United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
Louisiana Agricultural
Experiment Station and
Louisiana Soil and Water
Conservation Committee

Soil Survey of St. Helena Parish, Louisiana

How To Use This Soil Survey

General Soil Map

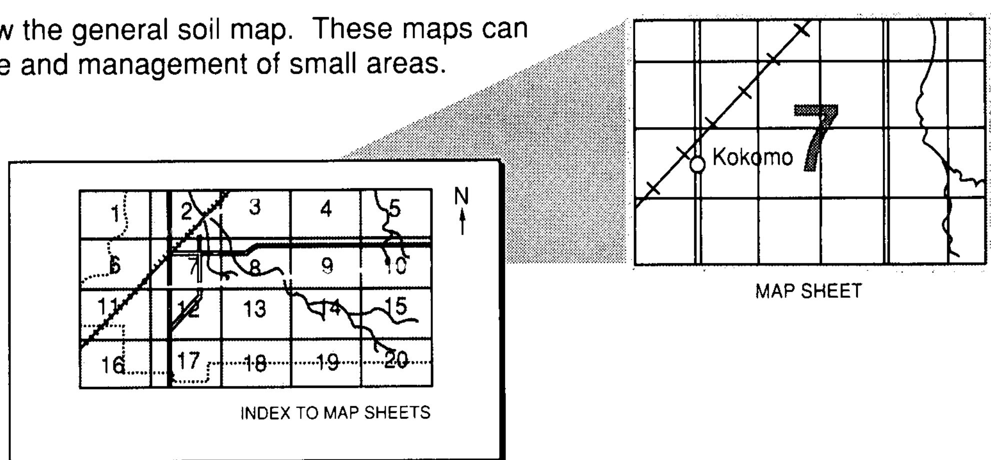
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

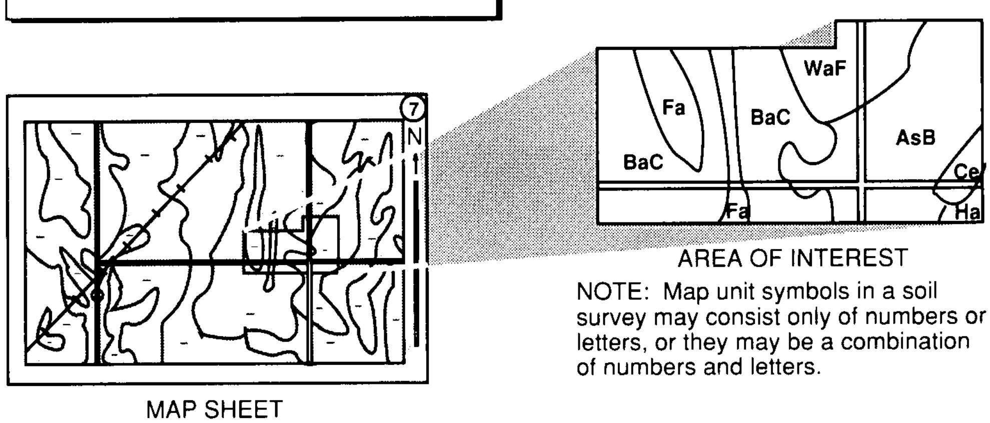
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service, formerly the Soil Conservation Service, has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1990. Soil names and descriptions were approved in 1990. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1990. This soil survey was made cooperatively by the Natural Resources Conservation Service, the Louisiana Agricultural Experiment Station, and the Louisiana Soil and Water Conservation Committee. It is part of the technical assistance furnished to the Tangipahoa-St. Helena Soil and Water Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

All programs and services of the Natural Resources Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Bahiagrass on Kenefick fine sandy loam, 1 to 3 percent slopes. Hayland is a major land use in St. Helena Parish.

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Issued April 1996

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Foreword

This soil survey contains information that can be used in land-planning programs in St. Helena 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 ensure 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 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 Natural Resources Conservation Service or the Cooperative Extension Service.

