dark gray, medium acid clay about 4 inches thick. The subsoil is dark gray, mottled, medium acid clay in the upper part; gray, mottled, slightly acid clay in the middle part; and gray, mottled, neutral clay in the lower part. The underlying material to a depth of about 75 inches is gray, mottled, moderately alkaline clay.

This Sharkey soil has high fertility. Water moves through this soil at a very slow rate, and it runs off the surface at a very slow rate and stands in low places for long periods after heavy rains. This soil has very high shrink-swell potential. The surface layer of this soil is sticky when wet and hard when dry.

Included in this map unit are a few small areas of somewhat poorly drained Dundee soils. Also included are small areas of Tensas silty clay loam and a Tensas soil that has a slope of more than 3 percent. Some of the soil in the swales is subject to flooding after heavy rainfall. Included soils make up about 10 percent of the map unit.

Most of these Tensas and Sharkey soils are used for crops. A small acreage is in pasture and woodland.

These soils are moderately well suited to cultivated crops, mainly soybeans, cotton, rice, wheat, oats, and grain sorghum. The main limitations are wetness of the soil in the swales, a clayey surface, and short irregular slopes. These soils are sticky when wet and hard when dry, and they become cloddy when farmed if too wet or too dry. Irregular slopes hinder tillage somewhat. Land smoothing will improve surface drainage and permit efficient use of farm equipment. Proper row arrangement, surface field ditches, and vegetated waterways are needed to remove excess surface water. Leaving crop residue on the surface helps maintain soil tilth and the organic matter content. Most crops, other than legumes, respond well to nitrogen fertilizer.

These soils are moderately well suited to pasture. The main limitations are wetness and a clayey surface. Suitable pasture plants are common bermudagrass, improved bermudagrass, white clover, southern winterpeas, wheat, ryegrass, dallisgrass, and tall fescue. Use of proper stocking rates, pasture rotation, and restricted grazing during wet periods helps maintain the pasture plants and soil tilth.

These soils are moderately well suited to water oak, eastern cottonwood, green ash, pecan, and sweetgum trees. The main concerns in producing and harvesting timber are equipment use limitations and seedling mortality. Because these clayey soils are sticky when wet, most planting and harvesting equipment can be used only during dry periods.

These soils are poorly suited to recreation uses. The main limitations are wetness, a clayey surface layer, and very slow permeability. Good drainage should be provided for intensively used areas. Spreading loamy fill material on the surface can improve drainage and reduce stickiness of the surface layers in areas used as playgrounds. Plant cover can be maintained by controlling traffic.

These soils are poorly suited to urban uses. The main limitations are wetness and very high shrink-swell potential. Excess water can be removed by using shallow ditches and providing the proper grade. Selection of adapted vegetation is critical for the establishment of lawns, shrubs, trees, and vegetable gardens. Septic tank absorption fields do not function properly during rainy periods because of wetness and very slow permeability. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential.

These soils are in capability subclass IIIw and in woodland group 2w6.

prime farmland

Prime farmland, as defined by the U.S. Department of Agriculture, is that land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high crop yields if acceptable farming methods are used. Prime farmland produces the highest yields with minimal inputs of energy and money, and farming it results in the least damage to the environment. Prime farmland is of major importance in satisfying the nation's short- and long-range needs for food and fiber. The supply of high quality farmland is limited, and it should be used with wisdom and foresight.

Prime farmland does not include any soil now being used for urban and built-up land or water areas. It includes only those prime farmland soils that are now used for cropland, pastureland, or woodland.

Prime farmland soils usually have an adequate and dependable supply of moisture from precipitation. They have favorable temperature, and growing season length, and acceptable reaction. They have few or no rocks and are permeable to water and air. Prime farmland soils are not excessively erodible or saturated with water for long periods and generally are not frequently flooded during the growing season. The slopes range mainly from 0 to 6 percent. For more detailed information on the criteria for prime farmland consult the local Soil Conservation Service.

About 340,920 acres, or nearly 82 percent, of Franklin Parish meets the soil requirements for prime farmland. Areas are scattered throughout the parish. About 278,000 acres of this prime farmland is used for crops.

The trend of land use to urban and related uses has resulted in the loss of some prime farmland. This loss puts pressure on marginal land, which generally is more erodible, droughty, and difficult to cultivate, and usually less productive.

The soils that make up prime farmland in Franklin Parish are listed in this section. This list does not constitute a recommendation for a particular land use. The percentage of each listed map unit is shown in table 5. The location is shown on the detailed soil maps in the back of this publication. The soil qualities that affect use and management are described in the section "Detailed soil map units."

Soils that have limitations—a seasonal high water table, flooding, or inadequate moisture—may qualify for prime farmland if these limitations are overcome by drainage or flood control. However, only those soils that have few limitations and need no additional improvements to qualify for prime farmland are included.

The following map units meet the soil requirements for prime farmland except where the use is urban or built-up land:[1]

Co—Calhoun silt loam
Cu—Calhoun-Calloway complex
Cw—Calloway silt loam
Dh—Dexter silt loam, 1 to 3 percent slopes
Dn—Dundee silt loam
Dr—Dundee silty clay loam
Ds—Dundee-Sharkey complex, gently undulating
Eg—Egypt silt loam
Gd—Gigger silt loam, 1 to 3 percent slopes
Gh—Gigger-Gilbert complex, gently undulating
Gr—Gilbert silt loam
Gy—Gilbert-Egypt complex
Ld—Liddieville fine sandy loam, 2 to 5 percent slopes
Lo—Loring silt loam, 1 to 3 percent slopes
Lr—Loring-Calhoun complex, gently undulating
Me—Memphis silt loam, 2 to 5 percent slopes
Ne—Necessity silt loam
Sh—Sharkey clay
St—Sterlington silt loam
Te—Tensas silty clay
Ts—Tensas-Sharkey complex, gently undulating

[1] Urban and built-up land is any contiguous unit of land 10 acres or more that is used for residences, industrial sites, commercial sites, construction sites, institutional sites, public administrative sites, railroad yards, small parks, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures and spillways, and so forth.

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and suitabilities of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the suitabilities and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where wetness or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; 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 listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

More than 305,000 acres in Franklin Parish was used for crops and pasture in 1978. Of this total, about 285,000 acres was used for crops—mainly soybeans, cotton, rice, and corn. More than 20,000 acres was used for pasture. Acreage used for crops has steadily increased in the past 20 years as woodland and pastureland has been converted to cropland.

Differences in crop suitability and management result from differences in soil characteristics, such as fertility levels, erodibility, organic matter content, availability of water for plant growth, drainage, and flooding hazard. Cropping systems and soil tillage are also an important part of management. Each farm has a unique soil pattern; therefore, it has unique management problems. Some principles of farm management, however, apply only to specific soils and certain crops. This section presents the general principles of management that can be applied widely to the soils of Franklin Parish.

Fertilization and liming. The amount of fertilizer needed depends upon (1) the crop to be grown, (2) the cropping history, (3) the level of yield desired, (4) and the soil phase. Kind and amount of plant nutrients to apply should be based on results of laboratory analysis of soil samples from each field.

A soil sample should be taken from a single soil phase and should represent no more than 10 acres. Agricultural agencies in the parish can supply detailed information and instructions regarding soil sampling. In the upper 20 inches, the soils in Franklin Parish range in reaction from extremely acid to moderately alkaline. The more acid soils may require lime.

Organic matter content. Organic matter is important as a source of nitrogen for crop growth. It is also important in increasing the rate water is taken into the soil, in reducing surface crusting and soil loss by erosion, and in promoting a good physical condition of the surface soil.

Most of the cultivated soils in Franklin Parish are low in organic matter content.

Organic matter can be built up to a limited extent and maintained by leaving plant residue on the surface of the soil, by promoting bigger plant growth, by growing plants with extensive root systems, by adding barnyard manure, and by growing perennial grasses and legumes in rotation with other crops.

Soil tillage. The major purpose of soil tillage is seedbed preparation and weed control. Preparing a seedbed, cultivating, and harvesting tend to damage soil structure. Excessive cultivating of the soils should be avoided. Some of the clayey soils in the parish become cloddy when cultivated.

A compacted layer develops in the loamy soils if they are plowed at the same depth season after season or are plowed when wet. This compact layer is generally known as a trafficpan or plowpan and develops just below the plow layers. The development of this compacted layer can be avoided by not plowing when the soil is wet, by changing to another depth of plowing, or by chiseling or subsoiling.

Some tillage implements stir the surface and leave crop residues on the soil surface for protection from beating rains. This helps control erosion, reduce runoff, and increase infiltration.

Drainage. Many of the soils in the parish need surface drainage for cultivated crops. Early drainage methods involved a complex pattern of main ditches, laterals, and surface field ditches. The more recent approach to drainage in this parish is a combination of land smoothing with a minimum of surface ditches. This creates larger and more uniformly shaped fields, which are more suited to the use of modern, multirow farm machinery. Deep cutting of soils that have unfavorable subsoil characteristics, however, should be avoided.

Water for plant growth. The available water capacity of the soils in the parish is moderate to high, but in many years sufficient water is not available at the critical time for optimum plant growth. Large amounts of rainfall occur in winter and spring. Sufficient rain generally occurs in summer and autumn of most years. On most soils, however, plants lack water during dry periods in summer and autumn. This rainfall pattern favors the growth of early maturing crops.

Control of erosion. Soil erosion is a hazard on the terrace uplands in Franklin Parish. Erosion generally is not a serious problem on the alluvial plains, mainly because most of the topography is level and nearly level. Sheet erosion is moderately severe in all fallow-plowed fields and in newly constructed drainage ditches. Some gully erosion occurs, mainly in areas of the more sloping soils, and sediment enters the drainage ditches. Sheet and gully erosion can be reduced by maintaining a cover of vegetation or plant residue, by farming on the contour or stripcropping, and by minimizing tillage. New drainage ditches should be seeded immediately after construction. Water control structures to control gully erosion should be placed where water flows into drainage ditches.

Cropping system. A good cropping system includes a legume for nitrogen; a cultivated crop to aid in weed control; a deep-rooted crop that uses subsoil fertility and maintains subsoil permeability; and a close-growing crop to help maintain organic matter content. The sequence of crops should provide a cover for the soil as much of the year as possible.

A suitable cropping system varies according to the needs of the farmer and the characteristics of the soil. Producers of livestock, for example, generally use cropping systems that have higher percentages of pasture than the cropping systems of cash-crop farms. Additional information on cropping systems can be obtained from the Soil Conservation Service, the Louisiana Cooperative Extension Service, or the Louisiana Agricultural Experiment Stations.

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 6. 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.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby parishes and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; 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 residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil 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 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have slight 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 miscellaneous areas 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 very cold or very 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. They have other limitations that restrict their use to pasture, woodland, wildlife habitat, or recreation.

The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

By H. Ford Fallin, state staff forester, Soil Conservation Service

Franklin Parish was mostly covered with hardwood forest and a few scattered stands of pine. Most of the acreage has been cleared, and in 1978 woodland covered only 84,000 acres in the parish.

Most of the woodland is on the alluvial plain. One large tract is on the upland terrace. The woodland is mostly of poor quality; however, a few good stands of commercial timber are still present.

Most of the soils in the parish are capable of producing high quality wood crops. Managed woodlands are also of value for wildlife habitat, recreation, soil and water conservation, and natural beauty.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination 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. The letter *o* indicates that limitations or restrictions are insignificant. 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 needleleaved trees. The numerals 4, 5, and 6 indicate slight, moderate, and severe limitations, respectively, and suitability for broadleaved trees. The numerals 7, 8, and 9 indicate slight, moderate, and severe limitations, respectively, and suitability for both needleleaved and broadleaved trees.

In table 7, *slight, moderate,* and *severe* indicate the degree of the major soil limitations to be considered in management.

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 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 in equipment; and *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 to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

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

recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that 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 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the 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 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 campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for 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 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 free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

wildlife habitat

By Billy R. Craft, state staff biologist, Soil Conservation Service

The wildlife population of Franklin Parish is of medium to low density, mainly because of inadequate permanent cover. The areas of woodland, except for two large tracts, are of poor quality for wildlife habitat.

Openland wildlife is mainly bobwhite quail, cottontail, and doves. The Louisiana Department of Wildlife and Fisheries rates the parish as one of the higher producers of doves. During the winter, moderate numbers of common snipe feed in fields of wet soils. The nongame bird population is small because of the sparsity of cover and the lack of permanent surface water.

Within the woodland areas are small populations of squirrel and swamp rabbit and a few deer. The deer are confined mainly to a large tract of woodland on the upland terrace in the northern part of the parish and a tract of woodland on the alluvial flood plain. American woodcock are also in these woodland areas during the winter.

The waterfowl population of the parish is high. Rice and soybean fields flooded by winter rains provide attractive feeding areas for waterfowl, mainly ducks and a few geese. Turkey Creek Lake also provides a resting area for ducks during the winter months.

In the natural waters of the parish, fishing is poor. A few large areas of permanent surface water exist but they are of poor quality. The natural waters contain bowfin, spotted gar, yellow and black bullhead, carp, smallmouth buffalo, warmouth, black and white crappie, largemouth bass, chain pickerel, and bream. The Louisiana Department of Wildlife and Fisheries estimated that the natural water fisheries produce only 20 pounds per acre.

Turkey Creek Lake is the largest manmade lake in the parish. Fishing is only fair to poor because of poor water quality. The lake contains black and white crappie, largemouth bass, bream, spotted gar, carp, yellow and black bullheads, and smallmouth buffalo. There are approximately 1,000 acres of ponds used for the commercial production of minnows and catfish.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in 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* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

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

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are texture of the surface layer, available water capacity, wetness, slope, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and rice.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are texture of the surface layer, available water capacity, wetness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, bahiagrass, bermudagrass, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, paspalum, switchgrass, panicum, and lespedeza.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are red mulberry, redbay, and mayhaw.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife 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. The wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, shore birds, muskrat, mink, and beaver.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by a very firm dense layer; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, the available water capacity in the upper 40 inches, and the content of salts and sodium affect plant growth. Flooding, wetness, slope, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table and flooding affect absorption of the effluent.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the 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.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, flooding, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, slope, and flooding affect both types of landfill. Texture, soil reaction, and content of salts and sodium affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

construction materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, or a high shrink-swell potential. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay and soils that have only 20 to 40 inches of suitable material. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of sodium. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; and susceptibility to flooding. Excavating and grading and the stability of ditchbanks are affected by slope and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as sodium. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The performance of a system is affected by the depth of the root zone, the amount of sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope and wetness affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of water erosion, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Wetness and slope affect the construction of grassed waterways. Low available water capacity, toxic substances such as sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (*4*) and the system adopted by the American Association of State Highway and Transportation Officials (*3*).

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 and according to plasticity index, liquid limit, and organic matter content. Sandy soils are identified as SM and SC; and silty and clayey soils as ML, CL, and CH. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups 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 (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

In table 15, the estimated content of *organic matter* of the plow layer is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive 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 mainly of deep, well drained to excessively drained sands or gravelly sands. 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 or deep, moderately well drained or 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 having a layer that impedes the downward movement of water or soils of 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 clays 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, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of 2 years or less in 5 years; and *frequent* that it occurs on an average of more than 2 years out of 5 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-June, for example, means that flooding can occur during the period November through June.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Only saturated zones within a depth of about 6 feet are indicated. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

chemical analyses of selected soils

The results of chemical analysis of several typical pedons in the survey area are given in table 17. The data are for soils sampled at carefully selected sites. Most of the pedons are typical of the series and are described in the section "Soil series and their morphology." Soil samples were analyzed by the Soils Laboratory of the Louisiana Agricultural Experiment Station.

The methods used in obtaining the data are indicated in the list that follows. The codes in parentheses refer to published methods (*31*).

Organic carbon—dichromate, ferric sulfate titration (6A1a).

Extractable cations—ammonium acetate pH 7.0, uncorrected; calcium (6N2), magnesium (602), sodium (6P2), potassium (6Q2).
Extractable acidity—barium chloride-triethanolamine I (6H1a).
Cation-exchange capacity—sum of cations (5A3a).
Reaction (pH)—1:1 water dilution (8C1a)
Available phosphorus—(Bray's strong extracting agent).

soil fertility levels

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The fertility level is one of the major factors determining a soil's potential for crop production. The natural fertility level is a reflection of the soil's inherent capacity to supply the nutrients required by plants and to provide a favorable chemical environment for roots. Plant nutrient deficiencies as well as excessive quantities of some elements limit yields of crops grown on some soils in Franklin Parish.

Evaluation of the soil's fertility requires consideration of the quantities of available plant nutrient elements as indicated by results of soil tests or plant tissue analyses. Special consideration is also given to other soil chemical characteristics that might have a detrimental effect on plant growth. During the survey, samples were collected from each horizon to a depth of at least 40 inches of most soils mapped. The samples were analyzed to determine organic matter content; soil reaction; extractable phosphorus; cation exchange capacity; and exchangeable calcium (Ca), magnesium (Mg), potassium (K), sodium (Na), aluminum (Al), and hydrogen (H). The results from these analyses in table 17 are the basis for the discussion in this section.

Soil fertility management and other soil management programs in the area are, with few exceptions, based on chemical and physical alteration of the surface horizon or plow layer. Characteristics of this horizon may be extremely variable from one place to another depending on past management practices and soil use. However, in this section emphasis is placed on characteristics of horizons below the plow layer. Subsurface horizons are less subject to change, or change very slowly, as a result of alteration of the plow layer. Fertility levels and other chemical characteristics of the surface horizon can be essentially eliminated as limiting factors in plant growth under management systems that include adequate soil testing and fertility maintenance programs. Under these conditions, physical characteristics of the plow layer and chemical and physical characteristics of horizons below the plow layer are the soil factors that may limit plant growth. Thus, subsurface horizons can, and frequently do, limit crop yields that can be obtained through normal crop management practices.

The actual quantity of a nutrient element present as well as the relative quantity of other elements present are important considerations in evaluating a soil's fertility. The soil's cation exchange capacity is a measure of its ability to adsorb positively charged ions such as Ca, Mg, K, Na, Al, and H. Thus, larger quantities of an element such as Ca are required to give a high exhangeable Ca saturation in a soil horizon with a high cation exchange capacity than in one where it is low. Louisiana Agricultural Experiment Station publications (*7, 21*) contain additional information about these factors as well as the guidelines (*21*) used for various nutrient levels in this discussion.

Soil cation exchange capacity is almost entirely a result of the amount and kind of clay and organic matter present. All the soils mapped in the parish, except Sharkey, have subsoil horizons that are more clayey than surface horizons. As a result they have greater cation exchange capacity in the subsoil than in surface horizons. In the soils that developed entirely in loess or in loess overlying older sediments cation exchange capacity in the surface layer is between 6.3 and 11.5 milliequivalents per 100 grams of soil. The cation exchange capacity in the subsoil is greater, ranging to a high of 21.0 milliequivalents per 100 grams of soil. The Liddieville soil, which developed in the loamy braided-stream alluvium, has a cation exchange capacity of 4.1 milliequivalents per 100 grams of soil in the surface layer and 7.9 milliequivalents in the most clayey part of the subsoil. In the Forestdale, Sharkey, Tensas, and Dundee soils the cation exchange capacity in the surface layer is, respectively, 21.1, 45.7, 32.4, and 11.7 milliequivalents per 100 grams. Maximum cation exchange capacity is even higher in the subsoil horizons of these soils.

The distribution pattern of the different essential plant nutrient elements in most soils shown in table 17 indicates that weathering of minerals, decomposition of organic matter, and other possible natural sources of nutrient elements do not maintain high P, Ca, Mg, and K levels in the surface layer and in the upper horizons of the subsoil. Possible exceptions are the high P levels in the Liddieville soil and high Ca levels in the Sharkey and Dundee soils tested. In most of the soils the higher levels of Ca, P, and K in surface layers can be largely attributed to fertilizer and lime applications. Nutrients accumulated in organic matter and released through its decomposition may also contribute to this distribution pattern. These processes have not maintained higher levels of Mg in surface layers than in subsoil horizons in most of the soils.

Excessive quantities of exchangeable Na, however, are present within the normal depth of rooting of most crops in the Foley, Deerford, Gilbert, and Egypt soils. In all areas of these soils, some horizons have more than 15 percent of the cation exchange capacity saturated with exchangeable Na. In some places, the Forestdale soil has high levels of exchangeable Na at depths of less than 40 inches. In almost all years, crops grown on these soils produce lower yields than those grown on associated soils that do not have the high Na levels. In some places, the Forestdale soil has high levels of exchangeable Na at depths of less than 40 inches.

Reduction in crop yield may result from one or more detrimental effects associated with the large quantities of Na (*6*). The Na reduces soil aggregation, and as a result, the permeability of the soil to air and water is decreased. Consequently, when saturated these soils dry more slowly than associated soils. This is particularly apparent early in spring after they have become saturated during the wet winter months. Once these soils are dry, recharge of soil moisture from rainfall during the growing season is slower than in associated soils. Plants growing on the soils may suffer drought stress.

The high Na levels may also inhibit or interfere with the plant's uptake of other nutrients such as Ca and Mg. Quantities of Na large enough to have a detrimental effect are taken up by some plants. Where high Na levels are associated with high alkalinity, there is a caustic effect to some plants as well as possible toxic effects from anions such as bicarbonate associated with the large quantities of Na. Also, the high alkalinity may result in reduced availability to the plant of many nutrient elements. If large quantities of soluble salts are present in the soil, some plants suffer physiologic drought caused by the osmotic movement of water from the plant to the soil.

Four important characteristics of the soils that have high levels of exchangeable Na are indicated by the data in table 17. First, the high levels of Na are almost entirely in subsoil horizons. Second, the depth to horizons that have high levels of exchangeable Na is quite variable. The shallower the depth to high levels of exchangeable Na the more severe are the undesirable effects. The Deerford and Foley soils typically have high Na levels below a depth of about 10 to 20 inches. The depth to high Na levels is greater in the Egypt and Gilbert soils. They have more than 15 percent saturation with Na below a depth of about 24 to 30 inches. Other soils in the parish may have high levels of exchangeable Na in horizons below the normal depth of rooting of most crops. The distribution of the soils with high sodium levels is discussed in the section "Landforms and surface geology." Third, all the soils that contain large quantities of Na in the upper part of the solum also have large quantities of Na in the lower part. This indicates a potential for detrimental effects from incorporating subsoil material at the surface, for example, in land smoothing or spreading spoil (soil material taken from excavations for structures such as building foundations, roadways, drainage ditches, and other works.) Finally, a neutral or alkaline soil reaction (soil pH 6.6 or greater) is not a reliable indicator of exchangeable Na; in some areas, particularly in arid regions, large quantities of exchangeable Na are typically associated with alkaline soil reactions. In Franklin Parish, soils that have high Na levels in the upper part of the subsoil have pH value of 5.0 to 5.5. These soils do have an alkaline reaction, however, at some depth in or below the solum.

High levels of exchangeable Na are somewhat unusual in soils developed in parent materials that are possibly 20,000 or more years old in a humid subtropical climate such as characterizes Franklin Parish. The source of the Na in these soils has not been established. Neither have satisfactory economical methods been devised for reclamation of the soils for agriculture.

Quantities of exchangeable aluminum (Al) that are potentially toxic to some plants are present in some horizons of mineral soils that have pH values of less than about 5.5. High levels of exchangeable Al can be toxic to many cultivars of crops such as cotton, soybeans, corn, and small grains (*1, 2, 12, 13, 18, 19*). A greater than 10 percent saturation of the soil's effective cation exchange capacity with exchangeable Al may result in Al toxicity to some crops. The effective cation exchange capacity of the soil is the sum of the exchangeable Ca, Mg, K, Na, Al, and H. Potentially toxic levels of exchangeable Al were not present in surface horizons of any of the soils analyzed. The Calhoun, Calloway, Deerford, Dundee, Dexter, Egypt, Foley, Gigger, Gilbert, Loring, and Necessity soils all had exchangeable Al saturations of more than 10 percent in either the first or second subsoil horizon beneath the plow layer. In the rest of the soils, exchangeable Al was either not present in measurable quantities or the soil was less than 10 percent saturated with exchangeable Al in all horizons. All the soils mapped in Franklin Parish have, in some places, soil reaction sufficiently acid that exchangeable Al may be present.