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Soil Survey of
St. Helena Parish, Louisiana

By Donald McDaniel, Natural Resources Conservation Service

Fieldwork by Jeanette J. Bradley, Lyfon Morris, Larry Trahan, and Donald McDaniel, Natural Resources Conservation Service, and Pamela S. Porter, Louisiana Soil and Water Conservation Committee

United States Department of Agriculture, Natural Resources Conservation Service, in cooperation with
the Louisiana Agricultural Experiment Station and the Louisiana Soil and Water Conservation Committee

ST. HELENA PARISH is in the southeastern part of Louisiana (fig. 1). It has a total area of 262,000 acres. This parish is bordered on the north by Amite County, Mississippi, on the south by Livingston Parish, on the west by East Feliciana and East Baton Rouge Parishes, and on the east by Tangipahoa Parish. In 1980, the population of the parish was about 10,500. About 80 percent of the population is in rural areas. Land use is mainly woodland and agriculture. About 68 percent of the land area in the parish is woodland, 24 percent is cropland or pasture, and 8 percent is land in other uses.

The parish consists of three Major Land Resource Areas (MLRA's). The Southern Coastal Plain MLRA is used mainly as woodland or pasture. This MLRA consists dominantly of moderately well drained and well drained, loamy soils. The Eastern Gulf Coast Flatwoods MLRA and the Southern Mississippi Valley Silty Uplands MLRA are used mainly as woodland, as pasture, or for truck crops. These MLRA's consist dominantly of poorly drained and somewhat poorly drained, loamy soils. Elevation ranges from about 350 feet above sea level in the uplands of the Southern Coastal Plain MLRA to about 80 feet on the stream or marine terraces of the Eastern Gulf Coast Flatwoods MLRA.

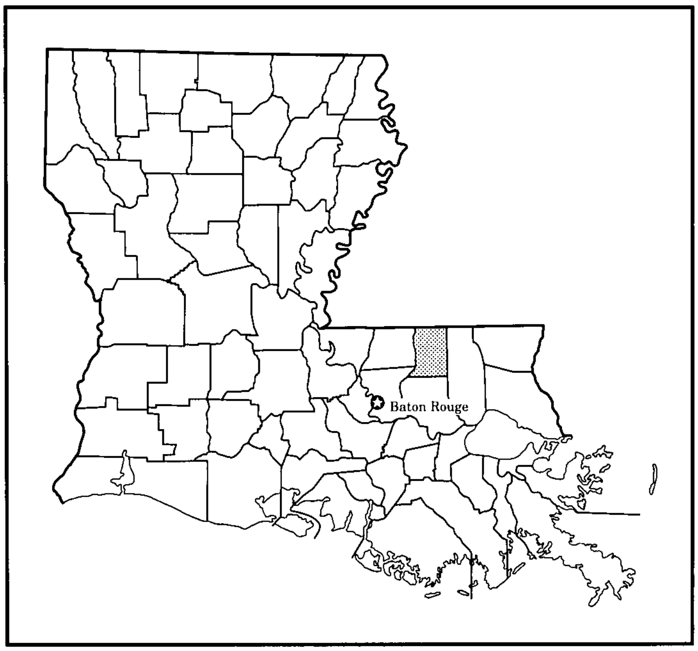

Figure 1.—Location of St. Helena Parish in Louisiana.

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

General Nature of the Parish

This section gives general information about the parish. It discusses climate, agriculture, history, industry, transportation, and water resources.

Climate

Table 1 gives data on temperature and precipitation for the survey area as recorded at Amite, Louisiana, in the period 1951 to 1979. 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 51 degrees F and the average daily minimum temperature is 40 degrees. The lowest temperature on record, which occurred at Amite on January 12, 1962, is 9 degrees. In summer, the average temperature is 81 degrees and the average daily maximum temperature is 92 degrees. The highest recorded temperature, which occurred on July 1, 1954, is 104 degrees.

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 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is about 64 inches. Of this, 34 inches, or about 53 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 27 inches. The heaviest 1-day rainfall during the period of record was 8.55 inches at Amite on September 6, 1977. Thunderstorms occur on about 70 days each year.

Snowfall is rare. In 90 percent of the winters, there is no measurable snowfall. In 10 percent, the snowfall, usually of short duration, is more than 2 inches. The heaviest 1-day snowfall on record was more than 3 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 70 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the southeast. Average windspeed is highest, 10 miles per hour, in spring.