The quantities and percent saturation with exchangeable Al and other selected soil chemical properties of several soils in Franklin Parish are given in table 17. Important relationships exist between saturation with exchangeable Al and other properties of mineral soils. First, exchangeable Al rather than H is the dominant form of exchangeable acidity in most horizons. Total exchangeable acidity for any horizon can be obtained by summing exchangeable Al and H. Second, potentially toxic levels of exchangeable Al are typically present in soil horizons that have pH 5.0 or less and in some that have pH 5.I to 5.5. Third, the percent saturation with exchangeable Al generally decreases with increasing organic matter content. Thus, surface layers are commonly less saturated with exchangeable Al than subsoil horizons having comparable soil pH values. The amounts of exchangeable Al typically increase with increasing clay content in horizons having comparable soil reactions and the percent saturation increases as the soil becomes more acid than about pH 5.5. Consequently, the greatest saturation with exchangeable Al is generally in the first or second subsoil horizon below the plow layer with decreasing saturation at greater depths. The kinds of clay minerals in the soil can also influence the quantities of exchangeable Al present.

The complex relationship between exchangeable Al and other soil properties indicates that actual measurement of exchangeable Al present is the only reliable indicator of Al levels in acid mineral soils that have pH 5.5 or less. Potentially toxic levels of exchangeable Al have not been found in soils that have higher pH values.

Soil treatments or other cultural methods that reduce or avoid problems associated with high levels of exchangeable Al have not been thoroughly studied in Louisiana. Liming soil to above pH 5.5 is probably the most widespread method of reducing exchangeable Al levels (*5, 9, 15, 16, 20, 22, 23*). There is a wide range of susceptibility to Al phytotoxicity among many agronomic crops depending, in some cases, on the particular cultivar grown. Planting crops or cultivars that are tolerant of high Al levels can help avoid phytotoxicity problems.

Managanese (Mn) is an essential plant nutrient element that may be present in amounts that are toxic to plants in many acid, poorly drained soils. Mn is somewhat analogous to Al in that potentially toxic levels are most common in soil horizons that have a pH 5.0 to 5.5 or less. Increasing the pH of the soil to 6.0 or more reduces Mn solubility to nontoxic levels. Unlike Al, Mn can occur either as the oxidized or reduced form in soils. The more soluble reduced form of Mn is more prevalent in wet, poorly or somewhat poorly drained soils than in associated soils that are better drained. Also, potentially toxic levels in surface horizons are more common for Mn than Al. Toxicity from high levels of Mn is more common in wet than in dry years.

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (*32*). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquents (*Hapl*, meaning minimal horizonation, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Haplaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

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

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (*30*). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (*32*). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Calhoun series

The Calhoun series consists of poorly drained, slowly permeable soils that formed in loess of late Pleistocene age. These soils are on broad flats, in swales, and in narrow depressional areas adjacent to drainageways on the terrace uplands. Slope is less than 1 percent.

Soils of the Calhoun series are fine-silty, mixed, thermic Typic Glossaqualfs.

Calhoun soils commonly are near Calloway, Loring, and Memphis soils. The somewhat poorly drained Calloway soils are in higher positions than Calhoun soils and have a fragipan in the lower part of the subsoil. The moderately well drained Loring soils are on higher lying convex ridges and also have a fragipan in the lower part of the subsoil. The well drained Memphis soils are on higher lying convex ridges.

Typical pedon of Calhoun silt loam, 4 miles northeast of Crowville, 520 feet northeast of intersection of Highways 860 and 17, 180 feet north of Highway 860, NW1/4NW1/4 sec. 10, T. 15 N., R. 9 E.

Ap—0 to 4 inches; grayish brown (10YR 5/2) silt loam; few fine faint dark yellowish brown mottles; weak medium granular structure; friable; common fine roots; medium acid; clear smooth boundary.

A2g—4 to 13 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct strong brown (7.5YR 5/6) mottles; weak coarse subangular blocky structure; firm; few fine roots; few fine discontinuous vesicular pores; very strongly acid; clear irregular boundary.

B21tg—13 to 24 inches; gray (10YR 6/1) silty clay loam; common medium distinct strong brown (7.5YR 5/6) and few medium prominent reddish brown (5YR 4/4) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm; few fine roots; thin discontinuous clay films; few fine brown concretions; tongues of silt (A2g) 1 to 3 centimeters wide extend to the lower boundary of horizon and make up about 20 percent of the mass in the upper part; very strongly acid; clear irregular boundary.

B22tg—24 to 32 inches; light brownish gray (10YR 6/2) silty clay loam; few medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; few fine roots between vertical peds; few fine discontinuous vesicular pores; thin discontinuous clay films on faces of peds; few fine brown and black concretions (iron and manganese oxides); silt interfingers between some prisms; extremely acid; clear wavy boundary.

B23tg—32 to 42 inches; light brownish gray (2.5Y 6/2) silty clay loam; common medium distinct dark yellowish brown (10YR 4/4) and light olive brown (2.5Y 5/4) mottles; weak coarse prismatic structure parting to weak coarse subangular blocky; firm; few fine roots between peds; few fine discontinuous vesicular pores; thin gray silt coatings on vertical faces of peds; thin discontinuous clay films on faces of peds; extremely acid; gradual wavy boundary.

B3g—42 to 62 inches; light brownish gray (2.5Y 6/2) silt loam; common fine distinct yellowish brown mottles; weak coarse subangular blocky structure; firm; few fine discontinuous vesicular pores; few fine brown concretions (iron and manganese oxides); thin patchy clay films; strongly acid.

Solum thickness ranges from 40 to 65 inches or more. Sand content is less than 10 percent in the upper 48 inches of the solum.

The A1 or Ap horizon is 1 to 4 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 1 to 3. Reaction ranges from very strongly acid to medium acid.

The A2g horizon is 9 to 22 inches thick. It has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. Mottles are in shades of brown or yellow. Reaction ranges from very strongly acid to medium acid.

The Btg horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It is silt loam or silty clay loam. The clay content of the upper part of the horizon ranges from 22 to 35 percent. Mottles are in shades of yellow, brown, and gray. Reaction ranges from extremely acid to strongly acid.

The B3g horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. It is silt loam or silty clay loam. Mottles are in shades of yellow, brown, and gray. Reaction ranges from very strongly acid to mildly alkaline.

Some pedons have a C horizon. It has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 4. Mottles are in shades of yellow, brown, and gray. Reaction ranges from very strongly acid to mildly alkaline.

Calloway series

The Calloway series consists of somewhat poorly drained, slowly permeable soils that have a fragipan in the lower part of the subsoil. These soils formed in loess of late Pleistocene age. They are on low ridges and knolls on the terrace uplands. Slopes range from 0.5 to 2 percent.

Soils of the Calloway series are fine-silty, mixed, thermic Glossaquic Fragiudalfs.

Calloway soils are closely associated with Calhoun, Loring, and Memphis soils. The poorly drained Calhoun soils are in depressional areas. The moderately well drained Loring and the well drained Memphis soils are on higher lying convex ridges. The Memphis soils do not have a fragipan.

Typical pedon of Calloway silt loam, 1.5 miles south of Crowville, 0.3 mile east of Highway 578, 660 feet south of Highway 555, 650 feet north of quarter line, NE1/4NW1/4 sec. 7, T. 14 N., R. 9 E.

Ap—0 to 5 inches; brown (10YR 5/3) silt loam; common medium faint brown (10YR 4/3) and few fine distinct strong brown mottles; weak medium granular structure; friable; common very fine and fine roots; few fine black concretions; few fine black stains; medium acid; clear wavy boundary.

A2—5 to 9 inches; grayish brown (10YR 5/2) silt loam; weak medium subangular blocky structure; friable; few fine roots; few fine discontinuous vesicular pores; few fine black concretions; few fine black stains; few pockets of brown (7.5YR 4/4) silt loam; strongly acid; clear wavy boundary.

B&A—9 to 17 inches; yellowish brown (10YR 5/4) silt loam (B2t); grayish brown (10YR 5/2) silt loam (A2);

common medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine discontinuous vesicular pores; few medium black concretions; very strongly acid; gradual irregular boundary.

A&B—17 to 21 inches; light gray (10YR 7/2) silt loam (A2); yellowish brown (10YR 5/4) silty clay loam (B2t making up 40 percent of horizon) weak medium subangular blocky structure; firm, slightly brittle and compact; common fine discontinuous vesicular pores; few medium black and brown concretions; very strongly acid; clear irregular boundary.

B'x1—21 to 42 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle; few fine roots; few very fine discontinuous vesicular pores; thin patchy clay films on faces of peds; thick silt coats on vertical faces of prisms; common medium and fine brown and black concretions; very strongly acid; clear irregular boundary.

B'x2—42 to 65 inches; yellowish brown (10YR 5/4) silty clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; firm, compact and brittle; few medium discontinuous vesicular pores; thin patchy clay films on faces of peds; thin silt coats of light brownish gray on vertical faces of prisms; common discontinuous black stains on faces of peds; few soft brown bodies; few fine brown and black concretions; strongly acid.

Solum thickness is 60 inches or more. Depth to the fragipan ranges from 14 to 35 inches. Sand content is less than 10 percent in the upper 48 inches of the solum.

The Ap horizon is 2 to 6 inches thick and may include the A1 and part of the A2 horizon. It has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. Reaction ranges from strongly acid to medium acid.

The A2 horizon is 4 to 8 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 2 or 3. Reaction ranges from strongly acid to medium acid.

The B or B&A horizon has hue of 10YR, value of 4 to 6, and chroma of 4 to 6. It is silt loam or silty clay loam. In some pedons it is mottled in shades of gray and brown. Clay content from a depth of 10 inches to the fragipan ranges from 18 to 30 percent. Reaction ranges from very strongly acid to medium acid.

Some pedons have an A'2 horizon. It has hue of 10YR, value of 5 to 7, and chroma of 2. Mottles are in shades of brown. Reaction ranges from very strongly acid to medium acid.

The B'x horizon has hue of 10YR or 2.5YR, value of 5, and chroma of 2 to 6. It is silt loam or silty clay loam. Mottles are in shades of yellow, brown, and gray. Reaction ranges from very strongly acid to medium acid in the upper part of this horizon and from strongly acid to mildly alakline in the lower part.

The Calloway soils in Franklin Parish are taxadjuncts to the Calloway series because they have a clay content in the textural control section that is slightly too low for the defined range of the series. This difference, however, does not affect the use and management of the soils.

Deerford series

The Deerford series consists of somewhat poorly drained, slowly permeable soils that formed in silty stream terrace material of late Pleistocene age. These soils are on the terrace uplands. Slopes are dominantly less than 2 percent.

Soils of the Deerford series are fine-silty, mixed, thermic Albic Glossic Natraqualfs.

Deerford soils are closely associated with the Dexter, Foley, Gigger, Liddieville, and Necessity soils. The well drained Dexter and Liddieville soils and the moderately well drained Gigger soils are on higher lying convex ridges but do not have a natric horizon. The poorly drained Foley soils are in depressional areas and narrow drainageways. The somewhat poorly drained Necessity soils have a fragipan but do not have a natric horizon.

Typical pedon of Deerford silt loam, 1.5 miles south of Winnsboro, 0.3 mile northwest of Highway 865, 373 feet north of quarter line and drainage ditch, SE1/4NW1/4 sec. 11, T. 13 N., R. 7 E.

Ap—0 to 4 inches; grayish brown (10YR 5/2) silt loam; few fine faint dark yellowish brown mottles; weak medium granular structure; friable; common fine roots; few fine discontinuous vesicular pores; strongly acid; clear smooth boundary.

A2g—4 to 10 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; slightly hard; common fine roots; few fine discontinuous vesicular pores; few pockets of grayish brown silty clay loam; medium acid; clear irregular boundary.

B21t—10 to 22 inches; yellowish brown (10YR 5/6) silty clay loam; many medium faint grayish brown (10YR 5/2) and common medium distinct strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to weak medium subangular blocky; slightly hard; few fine discontinuous vesicular pores; thin discontinuous dark grayish brown (10YR 4/2) clay films on faces of peds; few fine black and brown concretions; common tongues of light brownish gray silt loam extend throughout this horizon; very strongly acid; clear irregular boundary.

B22t—22 to 30 inches; yellowish brown (10YR 5/4) silty clay loam; common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; slightly hard; few fine roots; thin discontinuous dark grayish brown (10YR 4/2) clay films on faces of peds; few tongues of brownish gray silt loam; few fine yellowish brown concretions; few very dark gray stains on faces of peds; neutral; clear wavy boundary.

B3—30 to 50 inches; yellowish brown (10YR 5/4) silty clay loam; few fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; slightly hard; thin dark grayish brown (10YR 4/2) patchy clay films on faces of peds; few medium brown concretions; nearly continuous very dark grayish brown stains on faces of some peds; neutral; gradual smooth boundary.

C—50 to 60 inches; yellowish brown (10YR 5/4) silty clay loam; few medium faint grayish brown (10YR 5/2) and few medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; slightly hard; few fine brown concretions; few black stains on faces of peds; moderately alkaline.

Solum thickness ranges from 40 to 60 inches. The upper boundary of a subhorizon with more than 15 percent exchangeable sodium is 16 to 32 inches below the soil surface and 6 to 16 inches below the upper boundary of the argillic horizon.

The Ap or A1 horizon is 3 to 6 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. Reaction ranges from strongly acid to medium acid.

The A2 horizon is 3 to 12 inches thick. It has hue of 10YR, value of 5 to 6, and chroma of 2 or 3. Tongues of A2 material 0.5 centimeter to 10 centimeters in width extend to a depth of 25 to 45 inches. Mottles are in shades of yellow, brown, and gray. Reaction ranges from strongly acid to medium acid.

The B2t horizon has hue of 10YR and 2.5Y, value of 4 or 5, and chroma of 3 to 6. Texture is silt loam or silty clay loam. The calcium-magnesium ratio is more than 1:1. Mottles are in shades of yellow, brown, and gray. Peds are coated or partly coated with 1 or 2 chroma clay films. Reaction is very strongly acid to slightly acid in the upper part of the horizon and neutral to moderately alkaline in the lower part.

The B3 and C horizons have hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 to 6. Texture is silt loam or silty clay loam. Mottles are in shades of yellow, brown, and gray. Reaction ranges from neutral to moderately alkaline.

Dexter series

The Dexter series consists of well drained, moderately permeable soils that formed in loess and loamy stream terrace deposits of late Pleistocene age. These soils are on long, narrow, convex ridges on the terrace uplands. Slopes range from 0 to 3 percent.

Soils of the Dexter series are fine-silty, mixed, thermic Ultic Hapludalfs.

Dexter soils are closely associated with Deerford, Egypt, Foley, Gigger, Gilbert, Liddieville, and Necessity soils. Somewhat poorly drained Deerford soils are in nearly level areas and have a natric horizon. The somewhat poorly drained Egypt and Necessity soils are in lower positions than the Dexter soils. The poorly drained Foley soils are in depressional areas and have a natric horizon. The moderately well drained Gigger soils are at about the same elevation as the Dexter soils and have a fragipan horizon. The poorly drained Gilbert soils are in depressional areas. The well drained Liddieville soils are on higher lying convex ridges.

Typical pedon of Dexter silt loam, 1 to 3 percent slopes, 2 miles northwest of Winnsboro, 310 feet west of Highway 869, 42 feet north of church, SE1/4SE1/4 sec. 8, T. 14 N., R. 7 E.

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

B1—4 to 10 inches; dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; few fine pores; strongly acid; clear smooth boundary.

B21t—10 to 24 inches; yellowish red (5YR 5/6) silty clay loam; surfaces of peds are reddish brown (5YR 4/4); moderate medium subangular blocky structure; firm; common fine roots; few fine pores; nearly continuous clay films on faces of peds; few fine black stains on peds; very strongly acid; gradual smooth boundary.

B22t—24 to 32 inches; yellowish red (5YR 5/6) clay loam; surfaces of peds are reddish brown (5YR 4/4); moderate medium subangular blocky structure; firm; few fine pores; thin patchy clay films on faces of peds; common medium black stains on faces of peds; very strongly acid; clear smooth boundary.

B23t—32 to 40 inches; dark brown (7.5YR 4/4) clay loam; surfaces of peds are reddish brown (5YR 4/4); moderate medium subangular blocky structure; firm; few fine pores; thin patchy clay films on faces of peds; common medium black stains on faces of peds; very strongly acid; clear smooth boundary.

IIB3—40 to 52 inches; dark brown (7.5YR 4/4) loam; weak medium subangular blocky structure; friable; few fine pores; thin patchy clay films on faces of peds; few medium black stains on faces of peds; strongly acid; gradual smooth boundary.

IIC1—52 to 65 inches; brown (7.5YR 4/4) fine sandy loam; weak coarse subangular blocky structure; very friable; few fine black stains on faces of peds; strongly acid; gradual smooth boundary.

IIC2—65 to 80 inches; light yellowish brown (10YR 6/4) loamy fine sand; single grained; very friable; strongly acid.

Solum thickness ranges from 32 to 60 inches.

The Ap or A1 horizon is 4 to 10 inches thick. It has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. Reaction ranges from strongly acid to slightly acid.

Some pedons have a B1 horizon. It has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4. It is silt loam or loam. Reaction ranges from very strongly acid to medium acid.

The B2t horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. It has a total sand content of 10 to 35 percent that is less than 15 percent coarser than very fine sand in the upper 20 inches of the argillic horizon. Black stains are evident on peds in most pedons. Reaction ranges from very strongly acid to medium acid.

The IIB3 horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. It is sandy loam, loam, clay loam, or sandy clay loam. Reaction ranges from very strongly acid to medium acid.

The IIC horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is fine sandy loam, loamy fine sand, sandy clay loam, or clay loam. Reaction is very strongly acid or strongly acid.

Dundee series

The Dundee series consists of somewhat poorly drained, moderately slowly permeable soils that formed in loamy Mississippi River alluvium. These soils are on nearly level to gently undulating natural levees and ridges on the alluvial plain. Slopes range from 0 to 3 percent.

Soils of the Dundee series are fine-silty, mixed, thermic Aeric Ochraqualfs.

Dundee soils are closely associated with the Tensas and Sharkey soils. The somewhat poorly drained Tensas soils are in lower lying positions than Dundee soils and have a clayey subsoil. The poorly drained Sharkey soils are on flats and in depressional areas and are clayey throughout.

Typical pedon of Dundee silt loam, 1.5 miles east of Gilbert, 0.3 mile north of Highway 572, 60 feet east of Bayou Macon, NW1/4SE1/4 sec. 2, T. 12 N., R. 8 E.

Ap—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; few fine faint yellowish brown mottles; weak medium granular structure; friable; common fine roots; medium acid; abrupt boundary.

B21tg—5 to 13 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine pores; thin discontinuous clay films on faces of peds; few fine black stains; strongly acid; clear smooth boundary.

B22tg—13 to 29 inches; grayish brown (10YR 5/2) silty clay loam; few medium faint yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine pores; nearly continuous clay films on faces of peds; few fine black stains; strongly acid; clear smooth boundary.

B31g—29 to 35 inches; dark grayish brown (10YR 4/2) silty clay loam; common medium faint yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of peds; strongly acid; clear smooth boundary.

B32g—35 to 42 inches; grayish brown (10YR 5/2) silty clay loam; common medium faint yellowish brown (10YR 5/6) mottles; weak coarse subangular blocky structure; hard, firm; few patchy clay films; strongly acid; clear boundary.

IICg—42 to 80 inches; grayish brown (10YR 5/2) silt loam; common faint yellowish brown (10YR 5/6) mottles; hard, firm; massive; strongly acid.

Solum thickness ranges from 24 to 60 inches.

The Ap horizon is 4 to 8 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. In some pedons this horizon has hue of 10YR, value of 3, and chroma of 2 if it is less than 6 inches thick. It is silt loam or silty clay loam. Unless the surface is limed, reaction ranges from very strongly acid to medium acid.

The B2t horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2. Mottles are in shades of gray or brown. Texture is silt loam or silty clay loam. Reaction ranges from very strongly acid to medium acid.

The B3 horizon has hue of 10YR or 2.5Y, values of 4 to 6, and chroma of 1 or 2. Mottles are in shades of gray or brown. Texture is silt loam, clay loam, sandy clay loam, or silty clay loam. Reaction ranges from very strongly acid to medium acid.

The IIC horizon has hue of 10YR, value of 5 or 6, and chroma of 1 or 2. It is loam, very fine sandy loam, or silt loam. Reaction ranges from very strongly acid to neutral.

Egypt series

The Egypt series consists of deep, somewhat poorly drained, slowly permeable soils that formed in loess and loamy stream terrace deposits of late Pleistocene age. These soils are on low ridges and knolls on the terrace uplands. Slopes range from 0.5 to 2 percent.

Soils of the Egypt series are fine-silty, mixed, thermic Aquic Glossudalfs.

Egypt soils are closely associated with the Deerford, Dexter, Foley, Gigger, and Gilbert soils. The somewhat poorly drained Deerford soils have a natric horizon. The well drained Dexter and the moderately well drained Gigger soils are on higher lying convex ridges. The poorly drained Foley and Gilbert soils are in depressional areas. In addition, Foley soils have a natric horizon.

Typical pedon of Egypt silt loam, 5.5 miles south of Winnsboro, 700 feet east of parish highway, 35 feet north of field road, SW1/4NE1/4 sec. 34, T. 13 N., R. 7 E.

Ap—0 to 5 inches; dark brown (10YR 4/3) silt loam; weak fine granular structure; friable; few fine roots; few medium black and brown concretions; medium acid; clear wavy boundary.

A2—5 to 16 inches; brown (10YR 5/3) silt loam; common medium faint yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) mottles; weak fine subangular blocky structure; friable; few fine roots; common medium black concretions; strongly acid; clear wavy boundary.

B&A—16 to 25 inches; yellowish brown (10YR 5/4) silty clay loam; common medium faint grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; few fine discontinuous vesicular pores; thin discontinuous clay films on faces of peds; common medium black concretions; common tongues of light brownish gray (10YR 6/2) silt loam (A2) 0.5 centimeter to 4 centimeters wide extend between prisms and make up about 20 percent of horizon; strongly acid; clear irregular boundary.

B21t—25 to 41 inches; yellowish brown (10YR 5/4) silty clay loam; firm; common medium faint yellowish brown (10YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; thin discontinuous clay films on faces of peds; common medium brown concretions; thin pale brown silt coatings between prisms; strongly acid; clear wavy boundary.

B22t—41 to 52 inches; yellowish brown (10YR 5/4) silty clay loam; common medium faint pale brown (10YR 6/3) and yellowish brown (10YR 5/8) mottles; weak coarse prismatic structure parting to moderate fine subangular blocky; firm; few fine pores; thin discontinuous clay films on faces of peds; few fine and medium brown concretions; neutral; clear wavy boundary.

B23t—52 to 70 inches; dark brown (7.5YR 4/4) silty clay loam; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; thin discontinuous clay films on faces of peds; few medium black stains on faces of peds; thin grayish brown silt coatings between prisms; strongly alkaline.

Solum thickness ranges from 60 to 100 inches. Exchangeable sodium ranges from 15 to 35 percent within 17 to 40 inches of the upper boundary of the B horizon. Tongues of the A2 horizon extend into the B horizon.

The Ap or A1 horizon is 3 to 6 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. Unless the surface is limed, reaction ranges from very strongly acid to medium acid.

The A2 horizon is 5 to 15 inches thick. It has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 to 3. Mottles in shades of brown, yellow, and gray range from few to many. Fine and medium black, brown, or red concretions range from none to common. Reaction ranges from very strongly acid to medium acid.

The B horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 3 to 6. In the upper part it is silt loam or silty clay loam that is 3 to 15 percent sand. In the lower part it is silt loam, silty clay loam, loam, or clay loam. Fine or medium, black, brown, and red concretions range from few to common. Mottles in shades of brown, yellow, and gray range from none to common. Reaction ranges from very strongly acid to medium acid in the upper part and from neutral to strongly alkaline in the lower part.

Foley series

The Foley series consists of poorly drained, very slowly permeable soils that formed in silty deposits of late Pleistocene age. These soils are on flats, in swales, and in narrow depressional areas on the terrace uplands. Slopes range from 0 to 3 percent.

Soils of the Foley series are fine-silty, mixed, thermic Albic Glossic Natraqualfs.

Foley soils are closely associated with the Deerford, Dexter, Liddieville, and Necessity soils. The somewhat poorly drained Deerford soils are in higher positions. The well drained Dexter and Liddieville soils are on higher lying convex ridges and do not have a natric horizon. The somewhat poorly drained Necessity soils have a fragipan and do not have a natric horizon.

Typical pedon of Foley silt loam, 0.5 mile south of Winnsboro, 600 feet east of Highway 865, 150 feet south of road, NW1/4NW1/4 sec. 1, T. 13 N., R. 7 E.

Ap—0 to 5 inches; brown (10YR 5/3) silt loam; common medium faint light brownish gray (10YR 6/2) and few medium faint yellowish brown (10YR 5/6) mottles; weak medium granular structure; slightly hard, friable; common fine roots; strongly acid; clear wavy boundary.

A2g—5 to 12 inches; light brownish gray (10YR 6/2) silt loam; common fine distinct yellowish brown mottles; weak medium subangular blocky structure; hard, friable; few fine roots; few fine discontinuous vesicular pores; bodies of grayish brown silty clay loam 3 centimeters in diameter that have common medium faint yellowish brown mottles make up about 15 percent of horizon; medium acid; clear irregular boundary.

B1g—12 to 19 inches; light brownish gray (2.5Y 6/2) silty clay loam; few medium prominent strong brown (7.5YR 5/6) and few distinct yellowish brown (10YR 5/6) mottles; weak medium prismatic structure; hard, firm; few fine roots; thin patchy clay films on faces of peds; vertical tongues of gray silt loam make up about 15 percent of horizon; strongly acid; gradual irregular boundary.

B21tg—19 to 29 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium angular blocky; slightly hard, firm; thin discontinuous clay films on faces of peds; few fine black concretions;

few fine soft black bodies; few fine concretions of calcium carbonate; few thin streaks of powdery lime; gray silt interfingers extend throughout; neutral; clear wavy boundary.

B22tg—29 to 50 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium angular blocky; slightly hard, firm; thin patchy clay films on faces of peds; common medium black concretions; few medium lime concretions; few medium soft black bodies; mildly alkaline.

B3g—50 to 65 inches; grayish brown (2.5Y 5/2) silt loam; common medium prominent strong brown (7.5YR 5/6) mottles; weak coarse prismatic structure parting to weak medium angular blocky; slightly hard, firm; thin patchy clay films on faces of peds; few medium black concretions; few medium lime concretions; mildly alkaline.

Solum thickness ranges from 40 to 72 inches or more. Exchangeable sodium exceeds 15 percent within 7 to 16 inches of the upper boundary of the B horizon.

The Ap or A1 horizon is 3 to 5 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2 to 3. Reaction is strongly or medium acid.

The A2 horizon is 3 to 10 inches thick. It has hue of 10YR, value of 5 or 6, and chroma of 1 to 2. Interfingers of A2 material 2 to 5 millimeters wide extend to a depth of 25 to 50 inches. Mottles are in shades of gray and brown. Reaction is strongly acid or medium acid.

The B1 horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. Mottles are in shades of gray and brown. Texture is silt loam or silty clay loam. Reaction is strongly acid to neutral.

The B2t horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. Mottles are in shades of gray and brown. Texture is silt loam or silty clay loam. Reaction is strongly acid to neutral in the upper part of this horizon and ranges from neutral to moderately alkaline in the lower part.

The B3 horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 to 3. It is silt loam or silty clay loam. Reaction ranges from neutral to moderately alkaline.

Some pedons have a C horizon at a depth of 45 to 72 inches. It is loamy fine sand or alternating thin strata of loamy and clayey material. Reaction ranges from neutral to moderately alkaline.

Forestdale series

The Forestdale series consists of poorly drained, very slowly permeable soils. These soils formed in clayey and loamy Mississippi River alluvium overlying older loamy deposits of late Pleistocene age. These soils are on lower positions of natural levees and on wide and narrow flats on the alluvial plain. Slope is less than 1 percent.

Soils of the Forestdale series are fine, montmorillonitic, thermic Typic Ochraqualfs.

Forestdale soils are closely associated with the Sharkey and Sterlington soils. The poorly drained Sharkey soils are at lower elevations and have more clay in the subsoil. The well drained Sterlington soils are at higher elevations.

Typical pedon of Forestdale silty clay loam, occasionally flooded, 1.75 miles northwest of Liddieville, 0.5 mile north of parish road, 60 feet east of NW section corner, NW1/4NW1/4 sec. 33, T. 14 N., R. 6 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silty clay loam; massive; firm; common fine roots; medium acid; abrupt smooth boundary.

B21tg—4 to 16 inches; gray (10YR 5/1) clay; many medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; very firm; common fine roots; few medium pores; thin discontinuous clay films on faces of peds; few medium black stains on faces of peds; strongly acid; clear wavy boundary.

B22tg—16 to 21 inches; gray (10YR 5/1) silty clay; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few medium roots; few medium pores; thin discontinuous clay films on faces of peds; few medium black stains on faces of peds; medium acid; clear irregular boundary.

B23tg—21 to 31 inches; gray (10YR 5/1) silty clay loam; common medium distinct light olive brown (2.5Y 5/4) mottles; moderate medium subangular blocky structure; firm; few fine and medium roots; few fine pores; thin discontinuous clay films on faces of peds; few root channels coated with dark stains; few former root channels filled with silty clay; few fine brown concretions; medium acid; clear smooth boundary.

B31g—31 to 40 inches; gray (10YR 5/1) silty clay loam; common medium distinct light olive brown (2.5Y 5/4) and common medium faint brown (10YR 4/3) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few medium roots; few fine pores; thin patchy clay films on faces of peds; few fine brown concretions; few fine white crystals on faces of peds; few black stains; slightly acid; clear wavy boundary.

B32g—40 to 60 inches; light brownish gray (2.5Y 6/2) silty clay loam; common medium distinct gray (10YR 5/1) and few medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; few fine pores; thin patchy clay films on faces of peds; few fine and medium brown concretions; few fine white crystals on faces of peds; few clean sand grains on faces of peds; neutral.

Solum thickness ranges from 40 to 60 inches.

The A horizon is 4 to 8 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. Unless the surface is limed, reaction is strongly acid or medium acid.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. If value is 5, chroma is 1. Clay content of the upper 20 inches ranges from 35 to 60 percent. Sand content is less than 20 percent. Mottles are in shades of brown or yellow. Reaction ranges from very strongly acid to medium acid.

The B3 horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. If value is 5, chroma is 1. Mottles are in shades of brown or yellow. Texture is very fine sandy loam, silt loam, clay loam, or silty clay loam. Brown and black concretions range from few to common. Reaction ranges from medium acid to mildly alkaline.

Gigger series

The Gigger series consists of moderately well drained, slowly permeable soils that formed in loess and braided stream terrace deposits of late Pleistocene age. These soils have a fragipan in the lower part of the subsoil. They are on low ridges on the terrace uplands. Slopes range from 1 to 3 percent.

Soils of the Gigger series are fine-silty, mixed, thermic Typic Fragiudalfs.

Gigger soils are closely associated with the Dexter, Egypt, and Gilbert soils. None of these soils has a fragipan. The well drained Dexter soils are on higher lying convex ridges. The somewhat poorly drained Egypt soils are on lower lying positions. The poorly drained Gilbert soils are in depressional areas.

Typical pedon of Gigger silt loam, 1 to 3 percent slopes, 1 mile southeast of Liddieville, 0.8 mile east of Highway 135, 300 feet south of shed, NE1/4SE1/4 sec. 10, T. 13 N., R. 6 E.

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

B21t—6 to 15 inches; dark brown (7.5YR 4/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few fine discontinuous vesicular pores; thin discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B22t—15 to 26 inches; brown (7.5YR 5/4) silt loam; moderate medium subangular blocky structure; friable; few fine roots; few fine discontinuous vesicular pores; thin discontinuous clay films on faces of peds; few thin pale brown (10YR 6/3) silt coatings on surface of peds; very strongly acid; clear wavy boundary.

Bx1—26 to 33 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct strong brown (7.5YR 5/6) and few medium faint gray (10YR 5/1) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm, compact and slightly brittle; few fine roots; few thin discontinuous vesicular pores; thin discontinuous clay films on faces of peds; common thin pale brown (10YR 6/3) silt coatings on surfaces of peds; very strongly acid; clear irregular boundary.

IIBx2—33 to 41 inches; yellowish brown (10YR 5/4) silt loam containing noticeable sand; common medium distinct strong brown (7.5YR 5/6) and few medium faint light brownish gray (10YR 6/2) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; prisms and peds separated by 0.5 centimeter to 3 centimeters wide wedges of pale brown (10YR 6/3) silt loam; prisms are firm, compact, and brittle and make up about 85 percent of the cross section; few fine roots between prisms; common fine discontinuous vesicular pores; thin discontinuous clay films on faces of peds; few dark brown concretions; few medium black stains on faces of peds; very strongly acid; clear irregular boundary.

IIBx3—41 to 55 inches; brown (7.5YR 4/4) silt loam; common medium distinct light brownish gray (10YR 6/2) and common medium faint strong brown (7.5YR 5/8) mottles; weak medium prismatic structure parting to moderate medium subangular blocky; firm, compact and brittle; common fine discontinuous vesicular pores; thin discontinuous clay films on faces of peds; few medium black stains on faces of peds; thin pale brown (10YR 6/3) silt coatings between peds and prisms; very strongly acid; gradual wavy boundary.

IIB23t—55 to 65 inches; dark brown (7.5YR 4/4) loam; weak coarse subangular blocky structure; friable; few fine vesicular pores; thin discontinuous clay films on faces of peds; few fine black stains on faces of peds; strongly acid.

Solum thickness is about 60 inches or more. Depth to the fragipan ranges from 18 to 35 inches.

The A horizon is 4 to 8 inches thick. It has hue of 10YR, value of 4 or 5, and chroma of 2 to 4. Unless the surface is limed, reaction ranges from extremely acid to medium acid.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. Mottles are in shades of brown or yellow. Texture is silt loam or silty clay loam. The Bt horizon contains 5 to 15 percent sand that is dominantly very fine. Reaction ranges from extremely acid to medium acid.

The Bx and IIBx horizons have hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Mottles are in shades of brown, yellow, or gray. The Bx horizon is silt loam or silty clay loam. The IIBx horizon is loam, silt loam, silty clay loam, clay loam, or sandy clay loam that has 15 to 40 percent sand, dominantly very fine. Reaction ranges from very strongly acid to medium acid.

The IIBt horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Texture is loam, clay loam, sandy clay loam, or fine sandy loam. Reaction ranges from very strongly acid to medium acid.

Gilbert series

The Gilbert series consists of poorly drained, very slowly permeable soils that formed in loess and loamy stream terrace deposits of late Pleistocene age. These soils are on broad flats or narrow depressional areas. Slope is less than 1 percent.

Soils of the Gilbert series are fine-silty, mixed, thermic Typic Glossaqualfs.

Gilbert soils are closely associated with the Dexter, Egypt, Foley, and Gigger soils. The well drained Dexter soils are on higher lying convex ridges. The somewhat poorly drained Egypt soils are in higher positions. The poorly drained Foley soils have a natric horizon. The moderately well drained Gigger soils are on higher lying convex ridges and have a fragipan.

Typical pedon of Gilbert silt loam, 5.5 miles south of Winnsboro, 300 feet east of parish highway, 25 feet north of field road, SW1/4NE1/4 sec. 34, T. 13 N., R. 7 E.

Ap—0 to 4 inches; brown (10YR 4/3) silt loam; weak medium granular structure; friable; common fine roots; few fine brown stains on faces of peds; medium acid; abrupt smooth boundary.

A2—4 to 12 inches; grayish brown (10YR 5/2) silt loam; few medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine discontinuous vesicular pores; strongly acid; abrupt irregular boundary.

B&A—12 to 18 inches; light brownish gray (2.5Y 6/2) silty clay loam (B2t); common medium prominent strong brown (7.5YR 5/8) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; thin discontinuous clay films on faces of peds; few fine brown concretions; tongues of grayish brown (10YR 5/2) silt loam (A2) 1 centimeter to 4 centimeters wide extend between peds and prisms; very strongly acid; clear wavy boundary.

B21tg—18 to 31 inches; light brownish gray (2.5Y 6/2) silty clay loam; few medium distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; thin discontinuous clay films on faces of peds; common medium and fine black and brown concretions; few fine black stains on faces of peds; common thin grayish brown (10YR 5/2) silt coatings on faces of peds; very strongly acid; clear wavy boundary.

B22tg—31 to 45 inches; grayish brown (10YR 5/2) silty clay loam; few medium faint yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; thin discontinuous clay films on faces of peds; common fine black concretions; few fine black stains on faces of peds; few thin grayish brown silt coatings on faces of peds; common medium pockets of light gray (10YR 7/1) silt loam; strongly acid; clear wavy boundary.

B23tg—45 to 70 inches; grayish brown (2.5Y 5/2) silty clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; thin discontinuous clay films on faces of peds; few fine and medium black concretions; few medium black stains on faces of peds; mildly alkaline.

Solum thickness ranges from 60 to 100 inches. Exchangeable sodium ranges from 15 to 35 percent within 17 to 40 inches of the upper boundary of the B horizon.

The Ap or A1 horizon is 3 to 6 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. Unless the surface is limed, reaction ranges from very strongly acid to medium acid.

The A2 horizon is 5 to 15 inches thick. It has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. Mottles are in shades of brown or gray. Reaction ranges from very strongly acid to medium acid.

The B horizon has hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 1 or 2. It is silt loam or silty clay loam in the upper part and silt loam, silty clay loam, loam, or clay loam in the lower part. Mottles are in shades of brown or gray and range from few to many. Reaction ranges from very strongly acid to medium acid in the upper part and from neutral to strongly alkaline in the lower part.

Liddieville series

The Liddieville series consists of well drained, moderately permeable soils that formed in loamy stream terrace deposits of late Pleistocene age. These soils are on long, narrow convex ridges of the terrace uplands. Slopes range from 2 to 5 percent.

Soils of the Liddieville series are fine-loamy, mixed, thermic Ultic Hapludalfs.

Liddieville soils are closely associated with the Deerford, Dexter, Foley, Forestdale, and Necessity soils. The somewhat poorly drained Deerford soils are in nearly level positions and have a natric horizon. The well drained Dexter soils are on lower lying convex ridges and have less sand in the upper part of the subsoil. The poorly drained Foley soils are in depressional areas and have a natric horizon. The poorly drained Forestdale soils are in depressional areas and have a clayey subsoil. The somewhat poorly drained Necessity soils are in nearly level positions and a have a fragipan.

Typical pedon of Liddieville fine sandy loam, 2 to 5 percent slopes, 0.5 mile southwest of Liddieville, 0.3 mile west of Highway 135, 360 feet south of gravel road, 162 feet east of field road, NE1/4NE1/4 sec. 9, T. 13 N., R. 6 E.

Ap1—0 to 5 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine roots in upper part and common below; neutral; abrupt smooth boundary.

Ap2—5 to 9 inches; brown (10YR 4/3) fine sandy loam; weak thin platy structure; firm; common fine roots; neutral; abrupt smooth boundary.

B1—9 to 14 inches; dark brown (7.5YR 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; few fine vesicular pores; slightly acid; clear smooth boundary.

B21t—14 to 29 inches; yellowish red (5YR 4/6) loam; ped surfaces are reddish brown (5YR 4/4); moderate medium and fine subangular blocky structure; firm; few fine roots; few fine discontinuous vesicular pores; nearly continuous clay films on faces of peds; few fine black stains; medium acid; clear smooth boundary.

B22t—29 to 43 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; firm; few fine roots; few fine discontinuous vesicular pores; common medium and fine black stains on surfaces of peds; thin discontinuous reddish brown (5YR 4/4) clay films on faces of peds; slightly acid; gradual smooth boundary.

B3—43 to 53 inches; strong brown (7.5YR 5/6) loam; common fine faint light yellowish brown mottles; weak medium subangular blocky structure; friable; few fine black stains on faces of peds; slightly acid; gradual smooth boundary.

C—53 to 76 inches; strong brown (7.5YR 5/6) fine sandy loam; single grained; loose; neutral.

Solum thickness ranges from 40 to 60 inches. Reaction ranges from strongly acid to neutral.

In combined thickness the A1 and A2 horizons range from 3 to 13 inches. They have hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 3 or 4.

Some pedons have a B1 horizon. This horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 or 5. It is fine sandy loam or loam.

The Bt horizon has hue of 5YR, value of 4 or 5, and chroma of 4 to 6. Hue may range to 7.5YR in some pedons. Texture is clay loam, loam, or sandy clay loam. The clay content is 18 to 35 percent, averaging about 25 percent, in the control section.

The B3 horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 to 6. It is loam, very fine sandy loam, or fine sandy loam. In some pedons, this horizon has mottles in shades of red and brown.

The C horizon has hue of 10YR, 7.5YR, or 5YR, value of 4 to 6, and chroma of 4 to 6. It is fine sandy loam, very fine sandy loam, loam, or loamy fine sand. In some pedons, the C horizon contains mottles of red or brown.

Loring series

The Loring series consists of moderately well drained soils that have a brittle fragipan in the lower part of the subsoil. Permeability is moderate above the fragipan and moderately slow in the fragipan. These soils formed in loess of late Pleistocene age. They are on gently sloping ridges on the terrace uplands. Slopes range from 1 to 3 percent.

Soils of the Loring series are fine-silty, mixed, thermic Typic Fragiudalfs.

Loring soils are closely associated with Calhoun, Calloway, and Memphis soils. Poorly drained Calhoun soils are in depressional areas and do not have a fragipan. Somewhat poorly drained Calloway soils are on lower lying areas. Well drained Memphis soils are on higher lying convex ridges and do not have a fragipan.

Typical pedon of Loring silt loam, 1 to 3 percent slopes, about 2 miles southeast of Gilbert, 0.5 mile east of Highway 15, 90 feet south of Oakley Cemetery road, SE1/4NW1/4, sec. 15, T. 12 N., R. 8 E.

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

B21t—6 to 18 inches; brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; thin discontinuous clay films on faces of peds; few fine black stains on faces of peds; very strongly acid; clear wavy boundary.

B22t—18 to 23 inches; brown (7.5YR 5/4) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; common fine vesicular pores; thin discontinuous clay films on faces of peds; few medium black stains on faces of peds; thin light yellowish brown (10YR 6/4) silt coatings between faces of peds; very strongly acid; clear irregular boundary.

Bx1—23 to 30 inches; brown (7.5YR 4/4) silt loam; few fine faint strong brown mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; prisms separated by 1 centimeter to 3 centimeters wide wedges of light gray (10YR 7/2) and pale brown (10YR 6/3) silt loam; prisms are firm, compact and brittle and make up about 80 percent of the cross section; few fine roots between prisms; few fine and medium vesicular pores inside prisms; thin discontinuous clay films on faces of peds; few fine black stains inside prisms; strongly acid; clear irregular boundary.

Bx2—30 to 42 inches; yellowish brown (10YR 5/6) silt loam; common medium distinct brown (7.5YR 4/4) and few fine faint strong brown mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; firm, brittle and compact; few medium vesicular pores; thin discontinuous clay films on faces of peds; few fine black stains; thin pale brown (10YR 6/3) silt coatings between prisms; very strongly acid; clear wavy boundary.

Bx3—42 to 60 inches; brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; firm and brittle; few fine vesicular pores; thin patchy clay films on faces of peds; thin very pale brown (10YR 7/3) silt coatings between vertical peds; very strongly acid; gradual wavy boundary.

C—60 to 84 inches; brown (7.5YR 4/4) silt loam; massive; friable; strongly acid.

Solum thickness ranges from 45 to 75 inches. Depth to the fragipan ranges from 22 to 35 inches. Sand content throughout the solum generally is less than 5 percent but may range up to 15 percent.

The A horizon is 6 to 9 inches thick. It has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Reaction ranges from very strongly acid to medium acid.

The B2t horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. In some pedons, it has gray mottles in the lower part. It is silt loam or silty clay loam. Reaction ranges from very strongly acid to medium acid.

The Bx horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Mottles are in shades of brown, yellow, and gray. This horizon is silt loam or silty clay loam. Reaction ranges from very strongly acid to medium acid.

The C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam. Reaction ranges from very strongly acid to slightly acid.

Memphis series

The Memphis series consists of well drained, moderately permeable soils that formed in loess of late Pleistocene age. These soils are on long narrow ridges on the terrace uplands. Slopes range from 2 to 8 percent.

Soils of the Memphis series are fine-silty, mixed, thermic Typic Hapludalfs.

Memphis soils are closely associated with Calhoun, Calloway, and Loring soils. Poorly drained Calhoun soils are in depressional areas. Somewhat poorly drained Calloway soils are in nearly level areas and have a fragipan. Moderately well drained Loring soils are on lower ridges and adjacent side slopes and have a fragipan.

Typical pedon of Memphis silt loam, 2 to 5 percent slopes, 7 miles north of Crowville, about 800 feet west of Highway 859, 141 feet south of house on high school grounds, SE1/4SW1/4 sec. 21, T. 16 N., R. 9 E.

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

B21t—3 to 13 inches; dark brown (7.5YR 4/4) silty clay loam; weak medium subangular blocky structure; common fine roots; few fine pores; thin discontinuous clay films on faces of peds; very strongly acid; clear smooth boundary.

B22t—13 to 33 inches; dark brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine roots; few fine pores; thin discontinuous clay films; few black stains on faces of peds; very strongly acid; clear smooth boundary.

B3t—33 to 47 inches; dark brown (7.5YR 4/4) silty clay loam; moderate medium subangular blocky structure; firm; few fine pores; thin discontinuous clay films on faces of peds; thin patchy pale brown silt coatings on faces of peds; few black stains on peds; few fine black concretions; very strongly acid; clear smooth boundary.

C—47 to 80 inches; dark brown (7.5YR 4/4) silt loam; weak coarse subangular blocky structure; slightly hard; compact; thin common pale brown silt coatings between peds; strongly acid.

Solum thickness ranges from 45 to 78 inches. To a depth of 48 inches or more, the soil is less than 5 percent sand. Reaction ranges from very strongly to medium acid throughout, except in the A horizon where the surface has been limed.

The A1 or Ap horizon is 2 to 8 inches thick. It has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4.

The Bt horizon has hue of 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silty clay loam or silt loam. Black coats and stains on faces of peds range from few to many. Most pedons have gray or pale brown silt coatings.

The C horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. It is silt loam or silty clay loam.

Necessity series

The Necessity series consists of somewhat poorly drained, slowly permeable soils that have a fragipan in the lower part of the subsoil. These soils formed in loamy stream terrace deposits of late Pleistocene age. They are on low ridges and knolls on the terrace uplands. Slopes range from 0.5 to 2 percent.

Soils of the Necessity series are fine-silty, mixed, thermic Glossaquic Fragiudalfs.

Necessity soils are closely associated with Deerford, Dexter, Foley, Forestdale, and Liddieville soils. Somewhat poorly drained Deerford soils are in lower lying areas and have a natric horizon. Well drained Dexter and Liddieville soils are on higher lying convex ridges and do not have a fragipan. Poorly drained Foley soils are in depressional areas and have a natric horizon. Poorly drained Forestdale soils are in depressional areas and have more clay in the subsoil.

Typical pedon of Necessity silt loam, about 3 miles southwest of Fort Necessity, 15 feet north of Highway 872 right-of-way, NW1/4SW1/4, sec. 22, T. 12 N., R. 6 E.

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

B2t—6 to 17 inches; yellowish brown (10YR 5/4) silty clay loam; common medium faint grayish brown (10YR 5/2) and common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; thin discontinuous clay films on faces of peds; few medium reddish brown concretions; strongly acid; clear wavy boundary.

B&A—17 to 25 inches; pale brown (10YR 6/3) silt loam (B2t); common medium distinct brown (7.5YR 4/4) mottles; grayish brown (10YR 5/2) silt loam (A2) makes up to 30 percent of horizon; weak medium subangular blocky structure; friable; pockets of slightly brittle material in B portion; few fine roots; few fine pores; thin patchy clay films on faces of peds; common fine and medium reddish brown concretions; strongly acid; clear irregular boundary.

A'2—25 to 28 inches; light brownish gray (10YR 6/2) silt loam; few fine faint brown mottles; weak medium subangular blocky structure; friable; slightly brittle; common fine and medium pores; common fine and medium brown concretions; strongly acid; clear irregular boundary.