Agriculture

Although St. Helena Parish is primarily used as forest land, agriculture is important to the economy of the parish. In 1989, the estimated gross value of all woodland and agricultural products was 24 million dollars. All crops, including forest products, generated more than 10 million dollars. Animal products made up about 13 million dollars of the gross value. In 1987, the parish had 359 farms. The value of the average farm, including land and buildings, was about 191,483 dollars. In 1982, the average size of a farm was about 150 acres. By 1987, it had decreased to about 142 acres. In 1987, the average market value of agricultural products sold per farm was 34,969 dollars.

The dairy industry is an important agricultural producer in the parish (fig. 2). In 1989, the dairy industry generated over 11 million dollars in gross revenue. The parish had 91 active dairies in 1987 and 81 dairies in 1989. In 1989, beef production was valued at more than 2 million dollars.

In 1987, about 30,000 acres in the parish was used as cropland or pasture. Truck crops are the main crops. In 1989, the three major crops, in order of cash value, were cucumbers, soybeans, and wheat. Other vegetable crops that are commercially produced include bell peppers, garlic, cabbage, mustard, okra, snap beans, and sweet potatoes. Small acreages of corn are also planted in most years.

History

St. Helena Parish was established in 1812. It is one of a group of parishes commonly referred to as the Florida Parishes. Before 1810, this area belonged to Spain and was known as West Florida *(18, 27)*. Spain gave 640 acres to each of the settlers, who were mostly Americans and English. In 1805, the settlers, wanting a democratic government, unsuccessfully revolted against Spain. In 1810, they revolted a second time and defeated the Spaniards at the fort in Baton Rouge. The settlers declared their holdings a free state and asked to be admitted into the Union. The State of West Florida became part of the United States in 1810. About a year later, the territory was divided into parishes, including Feliciana, East Baton Rouge, St. Helena, and St. Tammany Parishes.

The original boundaries of St. Helena Parish included the present Livingston Parish, which was established in 1832 *(18, 20, 27)*. Montpelier was the first parish seat, and Greensburg was selected in 1832. In 1869, a strip of land was taken from the eastern part of the parish to form Tangipahoa Parish.

Indians were the earliest settlers in the survey area. The French and Spanish settled the area next. The Acadians, after being forced from Canada by the English, settled at the limits of the parish in 1760. After the Revolutionary War, settlers arrived from the

Figure 2.—Dairy cows grazing bahiagrass on Tangi silt loam, 1 to 3 percent slopes.

Carolinas, Virginia, and Georgia. Many of them built homes in previously unexplored parts of the parish. Most of the settlements were along streams.

St. Helena Parish is one of the smallest parishes in the State and mainly rural. It has never had railroad service. It does not have a high population, and none of its towns have become cities. Greensburg is the most important town. Other towns and villages are Chipola, Darlington, Dennis Mills, Grangeville, Liverpool, Montpelier, and Pine Grove.

Industry

The industries in St. Helena Parish are either agricultural or closely related to agriculture. Because the parish does not have any large cities or railroads, which are needed to support large industrial plants, many residents work on a farm or in neighboring parishes.

St. Helena Parish has a small dairy industry consisting of family-owned dairies scattered throughout the parish. The timber industry and the mining of sand and gravel also are important to the economy of the survey area. A large timber company owns thousands of acres in the parish. Harvested timber is transported by truck out of the parish and processed elsewhere.

Transportation

Most of the roads in the parish are hard-surfaced State and parish highways. Louisiana Highway 43 runs north and south through the center of the parish. Several State highways run east and west. They include Highway 38 in the northern part of the parish, Highway

10 in the central part, and Highway 16 in the southern part. The parish also has numerous gravel roads.

Water Resources

Surface Water

The major sources of surface water in the parish are the Amite, Tickfaw, and Natalbany Rivers, which flow southward through St. Helena Parish, and their tributaries (Darling Creek, Twelvemile Creek, and Little Natalbany Creek). The Tickfaw River and its major tributary, the Natalbany River, drain the eastern part of the parish. The Amite River, which forms the western boundary of the parish, is the major source of streamflow.

Flooding is a major problem in the southern part of the parish. Extreme flooding occurred in April 1983.