B'x1—28 to 38 inches; brown (10YR 4/3) loam; common medium distinct brown (7.5YR 4/4) mottles; weak coarse prismatic structure parting to moderate medium subangular blocky; slightly hard; brittle; common fine and medium pores; thin discontinuous clay films on faces of peds; few medium brown concretions; few dark stains on surfaces of peds; common thin gray silt coatings between prisms; very strongly acid; clear smooth boundary.

B'x2—38 to 52 inches; brown (7.5 YR 4/4) loam; common medium distinct yellowish brown (10YR 5/4) mottles; common brown (7.5YR 5/2) ped coatings; weak coarse prismatic structure parting to moderate medium subangular blocky; firm; slightly brittle; common medium pores; thin discontinuous clay films on faces of peds; few dark stains on surfaces of peds; common thin gray silt coatings between prisms; very strongly acid; clear smooth boundary.

B3—52 to 67 inches; brown (7.5YR 4/4) clay loam; weak medium subangular blocky structure; friable; thin patchy clay films on faces of peds; few thin gray silt coating on surfaces of peds; strongly acid; clear smooth boundary.

Solum thickness ranges from 50 to 80 inches. Depth to the fragipan ranges from 20 to 37 inches. Sand content ranges from 10 to 35 percent; it is less than 15 percent fine sand or coarser in the upper 20 inches of the argillic horizon.

The A horizon is 4 to 10 inches thick. It has hue of 10YR, value of 4 to 6, and chroma of 2 or 3. Texture is silt loam or very fine sandy loam. Unless the surface is limed, reaction ranges from very strongly acid to medium acid.

The Bt horizon has hue of 10YR, value of 4 to 6, and chroma of 3 to 6. Texture is silt loam, silty clay loam, loam, or clay loam. Mottles are in shades of gray, yellow, and brown. Clay content ranges from 18 to 35 percent. Reaction ranges from very strongly acid to medium acid.

The A'2 has hue of 10YR, value of 5 to 7, and chroma of 2 to 3. Mottles are in shades of brown or gray. Reaction ranges from very strongly acid to medium acid.

The B'x horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 6. It is loam or clay loam. Mottles are in shades of gray, yellow, or brown. Reaction ranges from very strongly acid to medium acid.

The B3 horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It is loam or clay loam. Reaction ranges from very strongly acid to medium acid.

The C horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6. It is loam, clay loam, very fine sandy loam, or loamy fine sand. Reaction ranges from very strongly acid to mildly alkaline.

Sharkey series

The Sharkey series consists of poorly drained, very slowly permeable soils that formed in clayey alluvium. These soils are on broad flats and in slightly depressional areas on the Mississippi River alluvial plain. Slope ranges from 0 to 3 percent.

Soils of the Sharkey series are very fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts.

Sharkey soils are closely associated with Dundee, Forestdale, and Tensas soils. Somewhat poorly drained Dundee soils are on higher lying areas and are loamy throughout. Poorly drained Forestdale soils are loamy in the lower part of the subsoil. Somewhat poorly drained Tensas soils are loamy in the lower part of the subsoil.

Typical pedon of Sharkey clay, 7.5 miles east of Gilbert, 579 feet south of canal spoil bank, 63 feet east of field road, NW1/4SE1/4 sec. 11, T. 12 N., R. 9 E.

Ap—0 to 4 inches; very dark grayish brown (10YR 3/2) clay; few fine distinct dark brown mottles; weak fine and very fine subangular blocky structure; firm; common fine roots; neutral; clear smooth boundary.

B21g—4 to 16 inches; gray (10YR 5/1) clay; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; very firm; few fine roots; few fine black stains on faces of peds; neutral; clear smooth boundary.

B22g—16 to 26 inches; gray (10YR 5/1) clay; common fine distinct dark brown mottles; moderate medium subangular blocky structure; very firm; few fine roots; few fine black stains on faces of peds; mildly alkaline; clear smooth boundary.

B3g—26 to 46 inches; gray (10YR 6/1) clay; common medium distinct strong brown (7.5YR 5/6) mottles;

moderate medium subangular blocky structure; very firm; very fine roots; few fine black stains; moderately alkaline; clear wavy boundary.

Cg—46 to 60 inches; gray (10YR 5/1) clay; common medium faint yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; very firm; few slickensides; moderately alkaline.

Solum thickness ranges from 36 to 60 inches. Cracks from 1 centimeter to 3 centimeters in width develop to a depth of 50 to 60 centimeters or more in most years. Coefficient of linear extensibility ranges from about 0.1 to 0.17 in the B horizon.

The A horizon is 4 to 15 inches thick. It has hue of 10YR, value of 3 or 4, and chroma of 1 or 2. An A horizon that has a value of 3 is less than 10 inches thick. Reaction ranges from strongly acid to mildly alkaline.

The B horizon has hue of 10YR or 5Y, value of 4 to 6, and chroma of 1, or it is neutral. Mottles are in shades of brown, yellow, and red. Reaction ranges from medium acid to moderately alkaline.

The C horizon has hue of 10YR or 5Y, value of 4 to 6, and chroma of 1, or it is neutral. It is typically clay or silty clay, but in some pedons it has a coarser texture below a depth of 40 inches.

Some pedons have a clayey A horizon buried below a depth of 20 inches. Mottles are in shades of brown, yellow, and red. Reaction ranges from neutral to moderately alkaline.

Sterlington series

The Sterlington series consists of well drained, moderately permeable soils that formed in thinly stratified beds of loamy alluvium. These soils are on natural levees bordering a former channel of the Arkansas River. Slope is less than 1 percent.

Soils of the Sterlington series are coarse-silty, mixed, thermic Typic Hapludalfs.

Sterlington soils are closely associated with Forestdale soils. Poorly drained Forestdale soils are in lower positions and have more clay in the subsoil.

Typical pedon of Sterlington silt loam, 7.5 miles northeast of Baskin, 1.5 miles west of Highway 132, 25 feet south of Big Creek cutoff, NE1/4SW1/4 sec. 18, T. 16 N., R. 8 E.

Ap—0 to 6 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; lower 2 inches is massive; common fine roots; strongly acid; abrupt smooth boundary.

A2—6 to 12 inches; brown (10YR 5/3) very fine sandy loam; common medium distinct strong brown (7.5YR 5/6) mottles; friable; weak medium subangular blocky structure; few medium roots; strongly acid; clear wavy boundary.

B2t—12 to 28 inches; yellowish red (5YR 5/6) loam; common medium distinct brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine pores; thin patchy clay films on faces of peds; few fine black stains; strongly acid; clear wavy boundary.

B&A'2—28 to 42 inches; yellowish red (5YR 5/6) very fine sandy loam (B2t); weak medium subangular blocky structure; friable; few fine roots; light brown (7.5YR 6/4) silt loam A'2 material as streaks and coatings on peds makes up about 25 percent of horizon; strongly acid; clear wavy boundary.

B'2t—42 to 60 inches; brown (7.5YR 4/4) loam; common medium faint light brown (7.5YR 6/4) mottles; weak medium subangular blocky structure; friable; few fine roots; thin patchy clay films on faces of peds; strongly acid.

Solum thickness ranges from 36 to 60 inches. Base saturation 50 inches below the top of the argillic horizon ranges from 60 to 80 percent.

The A1 or Ap horizon is 4 to 8 inches thick. It has hue of 10YR or 7.5YR, value of 3 to 5, and chroma of 2 to 4. Unless the surface is limed, reaction ranges from strongly acid to medium acid.

Some pedons have an A2 horizon. It has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 or 4. Texture is silt loam or very fine sandy loam. Reaction ranges from strongly acid to medium acid.

The Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 3 to 6. Texture is silt loam, loam, or very fine sandy loam. At least one subhorizon of the Bt horizon has hue of 5YR. Reaction ranges from strongly acid to slightly acid.

Streaks and ped coatings of the A' material have color values that are 1 or 2 units higher or chroma 1 or 2 units lower than the B horizon. The A' material has chroma of 3 or more.

The B'2t horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 3 to 6. Reaction ranges from strongly acid to slightly acid.

Some pedons have a C horizon. It has hue of 10YR, 7.5YR, or 5YR, value of 4 or 5, and chroma of 4 to 6. It is very fine sandy loam, loam, silt loam, or fine sandy loam. Reaction ranges from strongly acid to moderately alkaline.

Tensas series

The Tensas series consists of somewhat poorly drained, very slowly permeable soils that formed in clayey alluvium. These soils are on the lower part of natural levees of the Bayou Macon and the Tensas River within the Mississippi River alluvial plain. Slopes range from 0 to 3 percent.

Soils of the Tensas series are fine, montmorillonitic, thermic Vertic Ochraqualfs.

Tensas soils are closely associated with Dundee and Sharkey soils. Dundee soils are on higher lying areas and are loamy throughout. Poorly drained Sharkey soils are clayey throughout.

Typical pedon of Tensas silty clay, 3.0 miles northeast of Crowville, 75 feet north of Highway 861, 45 feet west of shed, SW1/4SE1/4 sec. 22, T. 15 N., R. 9 E.

Ap—0 to 4 inches; dark grayish brown (10YR 4/2) silty clay; common fine faint yellowish brown mottles; weak medium subangular blocky structure; sticky; common fine roots; medium acid; abrupt smooth boundary.

B21t—4 to 10 inches; grayish brown (10YR 5/2) clay; many medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few root channels lined with dark grayish brown; few patchy clay films on faces of peds; strongly acid; clear smooth boundary.

B22t—10 to 26 inches; grayish brown (10YR 5/2) clay; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; thin discontinuous clay films on faces of peds; few fine black stains on faces of peds; strongly acid; clear smooth boundary.

IIB3—26 to 39 inches; grayish brown (10YR 5/2) silty clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; firm; few fine pores; thin discontinuous clay films on faces of peds; medium acid; clear smooth boundary.

IIC1—39 to 47 inches; grayish brown (10YR 5/2) silt loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine pores; medium acid; clear smooth boundary.

IIC2—47 to 61 inches; grayish brown (10YR 5/2) silt loam; common medium faint dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; few fine black stains on faces of peds; slightly acid.

Solum thickness ranges from 30 to 50 inches. Depth to the loamy IIB horizon is 20 to 36 inches. In dry seasons, cracks form in the soil and extend to a depth of 20 inches or more.

The A horizon is 3 to 8 inches thick. It has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. Reaction ranges from very strongly acid to medium acid.

The Bt horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2. Some pedons have subhorizons between the A horizon and a depth of 30 inches that are 10YR 4/1 or 10YR 5/1. Mottles are in shades of brown and yellow. Texture is clay or silty clay. Reaction ranges from very strongly acid to medium acid.

The IIB horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 2 or 3. The surfaces of peds are typically dark gray (10YR 4/1) or gray (10YR 5/1). Texture is silty clay loam, silt loam, or very fine sandy loam. Reaction ranges from strongly acid to slightly acid.

The C horizon has the same color and texture as the IIB horizon. Reaction ranges from strongly acid to slightly acid.

formation of the soils

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In this section, the processes and factors of soil formation are discussed and related to the soils in the survey area.

processes of soil formation

The processes of soil formation determine the kind and degree of development of soil horizons. The rate and relative effectiveness of different processes is determined by the factors of soil formation: climate, living organisms, relief, parent material, and time.

Important soil-forming processes include those that result in (1) additions of organic, mineral, and gaseous materials to the soil; (2) losses of these same materials from the soil; (3) translocation of materials within the soil; and (4) physical and chemical transformation of mineral and organic materials within the soil (*26*).

Typically, many processes occur simultaneously in soils. Examples in the survey area include accumulating organic matter, developing soil structure, and leaching of bases from soil horizons. The contribution of a particular process may change with time. For example, installing drainage and water control systems can change the length of time the soils are flooded or saturated with water. Some important processes that have contributed to the formation of soils in Franklin Parish are discussed in the following paragraphs.

Organic matter has accumulated, undergone partial decomposition, and been incorporated in all the soils. Organic matter production in soils is greatest in and above the surface layer. This results in the formation of soils that have a surface layer that is higher in organic matter content than the deeper horizons. The decomposing, incorporating, and mixing of organic residues into the soil is accomplished largely by the activity of living organisms. Many of the more stable products of decomposition remain as finely divided materials. These increase granulation, contribute dark color, increase water-holding and cation exchange capacities, and serve as a source of plant nutrients in the soil.

The addition of alluvium at the surface has been important in the formation of some of the soils. Added material provides new parent material in which processes of soil formation occur. For example, Sharkey soils formed in areas characterized by accumulations of clayey backswamp deposits of the Mississippi River.

Processes that result in development of soil structure occur in all the soils. Plant roots and other organisms contribute to the rearrangement of soil material into aggregates. Decomposition products or organic residues and secretions of organisms serve as cementing agents that help stabilize structural aggregates. Alternate wetting and drying as well as shrinking and swelling contribute to the development of structural aggregates and are particularly effective in soils that have large amounts of clay. An example is Sharkey soils.

All the soils in the survey area except Memphis, Dexter, Liddieville, and Sterlington have horizons in which segregation of iron and manganese compounds, as a result of alternating oxidizing and reducing conditions, has been an important process. Reducing conditions prevail for long periods in poorly aerated horizons. Consequently, the relatively soluble reduced forms of iron and manganese are predominant over the less soluble oxidized forms in the soil solution. Reduced forms of these elements can result in the gray colors in the Bg and Cg horizons that are characteristic of many of the soils in the parish. In the more soluble reduced form, appreciable amounts of iron and manganese can be removed from the soils or translocated from one part to another within the soil by water. The presence of brown mottles in predominantly gray horizons is indicative of segregation and local concentration of oxidized iron compounds as a result of alternating oxidizing and reducing conditions in the soils. The well drained Memphis, Dexter, Liddieville, and Sterlington soils do not have the gray colors associated with wetness and poor aeration and apparently are not dominated by a reducing environment for a significant time.

Loss of elements from the soils has been an important process in their formation. Water moving through the soil has leached soluble bases and any free carbonates that may have been present initially from some horizons of all the soils. All the soils are less acid with depth below horizons at or near the surface. The most extensive leaching has occurred in Memphis, Dexter, Loring, Dundee, Necessity, Sterlington, and Gigger soils, which are acid and do not become neutral or alkaline within the solum. The Deerford, Foley, Egypt, and Gilbert soils are the least severely leached soils in the parish as indicated by mildly alkaline or moderately alkaline reaction in the lower horizons of the solum.

The formation, translocation, and accumulation of clay in the profile have been important processes during the development of most of the soils in Franklin Parish. Silicon and aluminum released as a result of weathering of such minerals as pyroxenes, amphiboles, and feldspars can recombine with the components of water to form secondary clay minerals such as kaolinite. Layer silicate minerals such as biotite, glauconite, and montmorillonite can also weather to form other clay minerals such as vermiculite or kaolinite. Horizons of secondary accumulation of clay result largely from translocation of clays from upper to lower horizons. As water moves downward it can carry small amounts of clay in suspension. This clay is deposited, and it accumulates at the depths of penetration of the water or in horizons where it becomes flocculated or filtered out by fine pores in the soil. Over long periods, such processes can result in distinct horizons of clay accumulation. All the soils in Franklin Parish, except Sharkey soils, have a subsoil characterized by a secondary accumulation of clay.

Secondary accumulation of calcium carbonate in the lower soil horizons has been an important process in some of the soils in Franklin Parish. The Deerford, Egypt, Foley, Gilbert, and Sharkey soils have, in places, secondary accumulations of carbonates at a depth of less than 60 inches. Carbonates dissolved from overlying horizons may have been translocated to these depths by water and redeposited. Other sources and processes can contribute to these carbonate accumulations. These included segregation of material within the horizon, upward translocation of materials from deeper horizons during fluctuation of water table levels, and materials from readily weatherable minerals such as plagioclase.

factors of soil formation

Soil is a natural, three-dimensional body that formed on the earth's surface and that has properties resulting from the integrated effect of climate and living matter acting on parent material, as conditioned by relief over time.

The interaction of five main factors influences the processes of soil formation and results in differences among the soils. These factors are climate, the physical and chemical composition of the parent material, the kind of plants and other organisms living in and on the soil, the relief of the land and its effect on runoff and soil moisture conditions, and the length of time it took the soil to form.

The relative effect of any one factor can differ from place to place, but the interaction of all the factors determines the kind of soil that forms. Because of these interactions, many of the differences in soils cannot be attributed to differences in only one factor. For example, organic matter content in the soils of Franklin Parish is influenced by several factors including relief, parent material, and living organisms. Such interactions do not preclude recognition of the manner in which a given factor can influence a specific soil property. In the following paragraphs the factors of soil formation are discussed as they relate to soils in the parish.

climate

Franklin Parish is in a region characterized by a humid, subtropical climate. A detailed discussion of the climate in the parish is given in the section "General nature of the parish."

The climate is relatively uniform throughout the parish. As a result, local differences in the soils are not caused by large differences in atmospheric climate. The warm average temperatures and large amounts of precipitation favor a rapid rate of weathering of readily weatherable minerals in the soils. The most permeable soils are typically the most highly leached soils and have acid reaction throughout the solum. The less permeable soils are generally less leached, as indicated by soil reaction that is more alkaline with depth. Many of the soils in the parish have developed distinct horizons of secondary accumulation of clay. Differences in weathering, leaching, and translocating clay in soils in the parish are caused chiefly by variations in time, relief, and parent material rather than climate. Weathering processes involving the release and reduction of iron and manganese are indicated by the gray colors in A2g, Bg, or Cg horizons in many of the soils. Oxidation and segregation of these elements as a result of alternating oxidizing and reducing conditions is indicated by mottled horizons and iron and manganese concretions in most of the soils.

Another important facet of climate is expressed in the clayey soils that have large amounts of expanding lattice minerals in which large changes in volume occur upon wetting and drying. Wetting and drying cycles and associated volume changes are important factors in the formation and stabilization of structural aggregates in these soils. When the wet soils dry, cracks of variable width and depth can form as a result of the decrease in volume. When the cracks form, the depth and extent of cracking are influenced by climate. Repeated large changes in volume frequently result in structural problems for buildings, roads, and other structures. Formation of deep, wide cracks may shear roots of plants growing in the soil. When cracks are present, much of the water from initial rainfall or irrigation infiltrates through the cracks. Once the soil has become wet, however, infiltration rates become slow or very slow. Formation of cracks occurs extensively in Sharkey and Tensas soils late in summer and early in fall, when the soils are driest. During this time, cracks of an inch or more in width and extending to a depth of more than 20 inches can form in most years. Cracks that are less extensive and less deep sometimes form in some of the less clayey soils, such as Forestdale.

living organisms

Living organisms affecting the processes of soil formation exert a major influence on the kind and extent of horizon development. Plant growth and animal activity physically modify the soil, thereby affecting porosity, tilth, and content of organic matter. Through photosynthesis, plants use energy from the sun to synthesize compounds necessary for growth. Decomposition of plants returns nutrients to the soil and serves as a major source of organic residue. Decomposition and incorporation of organic matter by micro-organisms enhance the tilth and generally increase the infiltration rate and available water capacity in soils.

Relatively stable organic compounds in soils generally have high cation exchange capacities and thus increase the capacity of the soil to absorb and store nutrients such as calcium, magnesium, and potassium. The extent of these and other processes and the kind of organic matter produced can vary widely, depending on the kinds of organisms living in and on the soil. For example, the organic matter content of soils developed under prairie vegetation is typically higher than in soils developed under forests (*8, 14*). The native vegetation of the Tensas, Sharkey, Sterlington, Dexter, Dundee, and Forestdale soils was mainly mixed bottom land hardwoods and their associated understory and groundcover. Native vegetation on the Memphis, Loring, Calloway, Calhoun, and Necessity soils was mixed hardwood and pine. On the Deerford, Foley, Egypt, and Gilbert soils, the native vegetation consisted mostly of hardwoods and associated understory vegetation that is tolerant of the high levels of exchangeable sodium present in subsurface soil horizons.

The uncultivated soils that developed under mixed hardwood and pine forest are generally lower in organic matter content and have a more distinct A2 horizon than uncultivated soils that developed under the hardwood forest. The organic matter content of cultivated soils is typically lower than that of similar uncultivated soils and can vary widely, depending on use and management.

Differences in the amount of organic matter that has accumulated in and on the soils are influenced by the kind and number of micro-organisms. Aerobic organisms use oxygen from the air to decompose organic matter through rapid oxidation. These organisms are most abundant and prevail for long periods in the better drained and aerated soils such as Dexter and Memphis. Anaerobic organisms are dominant in the more poorly drained soils for long periods during the year. Anaerobic organisms do not require oxygen from the air, and they decompose organic residues very slowly. These different rates of decomposition can result in greater accumulations of organic matter in poorly drained than in better drained soils.

parent material

Parent material is the original material from which soils develop. Its effects are particularly expressed as differences in soil color, texture, permeability, and degree of leaching. Parent material also has a major influence on mineralogy of the soils and is a significant factor determining their susceptibility to erosion. The soils in the parish developed in unconsolidated material deposited by water and wind. The characteristics, distribution, and depositional pattern of the different parent materials in the parish are discussed more thoroughly in the section "Landforms and surface geology."

relief

Major physiographic features of Franklin Parish are discussed in the section "Landforms and surface geology." Relief and other physiographic features influence soil formation by affecting soil drainage, runoff, erosion and deposition, and exposure to the sun and wind.

The influence of relief on soils in Franklin Parish is especially evident in runoff rate, soil drainage, and depth to and duration of a seasonal high water table. Table 19 shows the relationships between parent material, slope, runoff, natural drainage, and seasonal high water table for the soil series mapped in the parish.

The Memphis, Loring, Calloway, and Calhoun soils, for example, which formed in loess, have progressively less relief and generally occur at lower elevations in the order named. On Memphis soils, which typically are gently sloping to sloping, runoff is medium; however, on the nearly level to depressional Calhoun soils, runoff is slow or very slow.

Depth to the seasonal high water table shows similar variation related to difference in relief. The depth ranges from more than 6 feet in the Memphis soils to less than 2 feet in the Calhoun soils. Duration of the high water table is longer in soils that have less relief and are at lower elevations. In Calhoun soils, for example, the high water table is generally present for 5 months. In the Loring soils it is generally present for 3 months.

Soil drainage also becomes more restricted with less relief and at lower elevations. Memphis, Loring, Calloway, and Calhoun soils are well drained, moderately well drained, somewhat poorly drained, and poorly drained, respectively.

time

The kinds of horizons that form and their degree of development are influenced by the length of time of soil formation. A long time is generally required for distinct horizons to develop. In the survey area, differences in the time of soil formation amount to several thousand years for some of the soils.

The Dundee, Sharkey, Sterlington, and Tensas soils are thought to be the youngest soils in the parish. They have developed in recent alluvial sediments that are probably less than 7,000 years old (*25*). Dundee, Sharkey, and Tensas soils formed in alluvium of the Mississippi River. Sterlington soils have apparently formed in loamy Arkansas River alluvium deposited at a time when the Arkansas River occupied areas west of the Macon Ridge (*25*).

The Calhoun, Calloway, Loring, and Memphis soils developed in loess deposits that are probably about 20,000 years old. These soils all have distinct horizons of secondary accumulation of clay and are acid and highly leached in the upper horizons.

The Liddieville soils developed in old braided-stream terrace materials. These are the oldest exposed soil parent materials in the parish. These materials were deposited by the Arkansas River system approximately 30,000 to 40,000 years ago (*25*).

Other soils in the parish, mainly Deerford, Dexter, Egypt, Foley, Gigger, and Gilbert soils have formed in more than one parent material. In these soils, a thin layer of loess or similar material overlies older braided-stream terrace material.

landforms and surface geology

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Franklin Parish has four general groups of soil parent materials. They consist of unconsolidated materials that differ in either their nature and source or their time of deposition, or both. The groups are braided-stream alluvium, and loess, in the upland terrace, and recent Arkansas River and Mississippi River alluvium. Soils developed in these materials are generally in elongated, approximately parallel bands that trend in a northeast-southwest direction between the major streams which drain the parish.

Big Creek and the Boeuf River form the parish boundary on the west, and Bayou Macon and the Tensas River form all but about 3 miles of the eastern boundary. These streams and their tributaries provide the surface drainage for the entire parish.