According to water quality samples collected in 1985 from the Amite River, the water periodically contains high concentrations of coliform bacteria. The water also contains relatively high concentrations of copper, iron, zinc, and manganese *(14, 41)*.

Ground Water

A regionally extensive aquifer system, the Southern Hills aquifer system, is the principal source of drinking water for St. Helena Parish. The system is composed of interlayered sand beds, chiefly deltaic, ranging in age from Miocene to Holocene. Four aquifer units containing nine areally extensive sand beds have been delineated within this system in the survey area. They are the shallow unit and units 1, 2, and 3. Fresh water within the aquifer system extends to 2,500 feet below sea level in the northern part of the parish.

Recharge from rainfall to the aquifer system occurs throughout most of St. Helena Parish and the southwestern counties of Mississippi. Rainfall is received directly by the shallow aquifer unit. It is transmitted to the underlying aquifer units 1, 2, and 3 as these units merge successively into or near the shallow aquifer unit in the northern part of St. Helena Parish and in Amite, Franklin, and Lincoln Counties of southwestern Mississippi. In the shallow aquifer unit, ground water generally moves in a southerly direction from recharge areas. Discharge from the shallow aquifer unit occurs as pumpage or ground-water leakage in the southern part of Livingston Parish. In aquifer units 1, 2, and 3, ground water moves in a southwesterly direction toward large centers of pumpage in the Baton Rouge area.

Wells in the shallow aquifer unit and in the sand beds of aquifer unit 1 have primarily low yields. Most withdrawals from these wells are for domestic use. Sands of aquifer units 2 and 3 supply ground water for public, domestic, and industrial uses. Large amounts of ground water withdrawn before 1980 in East Baton Rouge Parish caused significant declines in the water levels in the sand beds of aquifer units 1, 2, and 3. Water levels continue to decline in the sand beds of aquifer unit 3 in St. Helena Parish.

Most of the fresh ground water throughout the survey area is a safe sodium-bicarbonate type. Sand beds of the shallow aquifer, however, contain a mixed ionic type of water that has a low concentration of dissolved solids. Locally, all aquifer units may contain water that has concentrations of naturally occurring chemicals, such as dissolved iron or dissolved manganese, which can limit the use of water unless treated *(41)*.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; and the kinds of crops and native plants growing on the soils. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by two or three kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

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, it 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 another 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 a 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 potential for major land uses. Table 4 shows the extent of the map units shown on the general soil map. It lists the potential of each, in relation to that of the other map units, for major land uses and shows soil properties that limit use. Soil potential 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 *recreational areas.* Cultivated crops are those grown extensively in the survey area. Pasture refers to areas of native or improved grasses. Woodland refers to areas of native or introduced trees. Urban uses include residential, commercial, and industrial developments. Intensive recreational areas are campsites, picnic areas, ballfields, and other areas that are subject to heavy foot traffic. Extensive recreational areas are those used for nature study and as wilderness.

The boundaries of the general soil map units in St. Helena Parish were matched, wherever possible, with those of the previously completed surveys of Amite County, Mississippi, and Livingston and Tangipahoa Parishes, Louisiana. In a few places, however, the lines do not join and the names of the map units differ. These differences resulted mainly from changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

1. Tangi-Ruston-Smithdale

Very gently sloping to moderately steep, moderately well drained and well drained soils that have a loamy surface layer and a loamy and clayey or a loamy subsoil; on uplands

This map unit consists of soils on ridgetops and side slopes in the uplands. The landscape is crossed by numerous small drainageways. Elevations range from about 170 to 350 feet above sea level. Slopes range from 1 to 3 percent on the ridgetops and from 3 to 20 percent on the side slopes.

This map unit makes up about 49 percent of the parish. It is about 44 percent Tangi soils, 25 percent Ruston soils, 9 percent Smithdale soils, and 22 percent soils of minor extent.

The Tangi soils are very gently sloping to moderately sloping. These moderately well drained soils are on narrow and broad ridgetops and on side slopes along drainageways. They have a surface layer of dark grayish brown or dark brown silt loam. The upper part of the subsoil is yellowish brown, mottled silt loam and strong brown, mottled silty clay loam. The lower part is a fragipan of mottled yellowish brown, light brownish gray, pale brown, and strong brown silty clay loam and yellowish red, mottled clay loam and clay.

The Ruston soils are very gently sloping and rolling. These well drained soils are on ridgetops and side slopes. They have a surface layer of brown fine sandy loam. The subsurface layer is yellowish brown fine sandy loam. The subsoil is yellowish red sandy clay loam and loam; brown sandy loam; red, mottled sandy clay loam; and reddish brown, mottled sandy clay loam.

The Smithdale soils are rolling and moderately steep. These well drained soils are on escarpments and side slopes. They have a surface layer of dark grayish brown or brown fine sandy loam. The subsurface layer is yellowish brown sandy loam. The subsoil is red, mottled sandy clay loam and yellowish red sandy loam.

Of minor extent in this map unit are Fluker, Guyton, Lytle, Ochlockonee, Ouachita, and Prentiss soils. Fluker and Prentiss soils are on terraces. Fluker soils are somewhat poorly drained, and Prentiss soils are moderately well drained. Lytle soils are well drained. They are in landscape positions similar to those of Ruston soils. Ochlockonee, Ouachita, and Guyton soils are on flood plains along streams. Ochlockonee and Ouachita soils are well drained, and Guyton soils are poorly drained.

Most areas of this map unit are used as woodland or pasture. A small acreage is used for crops, recreational purposes, or homesite development.

The soils in this map unit generally are well suited to woodland. The moderately steep Smithdale soils are moderately well suited to this use. Plant competition and compaction are the main limitations in areas of the Tangi soils. Erosion is a hazard in areas of the moderately steep Smithdale soils.

The soils in this map unit generally are well suited to pasture and moderately well suited to cultivated crops. The moderately steep Smithdale soils are generally not suited to crops and moderately well suited to pasture. The slope, low fertility, and potentially toxic levels of aluminum are the main management concerns.

The soils in this map unit generally are moderately well suited to urban and intensive recreational uses. The moderately steep Smithdale soils are poorly suited to these uses, and the very gently sloping Ruston soils are well suited. Low strength on sites for roads, slow or very slow permeability, wetness, and the hazard of erosion are the main limitations. Seepage is a hazard affecting some sanitary facilities.

2. Toula-Tangi

Very gently sloping and moderately sloping, moderately well drained soils that have a loamy surface layer and a loamy or a loamy and clayey subsoil; on uplands

This map unit consists of soils on broad to narrow ridgetops and on side slopes along drainageways. Elevations range from about 115 to 200 feet above sea level. Slopes range from 1 to 3 percent on the ridgetops and from 3 to 8 percent on the side slopes.

This map unit makes up about 17 percent of the parish. It is about 48 percent Toula soils, 30 percent Tangi soils, and 22 percent soils of minor extent.

The Toula soils are very gently sloping and are on broad ridgetops. They have a surface layer of dark grayish brown silt loam. The subsoil is yellowish brown, mottled silt loam. It has a compact and brittle fragipan in the lower part.

The Tangi soils are very gently sloping and moderately sloping. They are on narrow to broad ridgetops and on side slopes along drainageways. They have a surface layer of dark grayish brown or dark brown silt loam. The upper part of the subsoil is yellowish brown, mottled silt loam and strong brown, mottled silty clay loam. The lower part is a fragipan of mottled yellowish brown, light brownish gray, pale brown, and strong brown silty clay loam and yellowish red, mottled clay loam and clay.

Of minor extent in this map unit are Bude, Calhoun, Fluker, Guyton, Ochlockonee, and Ouachita soils. Fluker soils are the dominant minor soils and make up about 8 percent of the map unit. Bude and Fluker soils are somewhat poorly drained and are on terraces. Calhoun soils are poorly drained. They are on broad flats, in depressions, and along drainageways on terraces. Guyton soils are poorly drained. They are on flood plains along streams and on terraces. Ochlockonee and Ouachita soils are well drained. They are on flood plains along streams.

Most areas of this map unit are used as woodland or pasture. A small acreage is used for crops, recreational purposes, or homesite development.

The soils in this map unit are well suited to woodland. Plant competition and compaction are the main limitations.

These soils are well suited to pasture and moderately well suited to cultivated crops. Low fertility, potentially toxic levels of aluminum, and the hazard of erosion are the main limitations.