The land surface features and the nature and distribution of the different materials in which the soils formed are the result of events that occurred during and after the late Pleistocene Epoch. These items are discussed further in the following paragraphs.

recent Mississippi River alluvium

Recent Mississippi River alluvium is the youngest material in the survey area. It covers about 23 percent of the parish, taking in the Sharkey-Tensas and Dundee map units and part of the Forestdale-Sharkey unit on the general soil map. The alluvium is in two distinct physiographic settings—along Bayou Macon and the Tensas River in the eastern part of the area and along streams further west that drain the upland terrace. This alluvium is mainly in a narrow, elongated north-south trending band east of the escarpment that borders the upland terrace and approximately parallel to Bayou Macon and the Tensas River. The materials in this area are flood plain and associated backswamp deposits.

Elevations in this area range from slightly higher than 80 feet above sea level at the northern edge of the parish to slightly lower than 60 feet at the southern edge. The overall slope is about 8 inches per mile toward the south. Nearly level topography characterizes the entire area, and local relief is generally less than 10 feet. Bayou Macon and the Tensas River occupy channels cut to depths of 30 to 50 feet or more below the adjacent alluvium.

The alluvium in this area is probably less than about 7,000 years old and is as much as 70 feet or more in thickness. The loamy surface alluvium probably accumulated during the period approximately 6,000 to 7,000 years ago when channels now occupied by the Tensas River and Bayou Macon carried all or part of the Mississippi River's flow (*25*). The clayey alluvium accumulated during that period and during flooding at later times.

Alluvium carried by the Mississippi River is of varied origin and may have originated anywhere within the river's drainage area. Sorting during deposition, as well as a diverse mineralogy, results in considerable differences. However, mineralogical studies of the alluvium indicate that smectite minerals are dominant in the clay-sized fraction; secondary amounts of micaceous clays also are present (*29*). Associated with these are lesser amounts of kaolinite, chlorite-vermiculite intergrade, and quartz minerals. The sand- and silt-sized fractions are mainly quartz with a large amount of feldspars and smaller amounts of a variety of other minerals, including such readily weatherable minerals as biotite and hornblende.

Partial sorting of alluvial materials occurs when a stream overflows; its initial decrease in velocity and in transporting capacity results in rapid deposition of alluvium. As the velocity of the water decreases, the initial deposits are high in sand content, followed by siltier and then more clayey materials. The clayey backswamp alluvium is deposited by still or slowly moving water in low areas behind the natural levees. Characteristically, this deposit pattern results in long, nearly level slopes that extend from natural levees near streams to backswamp.

Surface deposits of recent Mississippi Valley alluvium are mostly clayey, but some are loamy. Dundee soils developed in loamy alluvium at the higher and intermediate elevations, and Sharkey soils developed in the clayey alluvium at the lower elevations. Tensas soils developed in areas at intermediate elevations where clayey alluvium less than 36 inches thick overlies loamy alluvium.

Recent Mississippi River alluvium also occurs in some low, level or nearly level areas along the Boeuf River, Turkey Creek, and other streams that flow through the upland terrace. This alluvium is clayey and is deposited mostly from backwater during periods when the Mississippi River is at flood stage. Although flood control measures on the Mississippi River and smaller local streams have reduced the frequency and extent of flooding, many of these areas still flood from backwater for significant periods during the spring in most years.

Another possible source of these materials along the Boeuf River and its tributaries is the floodwaters from the Mississippi River that may have flowed into the Boeuf River from north of Macon Ridge in Arkansas. Throughout these areas, the accumulations of clayey alluvium are at elevations of less than approximately 60 feet. They are generally less than 6 feet thick at the lowest elevations and become progressively thinner at higher elevations. These are the youngest soil parent materials in the area west of the eastern edge of Macon Ridge. Depending on the location, they may overlie loess or braided-stream materials or other older materials in the area. They overlie red clayey sediments in some locations along the Boeuf River. The red clayey sediments are not parent materials of any of the soils mapped in the survey area. They were probably deposited about 3,000 to 5,000 years ago near the end of a period when a meander belt of the Arkansas River was in a position approximate to that now occupied by the Boeuf River (*25*).

recent Arkansas River alluvium

Recent loamy alluvium of the Arkansas River is on natural levees bordering the Boeuf River and is the parent material of the Sterlington soil. Areas of Sterlington soil were too small to be named in the general soil map. This alluvium is thought to have accumulated mostly about 3,000 to 5,000 years ago when the Arkansas River flowed in a course corresponding approximately to that of the present Boeuf River in this area (*25*). Here, also, more recent alluvium from local sources, and possibly the Ouachita River system, may also have been deposited. Recent Arkansas River alluvium is older than the recent Mississippi River alluvium that overlies it in places.

sediments in the upland terrace

The upland terrace area consists largely of loess and braided-stream alluvium. It lies between the recent Mississippi River alluvium to the east and alluvium along the Boeuf River and Big Creek to the west. About 70 percent of the parish is within this general area.

Two major areas can be readily identified on the upland terrace. The smaller one consists of the narrow north-south band of hills extending northward from near Como through Crowville to the Madison Parish line. This area is generally less than 5 miles wide and has the steepest and most dissected topography in the parish. It contains hills that are essentially rounded or elongated with a general north-south orientation. Maximum elevation of the hills is 125 to 130 feet. In contrast, maximum elevation of interfluves on the surrounding landscape is typically 90 to 95 feet. The remainder of the upland terrace has a braided-stream terrace landform with three apparent levels. Sinuous, relict, braided-stream channels and broad level or gently sloping interfluves characterize each level. Each level forms a north-south trending band in which maximum interfluve elevations differ by about 10 feet from adjoining higher areas to the east or lower areas to the west. The relationships between the different soil parent materials on the upland terrace are discussed in the paragraphs that follow.

loess

The area covered by loess corresponds approximately to the Calhoun-Calloway-Loring, Dexter-Liddieville-Necessity, and Gilbert-Gigger-Egypt general soil map units. Along the eastern edge, the area is bounded by an abrupt escarpment that rises 10 to 20 feet above the adjoining Mississippi River alluvium. On the western edge it slopes, almost imperceptibly in places, into alluvium along the Boeuf River and Big Creek.

The loess has a maximum thickness of about 14 feet at the eastern edge and becomes progressively thinner at the western edge (fig. 4). Loess is the dominant parent material for most of the soils on the upland terrace. Older topographical features such as braided-stream channels and interfluves are reflected in the land surface. Much time elapsed between the deposition of the braided-stream terrace alluvium and the deposition of the overlying loess. This is indicated by the development of erosional drainage features. These features are best expressed in the northeastern part of the upland terrace area where loess overlies the most uneven topography in the parish. Also, relict channels on the terrace were partly filled with finer-textured materials, which were later mantled with loess. Finally, almost everywhere are recognizable horizons of soils that developed in the loamy braided-stream alluvium and were later buried by the overlying loess.

Loess in the lower Mississippi Valley, its characteristics and distribution, its time of deposition, and its source have been the subject of a number of studies (*10, 11, 17, 24, 27, 28, 33*). Loess approximately 40 miles from the survey area has rather uniform mineralogy (*27*). The loess contains about 66 percent quartz, 20 percent carbonates, 5 percent feldspars, 7 percent clay minerals, and 2 percent accessory heavy minerals. The clay minerals are mostly smectite with lesser amounts of illite and kaolinite.

The loess that occurs throughout the southern Mississippi Valley is generally thought to have originated from alluvium on the flood plain of the Mississippi River at a time when the river drained actively glaciated areas. During dry periods, winds blowing across these flood plains eroded the alluvium and transported it and subsequently deposited it as loess over adjacent areas (*17*).

More than one interval of loess deposition has occurred in some areas of the lower Mississippi Valley, and somewhat different times of deposition have been

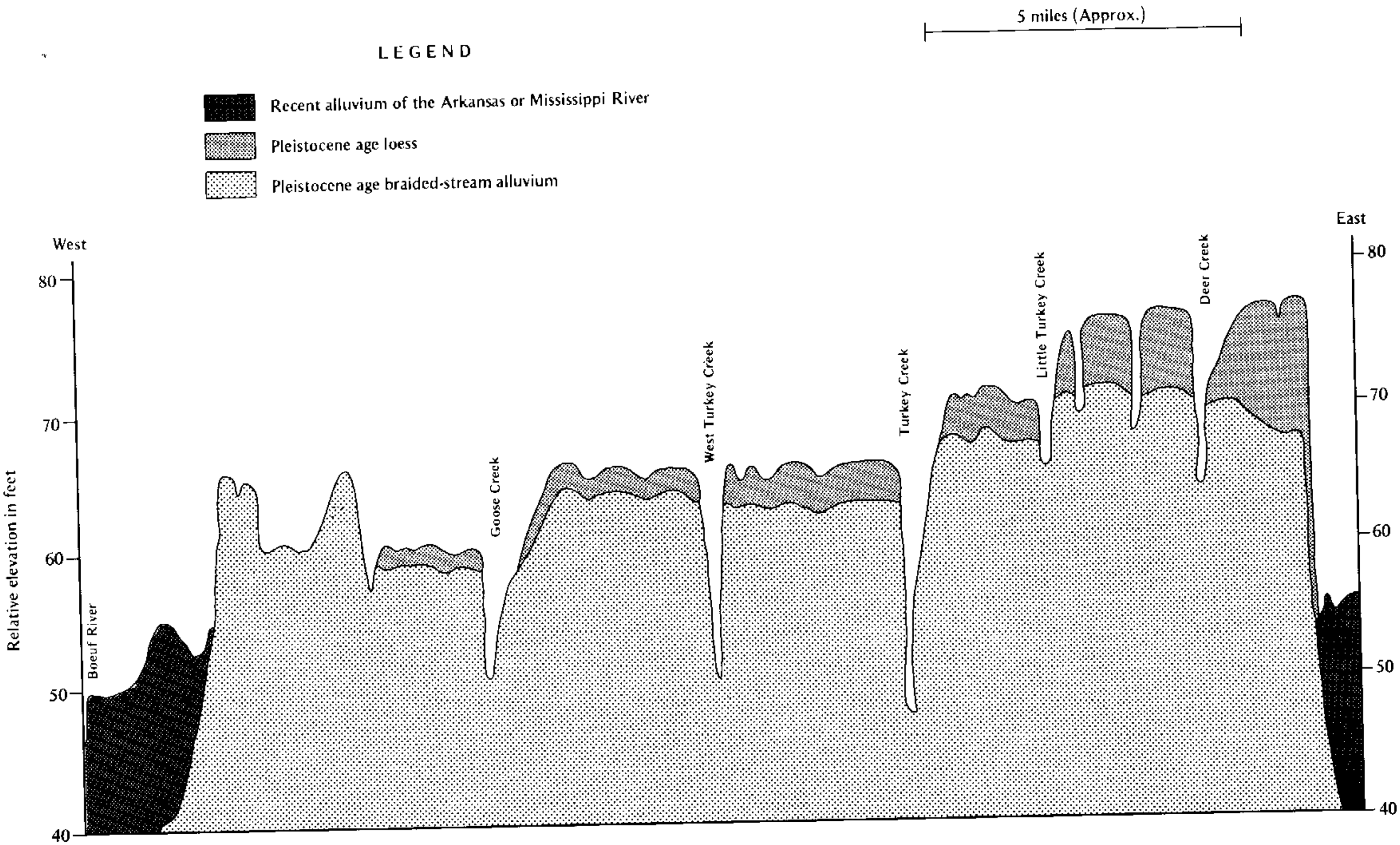

Figure 4.—Distribution of loess and other sediments on an east-west traverse from Louisiana Highway 4 bridge at the Boeuf River to vicinity of old church.

proposed (*17, 28, 33*). The loess in areas approximately 40 miles east of Franklin Parish is probably about 20,000 years old (*25*). The loess in Franklin Parish is probably 30,000 to 40,000 years old. Here it is leached of carbonates throughout. In the western part, the loess typically has a small admixture of the older underlying braided-stream terrace materials.

braided-stream alluvium

Braided-stream alluvium is the oldest material exposed on the upland terrace. The areas of exposure are limited to the western part of the terrace where they are the parent material of the Liddieville and Necessity soils. Most of these areas are within the Dexter-Liddieville-Necessity general soil map unit. However, they are also exposed in some small areas of Liddieville and Necessity soils within the western part of the Gilbert-Gigger-Egypt general soil map unit. Throughout most of the upland terrace the braided-stream alluvium is covered by a mantle of loess and, in some places, by more recent alluvium.

In the lower Mississippi Valley, materials forming the braided-stream terraces are glacial outwash or valley train deposits of the Arkansas River (*25*). These materials are mostly sand and gravel deposited from swiftly flowing, sediment-choked rivers at a time when they drained regions of active glaciation to the west and north. Deposition of the loamy materials was followed by deposition of somewhat more clayey materials in low or impounded portions of the landscape. These materials have a wide range in characteristics depending on the nature of the source material and characteristics of the depositional environment. For example, red clays were deposited in these positions on the loamy braided-stream materials in much of the eastern part of the upland terrace. Grayish silty clay loam textured materials are common in lower, central, and western parts of the area.

The differences in elevation and nature of the landscape and the presence of the more clayey alluvium in low areas on the upland terrace indicate possibly four major periods of deposition of the braided-stream deposits (*25*). The oldest materials are those comprising the more sloping, somewhat dissected area with elevations between about 90 and 130 feet in the northeastern part of the parish. These may be Prairie age sediments deposited 80,000 to 100,000 years ago. The time of deposition of each of the other three subareas was probably more than 40,000 years ago. Undoubtedly each subarea within a given elevation range is older than those at lower elevations and younger than those at higher elevations. However, the differences in age may not be large.

The typical relationship between the modern soils on the upland terrace and their various parent materials are shown in figure 5. The Memphis, Loring, Calloway, and Calhoun soils formed in areas where the loess is greater than about 4 feet thick and do not contain appreciable admixtures of material from the underlying sediments within the solum. The Memphis and Loring soils have better internal drainage than the Calloway and Calhoun soils. They occupy higher positions than Calloway and Calhoun soils and have developed in areas where the loess is underlain by loamy braided-stream materials or where the loess is more than 8 feet thick if it is underlain by more clayey materials. The Calloway and Calhoun soils developed in areas where the loess is underlain by more clayey materials on the loamy braided-stream materials.

The Gigger, Egypt, and Gilbert soils formed in areas where the loess is thinner than about 4 feet and may contain an appreciable admixture of material from the underlying sediments within the solum. The Gigger soils have better internal drainage than the Egypt and Gilbert soils. They are on the higher positions and have developed in areas where the loess is underlain by loamy braided-stream materials. Consequently, they contain more sand throughout the solum than soils developed in the thicker loess. The Egypt and Gilbert soils developed in areas where the loess is underlain by more clayey materials on the loamy braided-stream materials. They typically contain less sand throughout the solum than the Gigger soils.

The Necessity-Foley-Deerford and Dexter-Liddieville-Necessity general soil map units on the upland terrace have the thinnest loess. In these areas, the well drained Dexter and Liddieville soils are the ridges and portions of the adjacent side slopes. Dexter soils formed where thin loess deposits are mixed throughout with the loamy underlying braided-stream materials. The loamy Liddieville and Necessity soils formed where there is little or no influence of loess because of either, or both, absence of loess deposition or erosion of any loess deposited. Foley and Deerford soils are in the lowest positions in these areas. They are wetter than the associated soils and are only in places where the loamy braided-stream materials are overlain by more clayey alluvium which in turn is overlain by the silty material. This silty material consists of a loess-like local alluvium that may have been influenced by loess in places. Necessity soils are on intermediate positions in areas that are less sloping. They formed in silty alluvium that also may be influenced by loess in places.

The Forestdale soils formed in places where little or no loess or silty alluvium overlies clayey alluvium in the low areas on the upland terrace. The position of Forestdale soils in low elevations in the western part of the parish and their association with Sharkey soils indicated that Mississippi River alluvium may comprise a major portion of their parent material.

The presence of high levels of exchangeable sodium in soils in Franklin Parish is associated with specific soil-parent material-geomorphic relationships. The relationships are such that high levels of exchangeable

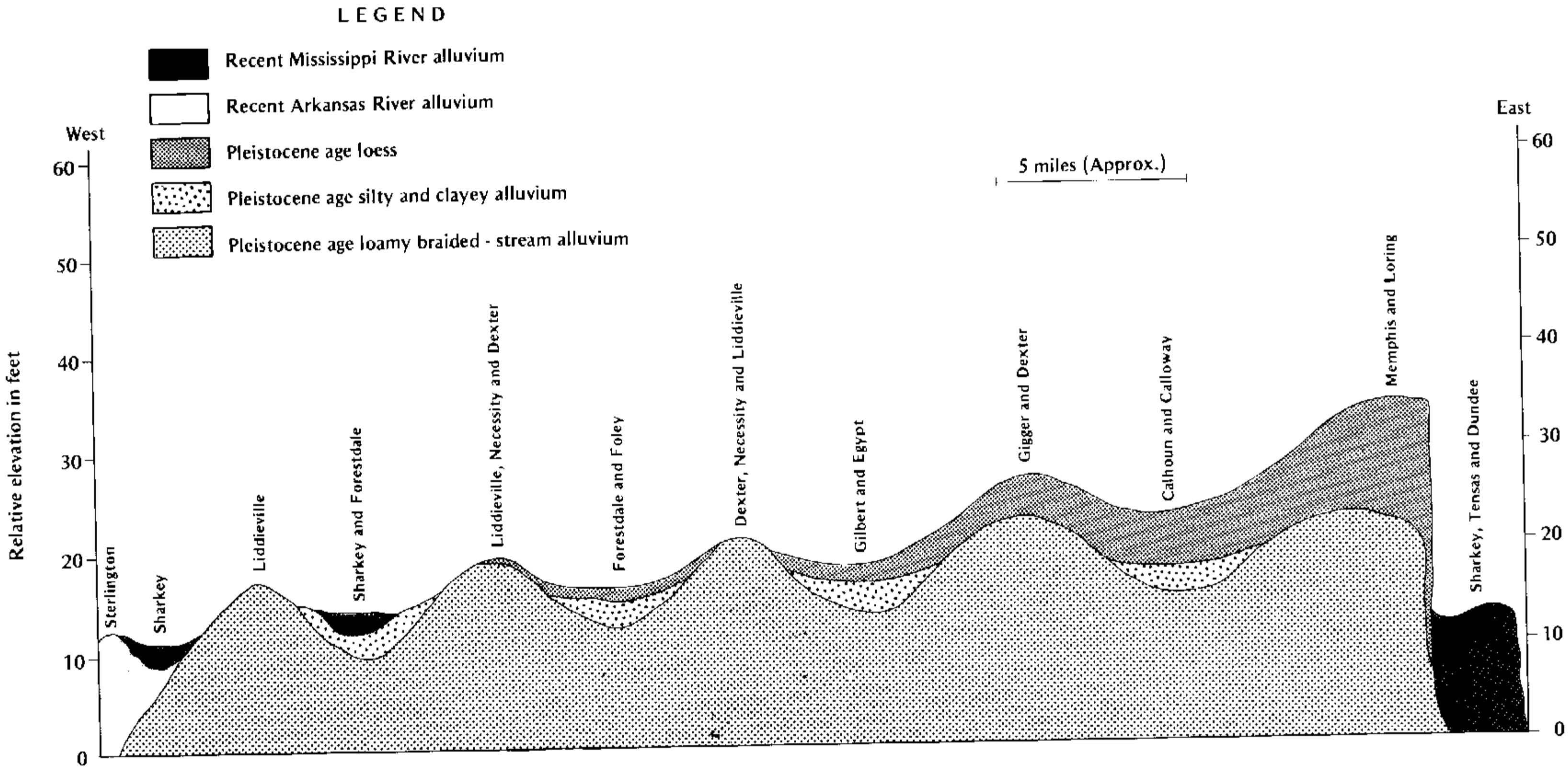

Figure 5.—Soils, parent material, and landscape position from east to west in the parish.

sodium are associated with the more clayey alluvium that accumulated in low or impounded areas on the braided-stream terrace before loess deposition. In the modern landscape, these are level or nearly level areas that are lower than the surrounding area. The Foley, Deerford, Egypt, and Gilbert soils all have high levels of exchangeable sodium within the solum. Foley and Deerford soils are the predominant soils with high levels of exchangeable sodium in areas of the thinnest loess deposits. They have a natric horizon beginning within 10 to 20 inches. In areas of somewhat thicker loess, Egypt and Gilbert soils have high sodium levels within the solum. They do not have natric horizons but have high sodium levels beginning within 24 to 50 inches. Soils developed in loess deposits greater than about 4 feet thick do not have high levels of exchangeable sodium within the solum. However, high levels of sodium are present at depths below 40 inches in areas where the loamy braided-stream alluvium is overlain by more clayey alluvium beneath the loess.

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glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Base saturation. The degree to which material having cation exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation exchange capacity.

Bottom land. The normal flood plain of a stream, subject to flooding.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

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.

Chiseling. Tillage with an implement having one or more soil-penetrating points that loosen the subsoil and bring clods to the surface. A form of emergency tillage to control soil blowing.

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 coating, clay skin.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

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.

Conservation tillage. Only the tillage essential to crop production and prevention of soil damage.

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.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

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 that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

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 they are wet 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.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by 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 the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

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.

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.

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.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon 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.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have 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 in which the solum 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.

Leaching. The removal of soluble material from soil or other material by percolating water.

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. The soil is not strong enough to support loads.

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).

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

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 (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated 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 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through 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 semisolid to plastic.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid	Below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

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 (in tables). The slow movement of water into the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in 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 plant and animal activities are largely confined to the solum.

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. 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.

Surface layer. 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 and behavior.

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 water soaks into the soil or flows slowly to a prepared outlet. 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.

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 loam, silt, 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 physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Recorded 1951-73 at Winnsboro, La.]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	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----	57.6	35.8	46.7	80	15	99	4.54	2.09	6.53	7	.5
February---	61.1	38.3	49.7	82	19	137	4.63	2.41	6.43	6	.6
March------	68.4	44.9	56.7	85	24	264	5.62	3.18	7.61	7	.2
April------	77.4	54.4	65.9	89	34	477	4.77	2.08	6.94	6	.0
May--------	84.4	61.2	72.9	95	45	710	4.97	2.25	7.17	6	.0
June-------	91.2	68.2	79.7	100	53	891	2.96	.93	4.57	5	.0
July-------	93.8	71.0	82.4	102	61	1,004	3.95	2.03	5.50	7	.0
August-----	93.6	69.4	81.5	102	57	977	3.54	1.11	5.47	5	.0
September--	89.2	64.1	76.6	99	44	798	3.16	1.05	4.84	5	.0
October----	80.5	51.6	66.1	95	30	499	2.25	.50	3.64	3	.0
November---	68.6	42.8	55.7	86	21	195	4.09	1.90	5.87	5	.0
December---	60.5	37.6	49.1	80	16	117	6.12	3.54	8.21	7	.2
Yearly:											
Average--	77.2	53.3	65.3	---	---	---	---	---	---	---	---
Extreme--	---	---	---	104	14	---	---	---	---	---	---
Total----	---	---	---	---	---	6,168	50.60	42.65	58.19	69	1.5

[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 2.--FREEZE DATES IN SPRING AND FALL

[Recorded 1951-73 at Winnsboro, La.]

Probability	Temperature: 24° F or lower	Temperature: 28° F or lower	Temperature: 32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 14	March 27	April 1
2 years in 10 later than--	March 3	March 17	March 26
5 years in 10 later than--	February 9	February 25	March 16
First freezing temperature in fall:			
1 year in 10 earlier than--	November 7	October 24	October 17
2 years in 10 earlier than--	November 16	October 31	October 23
5 years in 10 earlier than--	December 3	November 13	November 2

TABLE 3.--GROWING SEASON

[Recorded 1951-73 at Winnsboro, La.]

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	262	226	205
8 years in 10	273	238	214
5 years in 10	296	260	230
2 years in 10	319	283	247
1 year in 10	331	295	255

TABLE 4.--SUITABILITY AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP FOR SPECIFIED USES

Map unit	Percent of area	Cultivated farm crops	Pastureland	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
1. Sharkey-Tensas	16	Moderately well suited: wetness, very slow permeability, poor tilth.	Moderately well suited: wetness, poor tilth.	Moderately well suited: moderate seedling mortality, equipment limitations.	Poorly suited: wetness, shrink-swell, very slow permeability, low strength for roads.	Poorly suited: wetness, very slow permeability, too clayey.	Poorly suited: wetness, too clayey.
2. Dundee	5	Well suited	Well suited	Well suited	Moderately well suited*: wetness, shrink-swell, moderately slow permeability, low strength for roads.	Moderately well suited: wetness, moderately slow permeability.	Moderately well suited: erodes easily.
3. Calhoun-Calloway-Loring	33	Moderately well suited: wetness in low areas, uneven surface.	Well suited	Well suited	Poorly suited: wetness, moderately slow and slow permeability, low strength for roads.	Poorly suited: wetness, slope.	Poorly suited: wetness.
4. Gilbert-Gigger-Egypt	29	Moderately well suited: wetness, uneven surface.	Moderately well suited: wetness.	Moderately well suited: moderate seedling mortality, excess sodium in subsoil, equipment limitations.	Moderately well suited*: wetness, slow and very slow permeability, low strength for roads.	Moderately well suited: wetness, slow and very slow permeability.	Moderately well suited: erodes easily, wetness.
5. Necessity-Foley-Deerford	8	Moderately well suited: wetness, sodium salts in subsoil.	Moderately well suited: wetness.	Moderately well suited: moderate seedling mortality, excess sodium in subsoil, equipment limitations.	Poorly suited: wetness, slow and very slow permeability, low strength for roads.	Poorly suited: wetness, slow and very slow permeability, excess sodium in subsoil.	Poorly suited: wetness, erodes easily.

See footnote at end of table.

TABLE 4.--SUITABILITY AND LIMITATIONS OF MAP UNITS ON THE GENERAL SOIL MAP FOR SPECIFIED USES-Continued

Map unit	Percent of area	Cultivated farm crops	Pastureland	Woodland	Urban uses	Intensive recreation areas	Extensive recreation areas
6. Forestdale-Sharkey	6	Poorly suited: wetness, floods, poor tilth.	Moderately well suited: wetness, floods, limited grazing period, limited choice of plants.	Moderately well suited: floods, wetness, moderate seedling mortality, equipment limitations.	(**) floods, wetness, very slow permeability, shrink-swell potential.	(**) floods, wetness, very slow permeability, too clayey.	Poorly suited: floods, wetness, too clayey.
7. Dexter-Liddieville Necessity--------	3	Well suited-----	Well suited-----	Well suited---------	Moderately well suited: seepage, moderate permeability, low strength for roads.	Well suited---	Well suited.

* This map unit is poorly suited to sanitary facilities.
** This map unit has severe limitations for these uses.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Co	Calhoun silt loam	32,728	7.9
Cu	Calhoun-Calloway complex	16,366	3.9
Cw	Calloway silt loam	32,160	7.8
Df	Deerford silt loam	8,667	2.1
Dh	Dexter silt loam, 1 to 3 percent slopes	7,371	1.8
Dk	Dexter-Foley complex, gently undulating	4,607	1.1
Dn	Dundee silt loam	7,510	1.8
Dr	Dundee silty clay loam	5,484	1.3
Ds	Dundee-Sharkey complex, gently undulating	10,364	2.5
Eg	Egypt silt loam	3,115	0.8
Fo	Foley silt loam	9,280	2.2
Fs	Forestdale silty clay loam, occasionally flooded	13,958	3.4
Gd	Gigger silt loam, 1 to 3 percent slopes	6,279	1.5
Gh	Gigger-Gilbert complex, gently undulating	57,571	13.8
Gr	Gilbert silt loam	5,955	1.4
Gt	Gilbert silt loam, occasionally flooded	8,244	2.0
Gy	Gilbert-Egypt complex	38,179	9.2
Ld	Liddieville fine sandy loam, 2 to 5 percent slopes	3,173	0.8
Lo	Loring silt loam, 1 to 3 percent slopes	22,803	5.5
Lr	Loring-Calhoun complex, gently undulating	23,437	5.7
Me	Memphis silt loam, 2 to 5 percent slopes	3,978	1.0
Mm	Memphis silt loam, 5 to 8 percent slopes	1,895	0.5
Ne	Necessity silt loam	15,446	3.7
Sh	Sharkey clay	46,399	11.1
Sk	Sharkey clay, frequently flooded	12,040	2.9
St	Sterlington silt loam	746	0.2
Te	Tensas silty clay	5,708	1.4
Ts	Tensas-Sharkey complex, gently undulating	6,687	1.6
	* Water	4,570	1.1
	Total	414,720	100.0

* Includes measured acres of both large water areas of more than 40 acres and small water areas of less than 40 acres.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Cotton lint	Soybeans	Rice	Corn	Common bermuda-grass	Improved bermuda-grass	Bahiagrass
	Lb	Bu	Bu	Bu	AUM*	AUM*	AUM*
Co----------------------- Calhoun	400	25	120	60	5.0	---	6.5
Cu----------------------- Calhoun-Calloway	488	28	---	70	5.4	---	6.7
Cw----------------------- Calloway	650	35	---	85	6.0	10.8	6.9
Df----------------------- Deerford	400	20	110	---	4.5	10.0	5.5
Dh-----------------------	650	35	---	75	7.0	15.0	9.0
Dk----------------------- Dexter-Foley	650	33	---	65	6.0	---	7.0
Dn, Dr------------------- Dundee	750	40	---	85	7.5	14.5	9.0
Ds----------------------- Dundee-Sharkey	661	35	---	65	6.5	12.5	8.5
Eg----------------------- Egypt	500	25	110	70	5.5	9.0	6.0
Fo----------------------- Foley	650	30	---	---	6.0	---	---
Fs----------------------- Forestdale	---	30	---	---	5.5	---	---
Gd----------------------- Gigger	600	30	---	80	5.5	9.5	6.5
Gh----------------------- Gigger-Gilbert	534	26	---	65	4.9	---	5.8
Gr----------------------- Gilbert	450	20	120	50	4.2	---	5.0
Gt----------------------- Gilbert	---	15	---	---	4.2	---	5.0
Gy----------------------- Gilbert-Egypt	468	22	---	65	4.6	---	5.4
Ld----------------------- Liddieville	650	35	---	75	7.0	15.0	9.0
Lo----------------------- Loring	700	30	---	90	5.5	10.5	7.5
Lr----------------------- Loring-Calhoun	568	28	---	80	5.2	---	7.0
Me----------------------- Memphis	750	35	---	90	6.5	10.0	8.0
Mm----------------------- Memphis	700	---	---	80	6.0	9.0	7.5

See footnote at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Cotton lint	Soybeans	Rice	Corn	Common bermuda-grass	Improved bermuda-grass	Bahiagrass
	Lb	Bu	Bu	Bu	AUM*	AUM*	AUM*
Ne------------------------- Necessity	650	35	---	85	6.0	15.0	7.5
Sh------------------------- Sharkey	600	35	130	---	6.5	11.5	---
Sk------------------------- Sharkey	---	---	---	---	5.0	---	---
St------------------------- Sterlington	850	35	---	90	7.0	15.5	9.0
Te------------------------- Tensas	600	40	130	---	6.5	13.0	---
Ts------------------------- Tensas-Sharkey	585	35	130	---	6.5	12.0	---

* 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 30 days.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
Co: Calhoun	2w9	Slight	Severe	Moderate	Cherrybark oak Water oak Sweetgum Loblolly pine Slash pine	--- --- --- 90 90	Loblolly pine, slash pine.
Cu:* Calhoun	2w9	Slight	Severe	Moderate	Cherrybark oak Water oak Sweetgum Loblolly pine Slash pine	--- --- --- 90 90	Loblolly pine, slash pine.
Calloway	2w8	Slight	Moderate	Slight	Cherrybark oak Loblolly pine Shortleaf pine Sweetgum Water oak	90 90 80 90 90	Cherrybark oak, shumard oak, sweetgum, water oak, yellow-poplar.
Cw: Calloway	2w8	Slight	Moderate	Slight	Cherrybark oak Loblolly pine Shortleaf pine Sweetgum Water oak	90 90 80 90 90	Cherrybark oak, shumard oak, sweetgum, water oak, yellow-poplar.
Df: Deerford	3w9	Slight	Moderate	Moderate	Loblolly pine Sweetgum Water oak	78 --- ---	Loblolly pine.
Dh: Dexter	1o7	Slight	Slight	Slight	Loblolly pine Slash pine Cherrybark oak Water oak Sweetgum	110 110 --- --- ---	Loblolly pine, slash pine.
Dk:* Dexter	1o7	Slight	Slight	Slight	Loblolly pine Slash pine Cherrybark oak Water oak Sweetgum	110 110 --- --- ---	Loblolly pine, slash pine.
Foley	3w9	Slight	Severe	Moderate	Sweetgum Cherrybark oak Water oak Loblolly pine	80 80 80 60	Sweetgum, American sycamore, loblolly pine.
Dn, Dr: Dundee	2w5	Slight	Moderate	Slight	Cherrybark oak Eastern cottonwood Sweetgum Water oak	105 100 100 95	Cherrybark oak, eastern cottonwood, sweetgum, water oak, yellow-poplar.
Ds:* Dundee	2w5	Slight	Moderate	Slight	Cherrybark oak Eastern cottonwood Sweetgum Water oak	105 100 100 95	Cherrybark oak, eastern cottonwood, sweetgum, water oak, yellow-poplar.
Sharkey	2w6	Slight	Severe	Moderate	Green ash Eastern cottonwood Cherrybark oak Sweetgum Water oak Pecan American sycamore	85 100 90 90 --- --- ---	Eastern cottonwood, American sycamore, sweetgum.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns			Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Common trees	Site index	
Eg----------------- Egypt	3w9	Slight	Moderate	Slight	Sweetgum--------------- Water oak-------------- Loblolly pine-----------	85 80 80	Sweetgum, water oak, loblolly pine.
Fo----------------- Foley	3w9	Slight	Severe	Moderate	Sweetgum--------------- Cherrybark oak--------- Water oak-------------- Loblolly pine-----------	80 80 80 60	Sweetgum, American sycamore, loblolly pine.
Fs----------------- Forestdale	1w6	Slight	Severe	Moderate	Green ash-------------- Eastern cottonwood----- Cherrybark oak--------- Nuttall oak------------ Water oak-------------- Willow oak------------- Sweetgum---------------	78 100 94 99 90 94 100	Green ash, eastern cottonwood, Nuttall oak, sweetgum, American sycamore.
Gd----------------- Gigger	2o7	Slight	Slight	Slight	Cherrybark oak--------- Water oak-------------- Loblolly pine----------- Sweetgum---------------	85 90 95 85	Loblolly pine.
Gh:* Gigger------------	2o7	Slight	Slight	Slight	Cherrybark oak--------- Water oak-------------- Loblolly pine----------- Sweetgum---------------	85 90 95 85	Loblolly pine.
Gilbert------------	3w9	Slight	Severe	Moderate	Sweetgum--------------- Water oak-------------- Loblolly pine-----------	80 80 78	Sweetgum, water oak, loblolly pine.
Gr, Gt------------- Gilbert	3w9	Slight	Severe	Moderate	Sweetgum--------------- Water oak-------------- Loblolly pine-----------	80 80 78	Sweetgum, water oak, loblolly pine.
Gy:* Gilbert------------	3w9	Slight	Severe	Moderate	Sweetgum--------------- Water oak-------------- Loblolly pine-----------	80 80 78	Sweetgum, water oak, loblolly pine.
Egypt--------------	3w8	Slight	Moderate	Slight	Sweetgum--------------- Water oak-------------- Loblolly pine-----------	85 80 80	Sweetgum, water oak, loblolly pine.
Ld----------------- Liddieville	2o7	Slight	Slight	Slight	Loblolly pine----------- Eastern cottonwood----- Cherrybark oak--------- Nuttall oak------------ Sweetgum---------------	90 100 90 90 90	Loblolly pine, eastern cottonwood.
Lo----------------- Loring	2o7	Slight	Slight	Slight	Cherrybark oak--------- Loblolly pine----------- Shortleaf pine---------- Sweetgum--------------- Water oak--------------	86 95 90 90 90	Loblolly pine, shortleaf pine, cherrybark oak, sweetgum, yellow-poplar.
Lr:* Loring------------	2o7	Slight	Slight	Slight	Cherrybark oak--------- Loblolly pine----------- Shortleaf pine---------- Sweetgum--------------- Water oak--------------	86 95 90 90 90	Loblolly pine, shortleaf pine, cherrybark oak, sweetgum, yellow-poplar.
Calhoun------------	2w9	Slight	Severe	Moderate	Cherrybark oak--------- Water oak-------------- Sweetgum--------------- Loblolly pine----------- Slash pine-------------	--- --- --- 90 90	Loblolly pine, slash pine.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Potential productivity: Common trees	Potential productivity: Site index	Trees to plant
Me, Mm: Memphis	1o7	Slight	Slight	Slight	Cherrybark oak Loblolly pine Sweetgum Water oak	100 105 90 90	Cherrybark oak, loblolly pine, sweetgum, yellow-poplar.
Ne: Necessity	2w8	Slight	Moderate	Slight	Loblolly pine Slash pine Sweetgum Cherrybark oak Water oak	90 90 --- --- ---	Loblolly pine, slash pine.
Sh: Sharkey	2w6	Slight	Severe	Moderate	Green ash Eastern cottonwood Cherrybark oak Sweetgum Water oak Pecan American sycamore	85 100 90 90 --- --- ---	Eastern cottonwood, American sycamore, sweetgum.
Sk: Sharkey	3w6	Slight	Severe	Severe	Green ash Eastern cottonwood	--- ---	Eastern cottonwood, sweetgum.
St: Sterlington	2o4	Slight	Slight	Slight	Green ash Eastern cottonwood Cherrybark oak Water oak Pecan Sweetgum	75 --- 95 90 --- 90	Eastern cottonwood.
Te: Tensas	2w6	Slight	Severe	Moderate	Green ash Eastern cottonwood Water oak Sweetgum Pecan	80 105 95 100 ---	Eastern cottonwood, American sycamore.
Ts:* Tensas	2w6	Slight	Severe	Moderate	Green ash Eastern cottonwood Water oak Sweetgum Pecan	80 105 95 100 ---	Eastern cottonwood, American sycamore.
Sharkey	2w6	Slight	Severe	Moderate	Green ash Eastern cottonwood Cherrybark oak Sweetgum Water oak Pecan American sycamore	85 100 90 90 --- --- ---	Eastern cottonwood, American sycamore, sweetgum.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Co: Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Cu:*					
Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Calloway	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Cw: Calloway	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Df: Deerford	Severe: wetness, excess sodium.	Severe: wetness, excess sodium.	Severe: wetness, excess sodium.	Severe: wetness, erodes easily.	Severe: excess sodium, wetness.
Dh: Dexter	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
Dk:*					
Dexter	Slight	Slight	Moderate: slope.	Severe: erodes easily.	Slight.
Foley	Severe: wetness, percs slowly.	Severe: wetness, excess sodium, percs slowly.	Severe: wetness, percs slowly, excess sodium.	Severe: wetness.	Severe: excess sodium, wetness.
Dn, Dr: Dundee	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
Ds:*					
Dundee	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Severe: erodes easily.	Moderate: wetness.
Sharkey	Severe: wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Eg: Egypt	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Fo: Foley	Severe: wetness, percs slowly.	Severe: wetness, excess sodium, percs slowly.	Severe: wetness, percs slowly, excess sodium.	Severe: wetness.	Severe: excess sodium, wetness.
Fs: Forestdale	Severe: floods, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, erodes easily.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Gd-------------------- Gigger	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
Gh:*					
Gigger----------------	Moderate: percs slowly, wetness.	Moderate: percs slowly, wetness.	Moderate: slope, percs slowly.	Severe: erodes easily.	Slight.
Gilbert---------------	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Gr-------------------- Gilbert	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Gt-------------------- Gilbert	Severe: floods, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Gy:*					
Gilbert---------------	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Egypt-----------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Ld-------------------- Liddieville	Slight----------	Slight----------	Slight----------	Slight------------	Slight.
Lo-------------------- Loring	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight------------	Slight.
Lr:*					
Loring----------------	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Slight------------	Slight.
Calhoun---------------	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.
Me-------------------- Memphis	Slight----------	Slight----------	Moderate: slope.	Severe: erodes easily.	Slight.
Mm-------------------- Memphis	Slight----------	Slight----------	Severe: slope.	Severe: erodes easily.	Slight.
Ne-------------------- Necessity	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Severe: erodes easily.	Moderate: wetness.
Sh-------------------- Sharkey	Severe: wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.
Sk-------------------- Sharkey	Severe: floods, wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness, floods.	Severe: wetness, too clayey.	Severe: wetness, floods, too clayey.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
St: Sterlington	Slight	Slight	Slight	Severe: erodes easily.	Slight.
Te: Tensas	Severe: wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
Ts:*					
Tensas	Severe: wetness, percs slowly.	Severe: too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: too clayey.	Severe: too clayey.
Sharkey	Severe: wetness, percs slowly.	Severe: wetness, too clayey, percs slowly.	Severe: too clayey, wetness.	Severe: wetness, too clayey.	Severe: wetness, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Co----- Calhoun	Poor	Fair	Fair	Good	---	Good	Good	Fair	Fair	Good.
Cu:* Calhoun-----	Poor	Fair	Fair	Good	---	Good	Good	Fair	Fair	Good.
Calloway-----	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
Cw----- Calloway	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Fair.
Df----- Deerford	Fair	Good	Good	---	Good	Fair	Fair	Good	Good	Fair.
Dh----- Dexter	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Dk:* Dexter-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Foley-----	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Dn, Dr. Dundee										
Ds:* Dundee-----	Fair	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Sharkey-----	Fair	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.
Eg----- Egypt	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Good.
Fo----- Foley	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Fs----- Forestdale	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Gd----- Gigger	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gh:* Gigger-----	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Gilbert-----	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Gr, Gt----- Gilbert	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Gy:* Gilbert-----	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good.
Egypt-----	Fair	Good	Good	Good	---	Fair	Fair	Good	Good	Good.
Ld----- Liddieville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Lo----------------- Loring	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lr:*										
Loring------------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Calhoun-----------	Poor	Fair	Fair	Good	---	Good	Good	Fair	Fair	Good.
Me----------------- Memphis	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Mm----------------- Memphis	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ne----------------- Necessity	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Sh----------------- Sharkey	Fair	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.
Sk----------------- Sharkey	Poor	Fair	Fair	Good	---	Fair	Fair	Poor	Fair	Fair.
St----------------- Sterlington	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.
Te----------------- Tensas	Fair	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.
Ts:*										
Tensas------------	Fair	Fair	Fair	Good	---	Fair	Poor	Fair	Good	Fair.
Sharkey-----------	Fair	Fair	Fair	Good	---	Good	Good	Fair	Good	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Co: Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Cu:*					
Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Calloway	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Cw: Calloway	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Df: Deerford	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: excess sodium, wetness.
Dh: Dexter	Severe: cutbanks cave.	Slight	Slight	Severe: low strength.	Slight.
Dk:*					
Dexter	Severe: cutbanks cave.	Slight	Slight	Severe: low strength.	Slight.
Foley	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: excess sodium, wetness.
Dn, Dr: Dundee	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
Ds:*					
Dundee	Severe: wetness.	Moderate: wetness, shrink-swell.	Moderate: wetness, shrink-swell.	Severe: low strength.	Moderate: wetness.
Sharkey	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness, too clayey.
Eg: Egypt	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Fo: Foley	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: excess sodium, wetness.
Fs: Forestdale	Severe: wetness.	Severe: floods, shrink-swell, wetness.	Severe: floods, shrink-swell, wetness.	Severe: floods, shrink-swell, wetness.	Severe: wetness.
Gd: Gigger	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Gh:*					
Gigger	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: low strength, wetness.	Slight.
Gilbert	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Gr: Gilbert	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Gt: Gilbert	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, low strength, wetness.	Severe: wetness.
Gy:*					
Gilbert	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Egypt	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Ld: Liddieville	Severe: cutbanks cave.	Slight	Slight	Moderate: low strength.	Slight.
Lo: Loring	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
Lr:*					
Loring	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Me: Memphis	Slight	Slight	Slight	Severe: low strength.	Slight.
Mm: Memphis	Slight	Slight	Moderate: slope.	Severe: low strength.	Slight.
Ne: Necessity	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Moderate: wetness.
Sh: Sharkey	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness, too clayey.
Sk: Sharkey	Severe: wetness.	Severe: floods, wetness, shrink-swell.	Severe: floods, wetness, shrink-swell.	Severe: low strength, wetness, floods.	Severe: wetness, floods, too clayey.
St: Sterlington	Slight	Slight	Slight	Slight	Slight.
Te: Tensas	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Severe: too clayey.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Ts:*					
Tensas	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength.	Severe: too clayey.
Sharkey	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, wetness.	Severe: wetness, too clayey.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Co------------------ Calhoun	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Cu:*					
Calhoun------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Calloway-----------	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness.	Severe: wetness.	Poor: wetness.
Cw------------------ Calloway	Severe: wetness, percs slowly.	Slight-----------	Severe: wetness.	Severe: wetness.	Poor: wetness.
Df------------------ Deerford	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, excess sodium.	Severe: wetness.	Poor: wetness, excess sodium.
Dh------------------ Dexter	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Dk:*					
Dexter-------------	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Foley--------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, excess sodium.	Severe: wetness.	Poor: hard to pack, wetness, excess sodium.
Dn, Dr-------------- Dundee	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Ds:*					
Dundee-------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Sharkey------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Eg------------------ Egypt	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Fo------------------ Foley	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, excess sodium.	Severe: wetness.	Poor: hard to pack, wetness, excess sodium.
Fs------------------ Forestdale	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Gd: Gigger	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Gh:*					
Gigger	Severe: percs slowly, wetness.	Moderate: slope.	Moderate: wetness, too clayey.	Moderate: wetness.	Fair: too clayey, wetness.
Gilbert	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gr: Gilbert	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gt: Gilbert	Severe: floods, wetness, percs slowly.	Slight	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
Gy:*					
Gilbert	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Egypt	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ld: Liddieville	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
Lo: Loring	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
Lr:*					
Loring	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
Calhoun	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Me, Mm: Memphis	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Ne: Necessity	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Sh: Sharkey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Sk: Sharkey	Severe: floods, wetness, percs slowly.	Severe: floods, wetness.	Severe: floods, wetness, too clayey.	Severe: floods, wetness.	Poor: too clayey, hard to pack, wetness.
St: Sterlington	Moderate: percs slowly.	Moderate: seepage.	Slight	Slight	Good.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Te------------------ Tensas	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ts:*					
Tensas-------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Sharkey------------	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable"]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Co: Calhoun	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Cu:*				
Calhoun	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Calloway	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Cw: Calloway	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Df: Deerford	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
Dh: Dexter	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Dk:*				
Dexter	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Foley	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
Dn, Dr: Dundee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ds:*				
Dundee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Sharkey	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Eg: Egypt	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Fo: Foley	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, excess sodium.
Fs: Forestdale	Poor: shrink-swell, wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
Gd: Gigger	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Gh:*				
Gigger	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
Gh:*				
Gilbert	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Gr, Gt Gilbert	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Gy:*				
Gilbert	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Egypt	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ld Liddieville	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Lo Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Lr:*				
Loring	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Calhoun	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Me, Mm Memphis	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
Ne Necessity	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim.
Sh, Sk Sharkey	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.
St Sterlington	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Te Tensas	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Ts:*				
Tensas	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Sharkey	Poor: low strength, wetness, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Co: Calhoun	Slight	Severe: piping, wetness.	Percs slowly	Wetness, percs slowly, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
Cu:* Calhoun	Slight	Severe: piping, wetness.	Percs slowly	Wetness, percs slowly, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
Calloway	Moderate: seepage.	Severe: thin layer.	Percs slowly	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Cw: Calloway	Moderate: seepage.	Severe: thin layer.	Percs slowly	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Df: Deerford	Slight	Severe: wetness, excess sodium.	Percs slowly, excess sodium.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, excess sodium, erodes easily.
Dh: Dexter	Severe: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
Dk:* Dexter	Severe: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
Foley	Slight	Severe: wetness, excess sodium.	Percs slowly, excess sodium.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, excess sodium, erodes easily.
Dn, Dr: Dundee	Moderate: seepage.	Severe: piping, wetness.	Favorable	Wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
Ds:* Dundee	Moderate: seepage, slope.	Severe: piping, wetness.	Slope	Wetness, rooting depth.	Erodes easily, wetness.	Erodes easily, rooting depth.
Sharkey	Slight	Severe: hard to pack, wetness.	Percs slowly	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Eg: Egypt	Slight	Severe: thin layer, wetness.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily percs slowly.
Fo: Foley	Slight	Severe: wetness, excess sodium.	Percs slowly, excess sodium.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, excess sodium erodes easily
Fs: Forestdale	Slight	Severe: wetness, piping.	Floods, percs slowly.	Wetness, percs slowly, floods.	Wetness, percs slowly, erodes easily.	Percs slowly, wetness, erodes easily
Gd: Gigger	Slight	Severe: piping.	Percs slowly	Erodes easily, wetness, rooting depth.	Wetness, rooting depth.	Erodes easily, rooting depth
Gh:* Gigger	Slight	Severe: piping.	Percs slowly	Erodes easily, wetness, rooting depth.	Wetness, rooting depth.	Erodes easily, rooting depth