These soils are moderately well suited to urban and intensive recreational uses. Low strength on sites for roads, wetness, and slow or very slow permeability are the main limitations. Seepage is a hazard affecting some sanitary facilities.

3. Bude-Calhoun-Toula

Level, nearly level, and very gently sloping, moderately well drained to poorly drained soils that are loamy throughout; on terraces and uplands

This map unit consists of soils on ridges, on broad flats, on broad ridgetops, along drainageways, and in depressions. Elevations range from about 100 to 130 feet above sea level. Slopes range from 0 to 2 percent.

This map unit makes up about 3 percent of the parish. It is about 50 percent Bude soils, 25 percent Calhoun soils, 20 percent Toula soils, and 5 percent soils of minor extent.

The Bude soils are nearly level and somewhat poorly drained. They are on slightly convex ridges on terraces. They have a surface layer of very dark grayish brown silt loam. Below this is a layer of brown and yellowish brown, mottled silt loam. The next layer is mottled brown, yellowish brown, and light brownish gray silt loam. Below this is a fragipan. The fragipan is yellowish brown and mottled yellowish brown, light brownish gray, and strong brown silt loam.

The Calhoun soils are level and poorly drained. They are on broad flats, in depressions, and along small drainageways on terraces. They have a surface layer of dark grayish brown silt loam. The subsurface layer is light brownish gray, mottled silt loam. The subsoil is gray and light brownish gray, mottled silty clay loam and silt loam.

The Toula soils are very gently sloping and moderately well drained. They are on broad ridgetops on uplands. They have a surface layer of dark grayish brown silt loam. The subsoil is yellowish brown, mottled silt loam. It has a fragipan in the lower part.

Of minor extent in this map unit are Guyton soils on terraces and flood plains and Ochlockonee and Ouachita soils on flood plains. Guyton soils are poorly drained. Ochlockonee and Ouachita soils are well drained.

Most areas of this map unit are used as woodland or pasture. A small acreage is used for cultivated crops, homesite development, or intensive recreational purposes.

The Bude and Toula soils are well suited to woodland, and the Calhoun soils are moderately well suited. The main limitations are plant competition, compaction, windthrow, and an equipment limitation caused by wetness. Seedling mortality is a concern in areas of the Calhoun soils. Flooding is a hazard in some areas of the Calhoun soils.

The soils in this map unit generally are moderately well suited to pasture and crops. The Toula soils are well suited to pasture. The occasionally flooded Calhoun soils are poorly suited to crops. Low fertility, the wetness, potentially toxic levels of exchangeable aluminum, and the hazard of erosion are the main limitations.

The Bude and Calhoun soils generally are poorly suited to urban uses and most intensive recreational uses, and the Toula soils are moderately well suited. Low strength on sites for roads, slow permeability, the wetness, and a moderate shrink-swell potential are the main limitations. Flooding is a hazard in some areas of the Calhoun soils.

4. Gilbert-Satsuma

Level and very gently sloping, poorly drained and somewhat poorly drained soils that are loamy throughout; on terraces

This map unit consists of soils on broad flats, in depressions, along small drainageways, on broad, slightly convex ridges, and on side slopes along drainageways. Elevations range from 80 to 125 feet above sea level. Slopes range from 0 to 3 percent.

This map unit makes up about 4 percent of the parish. It is about 80 percent Gilbert soils, 17 percent Satsuma soils, and 3 percent soils of minor extent.

The Gilbert soils are level and poorly drained. They contain high levels of sodium in the lower part of the subsoil. They are on broad flats, in depressions, and along small drainageways. They have a surface layer of grayish brown silt loam. The subsurface layer is light brownish gray silt loam. The subsoil is gray, mottled silty clay loam and light brownish gray silt loam.

The Satsuma soils are very gently sloping and somewhat poorly drained. They are on broad, slightly convex ridges and on side slopes along drainageways. They have a surface layer of dark grayish brown silt loam. The subsurface layer is brown silt loam. The next layer is yellowish brown, mottled silt loam. The subsoil is yellowish brown, mottled silty clay loam and loam and light brownish gray silt loam.