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
Gh:*						
Gilbert	Slight	Severe: wetness.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Gr: Gilbert	Slight	Severe: wetness.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Gt: Gilbert	Slight	Severe: wetness.	Floods, percs slowly.	Wetness, percs slowly, floods.	Wetness, percs slowly.	Wetness, percs slowly.
Gy:*						
Gilbert	Slight	Severe: wetness.	Percs slowly	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Egypt	Slight	Severe: thin layer, wetness.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ld: Liddieville	Moderate: seepage.	Severe: thin layer.	Deep to water	Rooting depth	Favorable	Rooting depth.
Lo: Loring	Moderate: seepage.	Moderate: piping.	Slope	Wetness, rooting depth, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
Lr:*						
Loring	Moderate: seepage.	Moderate: piping.	Slope	Wetness, rooting depth, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.
Calhoun	Slight	Severe: piping, wetness.	Percs slowly	Wetness, percs slowly, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
Me, Mm: Memphis	Moderate: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Ne: Necessity	Slight	Moderate: piping, wetness.	Percs slowly	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Sh: Sharkey	Slight	Severe: hard to pack, wetness.	Percs slowly	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
Sk: Sharkey	Slight	Severe: hard to pack, wetness.	Percs slowly, floods.	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
St: Sterlington	Moderate: seepage.	Severe: piping.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
Te: Tensas	Moderate: seepage.	Severe: piping, wetness.	Percs slowly	Wetness, slow intake, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
Ts:*						
Tensas	Moderate: seepage.	Severe: piping, wetness.	Percs slowly	Wetness, slow intake, percs slowly.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
Sharkey	Slight	Severe: hard to pack, wetness.	Percs slowly	Wetness, slow intake, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than]

Map symbol and soil name	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	
Co----------------- Calhoun	0-13	Silt loam--------	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	13-42	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	95-100	30-45	11-24
	42-62	Silt loam--------	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	25-40	5-20
Cu:* Calhoun---------	0-17	Silt loam--------	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	17-48	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	95-100	30-45	11-24
	48-65	Silt loam--------	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	25-40	5-20
Calloway--------	0-20	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
	20-41	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-95	30-40	12-20
	41-60	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
Cw---------------- Calloway	0-21	Silt loam--------	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
	21-42	Silt loam, silty clay loam.	CL	A-6	0	100	100	100	90-95	30-40	12-20
	42-65	Silt loam, silty clay loam.	CL-ML, CL	A-4, A-6	0	100	100	100	90-100	25-35	5-15
Df---------------- Deerford	0-10	Silt loam--------	ML, CL-ML	A-4	0	100	100	100	95-100	<28	NP-7
	10-50	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	100	95-100	32-49	11-25
	50-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4, A-7	0	100	100	95-100	95-100	25-49	5-25
Dh---------------- Dexter	0-4	Silt loam--------	ML, SM, CL-ML, SM-SC	A-4	0	100	100	85-100	45-75	<25	NP-5
	4-40	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	0	100	100	90-100	70-90	28-40	8-18
	40-80	Loam, fine sandy loam, loamy fine sand.	SC, SM, CL, ML	A-6, A-4	0	100	100	75-95	35-60	<38	NP-16
Dk:* Dexter----------	0-5	Silt loam--------	ML, SM, CL-ML, SM-SC	A-4	0	100	100	85-100	45-75	<25	NP-5
	5-42	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	0	100	100	90-100	70-90	28-40	8-18
	42-82	Loam, fine sandy loam, loamy fine sand.	SC, SM, CL, ML	A-6, A-4	0	100	100	75-95	35-60	<38	NP-16
Foley-----------	0-10	Silt loam--------	CL, CL-ML	A-4, A-6, A-7	0	100	100	95-100	70-100	25-45	5-20
	10-20	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	30-49	11-25
	20-50	Silty clay loam, silt loam.	CL, CH	A-7	0	100	100	95-100	90-100	40-60	18-32
	50-72	Silt loam--------	CL	A-6, A-7	0	100	100	95-100	85-100	30-45	11-20
Dn---------------- Dundee	0-5	Silt loam--------	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	75-98	20-35	3-11
	5-42	Loam, silty clay loam, clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	28-44	12-22
	42-80	Loam, very fine sandy loam, silt loam.	CL, CL-ML, ML	A-4	0	100	100	85-100	60-90	<30	NP-8

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Dr----------------Dundee	0-5	Silty clay loam	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	75-98	20-35	3-11
	5-41	Loam, silty clay loam, clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	28-44	12-22
	41-82	Loam, very fine sandy loam, silt loam.	CL, CL-ML, ML	A-4	0	100	100	85-100	60-90	<30	NP-8
Ds:*											
Dundee-----------	0-4	Silt loam----------	CL, CL-ML, ML	A-4, A-6	0	100	100	90-100	75-98	20-35	3-11
	4-41	Silt loam, silty clay loam, clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	28-44	12-22
	41-60	Loam, very fine sandy loam, silt loam.	CL, CL-ML, ML	A-4	0	100	100	85-100	60-90	<30	NP-8
Sharkey-----------	0-4	Clay----------------	CH, CL	A-7	0	100	100	100	95-100	46-85	22-50
	4-40	Clay----------------	CH	A-7	0	100	100	100	95-100	56-85	30-50
	40-60	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7	0	100	100	100	95-100	32-85	11-50
Eg----------------Egypt	0-16	Silt loam----------	ML, CL-ML	A-4	0	100	100	95-100	90-100	<27	NP-7
	16-41	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	32-45	11-22
	41-70	Silty clay loam, loam, silt loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	70-100	25-43	5-20
Fo----------------Foley	0-12	Silt loam----------	CL, CL-ML	A-4, A-6, A-7	0	100	100	95-100	70-100	25-45	5-20
	12-19	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	30-49	11-25
	19-50	Silty clay loam, silt loam.	CL, CH	A-7	0	100	100	95-100	90-100	40-60	18-32
	50-65	Silt loam----------	CL	A-6, A-7	0	100	100	95-100	85-100	30-45	11-20
Fs----------------Forestdale	0-4	Silty clay loam	CL, CH	A-6, A-7	0	100	100	95-100	90-100	30-58	12-30
	4-31	Silty clay, clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	90-100	40-65	20-40
	31-60	Silty clay loam, silt loam, very fine sandy loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	95-100	75-100	20-50	5-30
Gd----------------Gigger	0-6	Silt loam----------	ML, CL-ML	A-4, A-7, A-6	0	100	100	95-100	85-100	<27	NP-7
	6-26	Silty clay loam, silt loam.	CL		0	100	100	95-100	85-100	35-47	15-23
	26-33	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	100	100	95-100	85-100	28-43	5-20
	33-55	Loam, clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	85-95	51-80	25-40	5-18
	55-65	Loam, clay loam, fine sandy loam.	CL, SC, ML, SM	A-6, A-4	0	100	100	75-95	40-80	<40	NP-18
Gh:*											
Gigger-----------	0-5	Silt loam----------	ML, CL-ML	A-4, A-7, A-6	0	100	100	95-100	85-100	<27	NP-7
	5-24	Silty clay loam, silt loam.	CL		0	100	100	95-100	85-100	35-47	15-23
	24-34	Silt loam, silty clay loam.	CL, CL-ML	A-4, A-6, A-7	0	100	100	95-100	85-100	28-43	5-20
	34-49	Loam, clay loam, silt loam.	CL, CL-ML	A-6, A-4	0	100	100	85-95	51-80	25-40	5-18
	49-65	Loam, clay loam, fine sandy loam.	CL, SC, ML, SM	A-6, A-4	0	100	100	75-95	40-80	<40	NP-18

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Gh:* Gilbert	0-15	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	15-38	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	32-45	11-22
	38-70	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Gr Gilbert	0-12	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	12-45	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	32-45	11-22
	45-70	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Gt Gilbert	0-13	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	13-47	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	32-45	11-22
	47-70	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Gy:* Gilbert	0-14	Silt loam	ML, CL-ML, CL	A-4	0	100	100	95-100	90-100	23-31	3-10
	14-44	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	32-45	11-22
	44-62	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	0	100	100	90-100	90-100	25-45	5-22
Egypt	0-14	Silt loam	ML, CL-ML	A-4	0	100	100	95-100	90-100	<27	NP-7
	14-45	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	90-100	32-45	11-22
	45-70	Silty clay loam, loam, silt loam.	CL, CL-ML	A-6, A-7 A-4	0	100	100	90-100	70-100	25-43	5-20
Ld Liddieville	0-14	Fine sandy loam	ML, SM, CL-ML, SM-SC	A-4	0	100	100	85-100	40-75	<26	NP-7
	14-43	Clay loam, loam, sandy clay loam.	CL, SC	A-6, A-4	0	100	100	85-100	45-80	29-40	8-18
	43-53	Loam, very fine sandy loam, fine sandy loam.	CL-ML, SM, CL, SC	A-4	0	100	100	75-100	40-80	23-30	3-10
	53-76	Loam, fine sandy loam, loamy fine sand.	SM, ML	A-4, A-2	0	100	100	60-75	25-65	<23	NP-3
Lo Loring	0-6	Silt loam	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	<35	NP-15
	6-23	Silt loam, silty clay loam.	CL, ML	A-6, A-7, A-4	0	100	100	95-100	90-100	32-48	8-20
	23-60	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7	0	100	100	95-100	90-100	30-45	8-22
	60-84	Silt loam	CL, ML	A-4, A-6, A-7	0	100	100	95-100	70-100	28-45	7-20
Lr:* Loring	0-6	Silt loam	ML, CL-ML, CL	A-4, A-6	0	100	100	95-100	90-100	<35	NP-15
	6-25	Silt loam, silty clay loam.	CL, ML	A-6, A-7, A-4	0	100	100	95-100	90-100	32-48	8-20
	25-62	Silt loam, silty clay loam.	CL, ML	A-4, A-6, A-7	0	100	100	95-100	90-100	30-45	8-22
Calhoun	0-15	Silt loam	CL-ML, ML, CL	A-4	0	100	100	100	95-100	<31	NP-10
	15-45	Silty clay loam, silt loam.	CL	A-6, A-7	0	100	100	95-100	95-100	30-45	11-24
	45-72	Silt loam	CL, CL-ML	A-6, A-4	0	100	100	100	90-100	25-40	5-20

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	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	
Me----------------- Memphis	0-3	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	100	90-100	<30	NP-10
	3-47	Silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	100	90-100	35-48	15-25
	47-80	Silt loam--------	ML, CL	A-4, A-6	0	100	100	100	90-100	30-40	6-15
Mm----------------- Memphis	0-4	Silt loam--------	ML, CL-ML, CL	A-4	0	100	100	100	90-100	<30	NP-10
	4-33	Silt loam, silty clay loam.	CL	A-6, A-7	0	100	100	100	90-100	35-48	15-25
	33-76	Silt loam--------	ML, CL	A-4, A-6	0	100	100	100	90-100	30-40	6-15
Ne----------------- Necessity	0-6	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	80-100	<27	NP-7
	6-25	Silt loam, clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	75-100	30-40	11-17
	25-28	Silt loam--------	ML, CL-ML	A-4	0	100	100	95-100	80-100	23-27	3-7
	28-67	Loam, clay loam	CL	A-6	0	100	100	90-100	75-100	30-40	11-17
Sh----------------- Sharkey	0-4	Clay--------------	CH, CL	A-7	0	100	100	100	95-100	46-85	22-50
	4-46	Clay--------------	CH	A-7	0	100	100	100	95-100	56-85	30-50
	46-60	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7	0	100	100	100	95-100	32-85	11-50
Sk----------------- Sharkey	0-4	Clay--------------	CH, CL	A-7	0	100	100	100	95-100	46-85	22-50
	4-48	Clay--------------	CH	A-7	0	100	100	100	95-100	56-85	30-50
	48-60	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7	0	100	100	100	95-100	32-85	11-50
St----------------- Sterlington	0-6	Silt loam--------	ML	A-4	0	100	100	90-100	60-95	<23	NP-3
	6-60	Silt loam, very fine sandy loam, loam.	CL-ML, ML	A-4	0	100	100	90-100	80-95	<28	NP-7
Te----------------- Tensas	0-4	Silty clay--------	CH, CL	A-7	0	100	100	100	95-100	46-70	22-40
	4-26	Clay, silty clay	CH	A-7	0	100	100	100	95-100	51-75	26-45
	26-61	Very fine sandy loam, silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	100	100	100	80-100	25-40	5-17
Ts:*											
Tensas-----------	0-4	Silty clay--------	CH, CL	A-7	0	100	100	100	95-100	46-70	22-40
	4-24	Clay, silty clay	CH	A-7	0	100	100	100	95-100	51-75	26-45
	24-60	Very fine sandy loam, silty clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	100	100	100	80-100	25-40	5-17
Sharkey----------	0-4	Clay--------------	CH, CL	A-7	0	100	100	100	95-100	46-85	22-50
	4-45	Clay--------------	CH	A-7	0	100	100	100	95-100	56-85	30-50
	45-75	Clay, silty clay loam, silt loam.	CL, CH	A-6, A-7	0	100	100	100	95-100	32-85	11-50

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH				Pct
Co----------------- Calhoun	0-13	10-27	1.30-1.65	0.2-0.6	0.21-0.23	4.5-6.0	Low-----------	0.49	5	.5-4
	13-42	10-35	1.30-1.70	0.06-0.2	0.20-0.22	4.0-5.5	Moderate-----	0.43		
	42-62	10-27	1.40-1.70	0.2-0.6	0.21-0.23	4.5-7.8	Low-----------	0.43		
Cu:*										
Calhoun----------	0-17	10-27	1.30-1.65	0.2-0.6	0.21-0.23	4.5-6.0	Low-----------	0.49	5	.5-4
	17-48	10-35	1.30-1.70	0.06-0.2	0.20-0.22	4.5-5.5	Moderate-----	0.43		
	48-65	10-27	1.40-1.70	0.2-0.6	0.21-0.23	4.5-7.8	Low-----------	0.43		
Calloway---------	0-20	10-30	1.35-1.65	0.6-2.0	0.20-0.23	4.5-6.0	Low-----------	0.49	3	.5-2
	20-41	10-32	1.35-1.65	0.06-0.2	0.09-0.12	4.5-6.0	Moderate-----	0.43		
	41-60	16-32	1.35-1.65	0.06-0.2	0.09-0.12	5.1-7.8	Low-----------	0.43		
Cw----------------- Calloway	0-21	10-30	1.35-1.65	0.6-2.0	0.20-0.23	4.5-6.0	Low-----------	0.49	3	.5-2
	21-42	10-32	1.35-1.65	0.06-0.2	0.09-0.12	4.5-6.0	Moderate-----	0.43		
	42-65	16-32	1.35-1.65	0.06-0.2	0.09-0.12	5.1-7.8	Low-----------	0.43		
Df----------------- Deerford	0-10	5-27	1.30-1.70	0.6-2.0	0.21-0.23	4.5-6.5	Low-----------	0.49	3	.5-4
	10-50	10-35	1.30-1.80	0.06-0.2	0.12-0.18	4.5-8.4	Moderate-----	0.49		
	50-60	10-35	1.30-1.80	0.2-0.6	0.12-0.18	6.6-8.4	Moderate-----	0.49		
Dh----------------- Dexter	0-4	10-27	1.30-1.70	0.6-2.0	0.15-0.24	5.1-6.5	Low-----------	0.37	5	.5-4
	4-40	10-35	1.30-1.70	0.6-2.0	0.15-0.24	4.5-6.0	Low-----------	0.32		
	40-80	10-30	1.30-1.70	0.6-6.0	0.08-0.18	4.5-5.5	Low-----------	0.24		
Dk:*										
Dexter-----------	0-5	10-27	1.30-1.70	0.6-2.0	0.15-0.24	5.1-6.5	Low-----------	0.37	5	.5-4
	5-42	10-35	1.30-1.70	0.6-2.0	0.15-0.24	4.5-6.0	Low-----------	0.32		
	42-82	10-30	1.30-1.70	0.6-6.0	0.08-0.18	4.5-5.5	Low-----------	0.24		
Foley------------	0-10	10-20	1.25-1.60	0.6-2.0	0.13-0.24	4.5-7.3	Low-----------	0.43	3	.5-2
	10-20	20-35	1.25-1.65	0.2-0.6	0.18-0.24	5.1-7.3	Moderate-----	0.43		
	20-50	20-35	1.35-1.80	<0.06	0.10-0.14	5.1-9.0	Moderate-----	0.43		
	50-72	15-25	1.35-1.80	<0.06	0.10-0.14	6.6-9.0	Low-----------	0.49		
Dn----------------- Dundee	0-5	10-30	1.30-1.80	0.6-2.0	0.15-0.20	4.5-6.0	Low-----------	0.37	5	.5-1
	5-42	18-34	1.30-1.80	0.2-0.6	0.15-0.20	4.5-6.0	Moderate-----	0.32		
	42-80	18-25	1.30-1.80	0.6-2.0	0.15-0.20	4.5-7.3	Low-----------	0.32		
Dr----------------- Dundee	0-5	10-30	1.30-1.80	0.6-2.0	0.15-0.20	4.5-7.3	Low-----------	0.37	5	.5-1
	5-41	18-34	1.30-1.80	0.2-0.6	0.15-0.20	4.5-6.0	Moderate-----	0.32		
	41-82	18-25	1.30-1.80	0.6-2.0	0.15-0.20	4.5-7.3	Low-----------	0.32		
Ds:*										
Dundee-----------	0-4	10-30	1.30-1.80	0.6-2.0	0.15-0.20	4.5-6.0	Low-----------	0.37	5	.5-1
	4-41	18-34	1.30-1.80	0.2-0.6	0.15-0.20	4.5-6.0	Moderate-----	0.32		
	41-60	18-25	1.30-1.80	0.6-2.0	0.15-0.20	4.5-7.3	Low-----------	0.32		
Sharkey----------	0-4	40-60	1.20-1.50	<0.06	0.18-0.20	5.1-8.4	Very high----	0.24	5	.5-2
	4-40	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	Very high----	0.28		
	40-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	Very high----	0.28		
Eg----------------- Egypt	0-16	8-25	1.30-1.65	0.6-2.0	0.21-0.23	4.5-6.0	Low-----------	0.49	4	.5-4
	16-41	18-35	1.30-1.85	0.06-0.2	0.16-0.20	4.5-6.0	Moderate-----	0.43		
	41-70	18-35	1.20-1.85	0.06-0.2	0.09-0.12	6.6-9.0	Moderate-----	0.49		
Fo----------------- Foley	0-12	10-20	1.25-1.60	0.6-2.0	0.13-0.24	4.5-7.3	Low-----------	0.43	3	.5-2
	12-19	20-35	1.25-1.65	0.2-0.6	0.18-0.24	5.1-7.3	Moderate-----	0.43		
	19-50	20-35	1.35-1.80	<0.06	0.10-0.14	5.1-9.0	Moderate-----	0.43		
	50-65	15-25	1.35-1.80	<0.06	0.10-0.14	6.6-9.0	Low-----------	0.49		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cm3	In/hr	In/in	pH				Pct
Fs----------------- Forestdale	0-4	27-38	1.30-1.55	0.2-0.6	0.20-0.22	4.5-6.0	Moderate-----	0.37	5	---
	4-31	35-60	1.40-1.60	<0.06	0.14-0.18	4.5-6.0	High---------	0.28		
	31-60	10-35	1.30-1.65	0.2-0.6	0.17-0.22	4.5-7.8	Moderate-----	0.37		
Gd----------------- Gigger	0-6	8-25	1.30-1.65	0.6-2.0	0.18-0.23	4.0-6.0	Low----------	0.43	3	<1
	6-26	18-35	1.30-1.70	0.6-2.0	0.18-0.22	4.0-6.0	Low----------	0.43		
	26-33	18-35	1.30-1.70	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.43		
	33-55	18-30	1.30-1.80	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.32		
	55-65	8-30	1.30-1.80	0.2-0.6	0.10-0.17	4.5-6.0	Low----------	0.32		
Gh:*										
Gigger-----------	0-5	8-25	1.30-1.65	0.6-2.0	0.18-0.23	4.0-6.0	Low----------	0.43	3	<1
	5-24	18-35	1.30-1.70	0.6-2.0	0.18-0.22	4.0-6.0	Low----------	0.43		
	24-34	18-35	1.30-1.70	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.43		
	34-49	18-30	1.30-1.80	0.06-0.2	0.06-0.13	4.5-6.0	Low----------	0.32		
	49-65	8-30	1.30-1.80	0.2-0.6	0.10-0.17	4.5-6.0	Low----------	0.32		
Gilbert----------	0-15	8-25	1.32-1.65	0.6-2.0	0.13-0.20	4.5-6.0	Low----------	0.43	4	<1
	15-38	18-35	1.42-1.76	<0.06	0.10-0.14	4.5-6.0	Moderate-----	0.43		
	38-70	18-35	1.40-1.76	<0.06	0.10-0.14	6.6-9.0	Moderate-----	0.43		
Gr----------------- Gilbert	0-12	8-25	1.32-1.65	0.6-2.0	0.13-0.20	4.5-6.0	Low----------	0.43	4	<1
	12-45	18-35	1.42-1.76	<0.06	0.10-0.14	4.5-6.0	Moderate-----	0.43		
	45-70	18-35	1.40-1.76	<0.06	0.10-0.14	6.6-9.0	Moderate-----	0.43		
Gt----------------- Gilbert	0-13	8-25	1.32-1.65	0.6-2.0	0.13-0.20	4.5-6.0	Low----------	0.43	4	<1
	13-47	18-35	1.42-1.76	<0.06	0.10-0.14	4.5-6.0	Moderate-----	0.43		
	47-70	18-35	1.40-1.76	<0.06	0.10-0.14	6.6-9.0	Moderate-----	0.43		
Gy:*										
Gilbert----------	0-14	8-25	1.32-1.65	0.6-2.0	0.13-0.20	4.5-6.0	Low----------	0.43	4	<1
	14-44	18-35	1.42-1.76	<0.06	0.10-0.14	4.5-6.0	Moderate-----	0.43		
	44-62	18-35	1.40-1.76	<0.06	0.10-0.14	6.6-9.0	Moderate-----	0.43		
Egypt------------	0-14	8-25	1.30-1.65	0.6-2.0	0.21-0.23	4.5-6.0	Low----------	0.49	4	.5-4
	14-45	18-35	1.30-1.85	0.06-0.2	0.16-0.20	4.5-6.0	Moderate-----	0.43		
	45-70	18-35	1.20-1.85	0.06-0.2	0.09-0.12	6.6-9.0	Moderate-----	0.49		
Ld----------------- Liddieville	0-14	10-20	1.32-1.60	0.6-2.0	0.12-0.18	5.1-7.3	Low----------	0.32	5	.5-3
	14-43	18-30	1.42-1.80	0.6-2.0	0.15-0.20	5.1-7.3	Low----------	0.28		
	43-53	15-25	1.32-1.80	0.6-2.0	0.12-0.20	5.1-7.3	Low----------	0.32		
	53-76	3-10	1.35-1.80	0.6-6.0	0.08-0.16	5.1-7.3	Low----------	0.32		
Lo----------------- Loring	0-6	8-18	1.30-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.43	3	.5-2
	6-23	18-35	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	23-60	12-25	1.50-1.70	0.2-0.6	0.06-0.13	4.5-6.0	Low----------	0.43		
	60-84	10-25	1.30-1.60	0.6-2.0	0.06-0.13	4.5-6.5	Low----------	0.43		
Lr:*										
Loring-----------	0-6	8-18	1.30-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.43	3	.5-2
	6-25	18-35	1.40-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.43		
	25-62	12-25	1.50-1.70	0.2-0.6	0.06-0.13	4.5-6.0	Low----------	0.43		
Calhoun----------	0-15	10-27	1.30-1.65	0.2-0.6	0.21-0.23	4.5-6.0	Low----------	0.49	5	.5-4
	15-45	10-35	1.30-1.70	0.06-0.2	0.20-0.22	4.5-5.5	Moderate-----	0.43		
	45-72	10-27	1.40-1.70	0.2-0.6	0.21-0.23	4.5-7.8	Low----------	0.43		
Me----------------- Memphis	0-3	8-22	1.30-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.37	5	1-2
	3-47	20-35	1.30-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.37		
	47-80	12-25	1.30-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.37		
Mm----------------- Memphis	0-4	8-22	1.30-1.50	0.6-2.0	0.20-0.23	4.5-7.3	Low----------	0.37	5	1-2
	4-33	20-35	1.30-1.50	0.6-2.0	0.20-0.22	4.5-6.0	Low----------	0.37		
	33-76	12-25	1.30-1.50	0.6-2.0	0.20-0.23	4.5-6.0	Low----------	0.37		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors K	Erosion factors T	Organic matter
	In	Pct	G/cm^3	In/hr	In/in	pH				Pct
Ne----------------- Necessity	0-6	5-15	1.32-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Low------------	0.43	5	.5-3
	6-25	18-32	1.40-1.80	0.06-0.2	0.15-0.20	4.5-6.0	Low------------	0.37		
	25-28	5-15	1.50-1.90	0.2-0.6	0.18-0.22	4.5-6.0	Low------------	0.43		
	28-67	18-30	1.50-1.90	0.06-0.2	0.15-0.20	4.5-6.0	Low------------	0.37		
Sh----------------- Sharkey	0-4	40-60	1.20-1.50	<0.06	0.18-0.20	5.1-8.4	Very high----	0.24	5	.5-2
	4-46	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	Very high----	0.28		
	46-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	Very high----	0.28		
Sk----------------- Sharkey	0-4	40-60	1.20-1.50	<0.06	0.18-0.20	5.1-8.4	Very high----	0.24	5	.5-2
	4-48	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	Very high----	0.28		
	48-60	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.5-8.4	Very high----	0.28		
St----------------- Sterlington	0-6	10-18	1.30-1.65	0.6-2.0	0.18-0.22	4.5-6.0	Low------------	0.37	5	.5-4
	6-60	10-18	1.30-1.70	0.6-2.0	0.18-0.22	5.1-6.5	Low------------	0.37		
Te----------------- Tensas	0-4	40-60	1.20-1.50	<0.06	0.18-0.20	4.5-6.0	High----------	0.32	5	.5-2
	4-26	40-60	1.20-1.50	<0.06	0.18-0.20	4.5-6.0	Very high----	0.32		
	26-61	10-39	1.30-1.80	0.2-2.0	0.20-0.23	5.1-6.5	Low------------	0.37		
Ts:*										
Tensas-----------	0-4	40-60	1.20-1.50	<0.06	0.18-0.20	4.5-6.0	High----------	0.32	5	.5-2
	4-24	40-60	1.20-1.50	<0.06	0.18-0.20	4.5-6.0	Very high----	0.32		
	24-60	10-39	1.30-1.80	0.2-2.0	0.20-0.23	5.1-6.5	Low------------	0.37		
Sharkey----------	0-4	40-60	1.20-1.50	<0.06	0.18-0.20	5.1-8.4	Very high----	0.24	5	.5-2
	4-45	60-90	1.20-1.50	<0.06	0.18-0.20	5.6-8.4	Very high----	0.28		
	45-75	25-90	1.20-1.75	0.06-0.2	0.18-0.22	6.6-8.4	Very high----	0.28		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. Absence of an entry indicates that the feature is not a concern]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Co: Calhoun	D	None	---	---	0-2.0	Perched	Dec-Apr	High	Moderate.
Cu:*									
Calhoun	D	None	---	---	0-2.0	Perched	Dec-Apr	High	Moderate.
Calloway	C	None	---	---	1.0-2.0	Perched	Jan-Apr	High	Moderate.
Cw: Calloway	C	None	---	---	1.0-2.0	Perched	Jan-Apr	High	Moderate.
Df: Deerford	D	None	---	---	0.5-1.5	Perched	Dec-Apr	High	Moderate.
Dh: Dexter	B	None	---	---	>6.0	---	---	Moderate	Moderate.
Dk:*									
Dexter	B	None	---	---	>6.0	---	---	Moderate	Moderate.
Foley	D	None	---	---	0-1.0	Perched	Dec-Apr	High	Low.
Dn, Dr: Dundee	C	None	---	---	1.5-3.5	Apparent	Jan-Apr	High	Moderate.
Ds:*									
Dundee	C	None	---	---	1.5-3.5	Apparent	Jan-Apr	High	Moderate.
Sharkey	D	None	---	---	0-2.0	Apparent	Dec-Apr	High	Low.
Eg: Egypt	D	None	---	---	0.5-2.0	Perched	Dec-Apr	High	Moderate.
Fo: Foley	D	None	---	---	0-1.0	Perched	Dec-Apr	High	Low.
Fs: Forestdale	D	Occasional	Brief to long.	Jan-Apr	0.5-2.0	Apparent	Jan-Apr	High	Moderate.
Gd: Gigger	C	None	---	---	2.0-3.0	Perched	Jan-Mar	Moderate	Moderate.
Gh:*									
Gigger	C	None	---	---	2.0-3.0	Perched	Jan-Mar	Moderate	Moderate.
Gilbert	D	None	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Gr: Gilbert	D	None	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Gt: Gilbert	D	Occasional	Brief to long.	Dec-May	0-1.5	Perched	Dec-Apr	High	Moderate.
Gy:*									
Gilbert	D	None	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Egypt	D	None	---	---	0.5-2.0	Perched	Dec-Apr	High	Moderate.
Ld: Liddieville	B	None	---	---	>6.0	---	---	Moderate	Low.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Lo----------------- Loring	C	None---------	---	---	2.0-3.0	Perched	Dec-Mar	Moderate	Moderate.
Lr:*									
Loring-----------	C	None---------	---	---	2.0-3.0	Perched	Dec-Mar	Moderate	Moderate.
Calhoun----------	D	None---------	---	---	0-2.0	Perched	Dec-Apr	High-----	Moderate.
Me, Mm------------ Memphis	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.
Ne----------------- Necessity	C	None---------	---	---	1.0-2.0	Perched	Dec-Mar	High-----	Moderate.
Sh----------------- Sharkey	D	None---------	---	---	0-2.0	Apparent	Dec-Apr	High-----	Low.
Sk----------------- Sharkey	D	Frequent----	Brief to very long.	Dec-Jun	0-2.0	Apparent	Dec-Apr	High-----	Low.
St----------------- Sterlington	B	None---------	---	---	>6.0	---	---	Low------	Moderate.
Te----------------- Tensas	D	None---------	---	---	1.0-3.0	Apparent	Dec-Apr	High-----	Moderate.
Ts:*									
Tensas-----------	D	None---------	---	---	1.0-3.0	Apparent	Dec-Apr	High-----	Moderate.
Sharkey----------	D	None---------	---	---	0-2.0	Apparent	Dec-Apr	High-----	Low.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--CHEMICAL TEST DATA

[Analysis by Soils Laboratory of the Louisiana Agricultural Experiment Station]

Soil sample and number	Depth from surface	Horizon	pH	Organic matter content	Extractable P	Exchangeable bases						Extractable acidity	Cation exchange capacity	Percent saturation	
						Ca	Mg	K	Na	Al	H			Al	Na
	In			Pct	Ppm	----------Meq/100 g----------									
Calhoun silt loam:	0-5	Ap	5.8	0.9	31	4.8	1.4	0.2	0.3	0.0	0.1	4.1	10.8	0.0	2.8
(S80LA-41-1)	5-13	A2g	5.0	0.3	15	4.2	1.6	0.1	0.3	1.3	0.2	4.7	10.9	16.9	2.8
	13-26	B21tg	4.8	0.2	5	3.9	2.4	0.1	0.2	2.4	0.1	5.3	12.1	26.4	1.7
	26-32	B22tg	4.5	0.0	5	4.2	3.3	0.2	0.3	3.2	0.0	6.1	14.1	28.6	2.1
	32-46	B23tg	4.7	0.0	5	4.5	3.4	0.2	0.4	3.0	0.1	4.4	12.9	25.9	2.9
Calloway silt loam:	0-5	Ap	5.4	1.2	139	4.4	0.9	0.3	0.1	0.1	0.1	5.8	11.5	1.7	0.9
(S80LA-41-2)	5-17	B&A	5.0	0.3	95	4.6	1.3	0.1	0.1	0.4	0.3	6.5	12.5	5.9	0.8
	17-26	A'2&B	5.2	0.1	47	2.6	1.6	0.1	0.1	1.3	0.4	5.7	17.1	21.3	0.9
	26-36	B'x1	5.3	0.1	53	3.9	4.1	0.2	0.4	2.6	0.3	9.3	17.8	22.6	2.2
	36-52	B'x2	5.2	0.1	53	5.6	5.5	0.2	1.1	1.5	0.3	8.5	20.9	10.6	5.3
Deerford silt loam:	0-4	Ap	5.0	1.3	17	3.6	1.3	0.2	0.1	0.4	0.3	2.1	5.8	5.5	4.0
(S80LA-41-3)	4-10	A2g	4.7	0.3	5	3.3	2.0	0.1	0.4	1.3	0.0	2.1	18.3	14.9	5.1
	10-22	B21t	6.1	0.5	7	4.7	6.3	0.2	1.7	0.0	0.2	1.6	14.5	0.0	11.7
	22-30	B22t	7.3	0.4	28	5.6	6.9	0.2	2.4	0.0	0.2	0.5	15.6	0.0	15.4
	30-50	B3	7.4	0.3	46	6.3	5.2	0.2	2.4	0.0	0.2	0.5	14.6	0.0	16.4
Dexter silt loam:	0-6	Ap	5.9	0.7	63	1.8	0.4	0.3	0.1	0.0	0.3	2.3	4.9	0.0	2.0
(S80LA-41-4)	6-12	B1	6.0	0.4	6	3.8	1.5	0.2	0.1	0.0	0.1	3.4	9.0	0.0	1.1
	12-26	B21t	5.2	0.3	7	3.7	3.8	0.3	0.1	1.7	0.2	3.9	11.8	17.3	0.8
	26-36	B22t	5.1	0.2	9	2.0	3.5	0.3	0.1	2.2	0.2	4.1	10.0	26.5	1.0
	36-46	B23t	5.2	0.2	10	1.7	2.7	0.2	0.1	1.8	0.1	3.6	8.3	27.3	1.2
Dundee silt loam:	0-5	Ap	5.4	0.7	39	7.8	2.5	0.3	0.1	0.8	0.0	1.0	11.7	7.0	0.9
(S80LA-41-5)	5-13	B21t	4.8	0.5	6	10.4	3.3	0.3	0.2	3.0	0.6	3.7	17.9	17.0	1.1
	13-29	B22tg	5.0	0.2	39	7.4	2.3	0.2	0.2	2.2	1.6	2.1	12.2	15.8	1.6
	29-35	B31g	5.4	0.2	72	8.9	2.7	0.2	0.4	1.4	0.0	2.1	14.3	10.3	2.8
	35-42	B32g	5.9	0.3	151	9.2	5.2	0.2	0.4	0.6	0.0	1.0	16.0	3.8	2.5
Egypt silt loam:	0-5	Ap	5.2	1.1	23	3.3	1.0	0.1	0.1	0.4	0.4	2.1	6.7	8.3	1.5
(S80LA-41-6)	5-16	A2	4.7	0.3	5	2.4	1.5	0.1	0.2	2.0	1.0	2.6	6.8	27.8	2.9
	16-25	B&A	5.0	0.3	5	3.8	3.5	0.2	0.3	2.0	1.2	3.2	11.0	18.2	2.7
	25-41	B21t	5.2	0.3	5	5.9	5.1	0.2	2.4	1.0	0.9	2.6	16.3	6.5	14.7
Foley silt loam:	0-6	Ap	6.0	1.3	112	7.0	2.0	0.3	0.2	0.2	0.2	1.6	11.1	2.0	1.8
(S80LA-41-7)	6-14	A2g	5.8	0.8	82	7.0	2.1	0.2	0.4	0.0	0.1	2.3	12.0	0.0	3.3
	14-26	B21tg	5.3	0.6	5	6.0	2.1	0.1	1.2	2.5	0.4	6.4	15.8	20.3	7.6
	26-39	B22tg	7.2	0.2	5	10.3	4.3	0.2	3.1	0.0	0.1	0.9	18.8	0.0	16.5
	39-49	B23tg	8.2	0.3	30	6.7	6.7	0.2	5.1	0.0	0.1	0.0	18.7	0.0	27.3
Forestdale silty clay loam:	0-4	Ap	5.5	1.7	42	14.1	5.6	0.3	0.4	0.2	0.5	3.7	21.1	0.9	1.9
(S80LA-41-8)	4-16.	B21tg	5.1	1.0	5	14.2	6.9	0.3	1.1	0.9	0.5	3.7	26.2	3.8	4.2
	16-21	B22tg	5.0	0.6	5	14.8	8.0	0.3	2.3	0.4	0.6	3.2	28.6	1.5	8.0
	21-31	B23tg	5.8	0.3	5	14.4	4.8	0.2	3.0	0.0	0.2	1.0	23.4	0.0	12.8
	31-40	B31g	7.1	0.2	18	5.2	4.5	0.1	3.0	0.0	0.2	0.0	13.8	0.0	21.7
Gigger silt loam:	0-6	Ap	6.0	1.1	118	4.3	1.1	0.4	0.1	0.0	0.1	3.7	9.6	0.0	1.0
(S80LA-41-9)	6-15	B21t	5.0	0.1	47	3.4	2.2	0.2	0.1	1.3	0.3	7.2	13.2	17.3	0.8
	15-24	B22t	4.7	0.1	47	1.7	3.7	0.3	0.2	4.6	0.2	11.8	17.7	43.0	1.1
	24-31	B23t	4.8	0.1	15	1.0	3.1	0.2	0.2	4.5	0.4	11.6	16.0	47.9	1.3
	31-38	IIBx1	5.0	0.0	15	0.8	3.5	0.2	0.4	3.9	0.3	9.6	14.6	42.9	2.8
	38-52	IIBx2	5.3	0.0	4	1.1	4.7	0.2	0.9	3.4	0.2	8.8	15.1	32.4	5.7
Gilbert silt loam:	0-6	Ap	5.9	1.3	44	3.5	1.0	0.1	0.1	0.0	0.2	2.2	6.9	0.0	1.4
(S80LA-41-10)	6-12	A2	5.2	0.4	22	2.2	1.3	0.1	0.2	0.8	0.2	3.1	6.9	16.7	2.9
	12-17	B&A	4.6	0.1	10	3.6	2.6	0.2	0.3	2.7	0.2	4.3	11.0	28.1	2.7
	17-32	B21tg	4.5	0.2	14	4.1	3.7	0.2	0.9	3.2	0.1	4.2	13.1	26.2	6.9
	32-46	B22tg	6.6	0.1	28	6.0	5.4	0.3	1.8	1.8	0.2	2.7	16.2	11.6	11.1
Liddieville fine sandy loam:	0-4	Ap1	6.8	0.6	102	1.6	0.4	0.2	0.1	0.0	0.2	1.8	4.1	0.0	2.4
(S80LA-41-11)	4-12	Ap2	6.7	0.4	163	2.6	0.7	0.2	0.1	0.0	0.1	2.1	5.7	0.0	1.8
	12-24	B21t	6.5	0.2	167	4.0	0.8	0.3	0.1	0.0	0.1	1.8	7.0	0.0	1.4
	24-29	B22t	6.5	0.1	185	4.8	0.7	0.3	0.1	0.0	0.0	2.0	7.9	0.0	1.3
	29-39	B23t	6.5	0.1	129	3.3	0.4	0.3	0.1	0.0	0.0	1.5	5.6	0.0	1.8
	39-45	B3	6.8	0.1	96	2.5	0.2	0.2	0.1	0.0	0.0	0.9	3.9	0.0	2.6

TABLE 17.--CHEMICAL TEST DATA--Continued

Soil sample and number	Depth from surface	Horizon	pH	Organic matter content	Extract-able P	Exchangeable bases						Extract-able acidity	Cation exchange capacity	Percent saturation	
						Ca	Mg	K	Na	Al	H			Al	Na
	In			Pct	Ppm	Meq/100 g									
Loring silt loam: (S80LA-41-12)	0-6	Ap	6.0	0.9	78	4.5	0.8	0.3	0.1	0.0	0.7	3.6	9.3	0.0	1.0
	6-18	B21t	4.9	0.3	61	4.8	3.0	0.3	0.1	3.2	0.8	11.0	19.1	26.0	1.0
	18-23	B22t	5.0	0.1	36	3.6	3.2	0.2	0.1	3.8	0.2	11.4	18.5	34.0	1.0
	23-30	Bx1	5.1	0.1	31	2.8	3.3	0.2	0.3	3.2	0.3	9.6	16.0	32.0	2.4
	30-42	Bx2	4.8	0.1	31	2.7	3.2	0.2	0.4	3.2	0.3	9.8	16.3	32.0	2.4
Memphis silt loam: (S80LA-41-13)	0-3	A1	5.7	1.1	31	4.6	2.1	0.2	0.2	0.1	0.3	4.3	11.4	1.3	1.8
	3-13	B21t	4.8	0.4	22	4.1	2.9	0.2	0.3	3.6	0.2	6.0	13.5	31.9	2.2
	13-33	B22t	4.9	0.2	16	3.6	2.6	0.2	0.3	3.1	0.1	5.9	12.6	31.3	2.4
	33-47	B3t	5.0	0.1	10	3.9	2.7	0.3	0.3	2.4	0.1	5.1	12.3	24.7	2.4
Necessity silt loam: (S80LA-41-14)	0-7	Ap	6.0	0.8	22	4.0	0.7	0.1	0.1	0.0	0.2	3.1	8.0	0.0	1.3
	7-17	B&A	6.0	0.7	5	5.2	1.1	0.1	0.1	0.0	0.2	4.2	10.7	0.0	0.9
	17-27	A'2	6.0	0.1	5	2.4	2.4	0.1	0.1	0.0	0.3	6.1	11.1	0.0	0.9
	27-33	B'x1	5.6	0.4	5	2.9	1.2	0.1	0.1	2.3	0.1	9.5	13.8	31.3	0.9
	33-43	B'x2	5.8	0.2	5	2.8	1.5	0.1	0.1	2.3	0.1	8.7	13.2	33.3	0.8
	43-53	B'x3	6.0	0.4	5	3.6	2.3	0.1	0.3	0.3	0.2	5.6	11.9	4.4	2.5
Sharkey clay: (S80LA-41-15)	0-4	Ap	5.7	2.9	86	29.0	10.8	1.0	0.2	0.2	0.2	4.7	45.7	1.0	1.0
	4-16	B21g	5.6	1.0	54	27.8	12.9	0.8	0.7	1.0	0.6	5.2	47.4	2.3	1.5
	16-26	B22g	5.6	0.7	38	30.4	14.4	0.6	1.3	0.2	0.6	4.2	50.9	1.0	2.6
	26-46	B3g	5.6	0.6	36	34.2	14.5	0.6	1.9	0.2	0.1	3.2	54.4	1.0	3.5
Sterlington silt loam: (S80LA-41-16)	0-6	Ap	6.0	0.7	34	4.9	1.4	0.2	0.1	0.2	0.2	0.0	6.6	2.9	1.5
	6-12	A2	5.8	0.3	25	6.0	2.0	0.1	0.1	0.2	0.2	0.5	8.7	2.3	1.1
	12-28	B2t	5.9	0.3	27	7.5	3.1	0.2	0.2	0.2	0.2	1.0	12.0	1.8	1.7
	28-42	B&A	6.0	0.2	40	6.1	2.9	0.2	0.2	0.2	0.2	1.0	10.4	2.0	1.9
Tensas silty clay: (S80LA-41-17)	0-4	Ap	6.0	2.1	246	22.0	6.1	1.0	0.1	0.0	0.2	3.2	32.4	0.0	0.3
	4-10	B21t	5.8	0.9	116	16.4	5.4	0.5	0.1	0.0	0.3	2.6	25.0	0.0	0.4
	10-26	B22t	5.7	0.3	60	14.9	5.4	0.3	0.2	0.4	0.3	1.6	22.4	1.9	0.9
	26-39	IIB3	6.1	0.2	111	13.2	4.9	0.3	0.2	0.0	0.2	1.0	19.6	0.0	1.0
	39-47	IIC	6.3	0.4	167	10.0	3.8	0.2	0.2	0.0	0.2	0.0	14.2	0.0	1.4

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Calhoun	Fine-silty, mixed, thermic Typic Glossaqualfs
*Calloway	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Deerford	Fine-silty, mixed, thermic Albic Glossic Natraqualfs
Dexter	Fine-silty, mixed, thermic Ultic Hapludalfs
Dundee	Fine-silty, mixed, thermic Aeric Ochraqualfs
Egypt	Fine-silty, mixed, thermic Aquic Glossudalfs
Foley	Fine-silty, mixed, thermic Albic Glossic Natraqualfs
Forestdale	Fine, montmorillonitic, thermic Typic Ochraqualfs
Gigger	Fine-silty, mixed, thermic Typic Fragiudalfs
Gilbert	Fine-silty, mixed, thermic Typic Glossaqualfs
Liddieville	Fine-loamy, mixed, thermic Ultic Hapludalfs
Loring	Fine-silty, mixed, thermic Typic Fragiudalfs
Memphis	Fine-silty, mixed, thermic Typic Hapludalfs
Necessity	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Sharkey	Very-fine, montmorillonitic, nonacid, thermic Vertic Haplaquepts
Sterlington	Coarse-silty, mixed, thermic Typic Hapludalfs
Tensas	Fine, montmorillonitic, thermic Vertic Ochraqualfs

*Taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

TABLE 19.--RELATIONSHIPS OF PARENT MATERIAL, SLOPE, RUNOFF, NATURAL DRAINAGE, AND SEASONAL HIGH WATER TABLE AMONG THE SOILS OF FRANKLIN PARISH

Parent material and soil series	Slope	Runoff	Natural drainage	Seasonal high water table: Depth	Seasonal high water table: Duration
				Ft	Months
Thick loess:					
Calhoun	Nearly level and depressional.	Slow and very slow.	Poorly drained	0-2.0	Dec-Apr
Calloway	Nearly level	Slow	Somewhat poorly drained.	1.0-2.0	Jan-Apr
Loring	Very gently sloping and gently undulating.	Medium	Moderately well drained.	2.0-3.0	Dec-Mar
Memphis	Gently sloping and sloping.	Medium	Well drained	>6.0	None
Thin loess or similar materials and underlying older materials:					
Deerford	Nearly level	Slow	Somewhat poorly drained.	0.5-1.5	Dec-Apr
Dexter	Very gently sloping and gently undulating.	Medium	Well drained	>6.0	None
Egypt	Level and nearly level.	Slow	Somewhat poorly drained.	0.5-2.0	Dec-Apr
Foley	Nearly level and depressional.	Slow	Poorly drained	0-1.0	Dec-Apr
Gigger	Very gently sloping and gently undulating.	Medium	Moderately well drained.	2.0-3.0	Jan-Mar
Gilbert	Level and depressional.	Very slow	Poorly drained	0-1.5	Dec-Apr
Necessity	Nearly level	Slow	Somewhat poorly drained.	1.0-2.0	Dec-Mar
Mississippi River alluvium:					
Dundee	Level and gently undulating.	Slow and medium.	Somewhat poorly drained.	1.5-3.5	Jan-Apr
Forestdale	Level and depressional.	Slow and very slow.	Poorly drained	0.5-2.0	Jan-Apr
Sharkey	Level and depressional.	Very slow	Poorly drained	0-2.0	Dec-Apr
Tensas	Level and gently undulating.	Medium	Somewhat poorly drained.	1.0-3.0	Dec-Apr
Arkansas River alluvium:					
Sterlington	Level	Slow	Well drained	>6.0	None
Braided-stream terrace alluvium:					
Liddieville	Gently sloping	Medium	Well drained	>6.0	None

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