Of minor extent in this map unit are Dexter, Guyton, Kenefick, Ouachita, and Ochlockonee soils. Dexter and Kenefick soils are on ridges. Ochlockonee and Ouachita soils are on flood plains along streams. Guyton soils are on flood plains along streams and on terraces.

Most areas of this map unit are used as woodland or pasture. A small acreage is used for crops, recreational purposes, or homesite development.

The Gilbert soils are moderately well suited to woodland, and the Satsuma soils are well suited. The main concerns in producing and harvesting timber are compaction and an equipment limitation caused by wetness and flooding. Seedling mortality and windthrow also are concerns in areas of the Gilbert soils. Competition from understory plants is a concern in areas of both soils. Excess sodium in the Gilbert soils can hinder tree growth.

The Gilbert soils generally are moderately well suited to crops and pasture. Where occasionally flooded, they are poorly suited to crops. The Satsuma soils are moderately well suited to crops and well suited to pasture. The wetness, low fertility, and potentially toxic levels of exchangeable aluminum are limitations in areas of both soils. Excess sodium is a limitation in areas of the Gilbert soils, and erosion is a hazard in areas of the Satsuma soils.

The soils in this map unit generally are poorly suited to urban and intensive recreational uses. The Satsuma soils are moderately well suited to intensive recreational uses. The wetness, slow or very slow permeability, a moderate shrink-swell potential, low strength on sites for roads, and the flooding are the main management concerns.

5. Myatt-Satsuma

Level and very gently sloping, poorly drained and somewhat poorly drained soils that are loamy throughout; on terraces

This map unit consists of soils in broad depressional areas, along small drainageways, on broad ridges, and on side slopes along drainageways. Elevations range from 85 to 105 feet above sea level. Slopes range from 0 to 3 percent.

This map unit makes up about 4 percent of the parish. It is about 80 percent Myatt soils, 18 percent Satsuma soils, and 2 percent soils of minor extent.

The Myatt soils are level and poorly drained. They are in broad depressional areas and along small drainageways. They have a surface layer of dark gray or dark grayish brown fine sandy loam. The subsurface layer is gray sandy loam. The subsoil is light brownish gray, mottled sandy clay loam and sandy loam.

The Satsuma soils are very gently sloping and somewhat poorly drained. They are on broad, slightly convex ridges and on side slopes along drainageways. They have a surface layer of dark grayish brown silt loam. The subsurface layer is brown silt loam. The next layer is yellowish brown silt loam. The subsoil is yellowish brown, mottled silty clay loam and loam and light brownish gray silt loam.

Of minor extent in this map unit are Dexter, Guyton, Kenefick, Ouachita, Ochlockonee, and Toula soils. Dexter and Kenefick soils are on ridges and are well drained. Guyton soils are on flood plains and terraces. They are poorly drained. Ouachita and Ochlockonee soils are on flood plains. They are well drained. Toula soils are moderately well drained and are on broad ridgetops in the uplands.

Most areas of this map unit are used as woodland or pasture. A small acreage is used for crops, homesite development, or recreational purposes.

The Myatt soils are moderately well suited to woodland, and the Satsuma soils are well suited. The main concerns in producing and harvesting timber are compaction and an equipment limitation caused by wetness. Windthrow and seedling mortality caused by the wetness and flooding are concerns in areas of the Myatt soils. Competition from understory plants can also be a concern in areas of both soils.

The Myatt soils generally are moderately well suited to pasture and crops. Where occasionally flooded, they are poorly suited to cultivated crops. The Satsuma soils are well suited to pasture and moderately well suited to crops. Low fertility, potentially toxic levels of exchangeable aluminum, and the wetness are the main limitations. Erosion is a hazard in areas of the Satsuma soils. Occasional flooding is a hazard in some areas of the Myatt soils.

The soils in this map unit generally are poorly suited to urban and intensive recreational uses. The Satsuma soils are moderately well suited to intensive recreational areas. The occasionally flooded Myatt soils generally are not suited to homesite development. The wetness, low strength on sites for roads, moderately slow or slow permeability, a moderate shrink-swell potential, and the flooding are the main management concerns.

6. Ouachita-Ochlockonee-Guyton

Level to gently undulating, well drained and poorly drained soils that are loamy throughout; on flood plains

This map unit consists of soils on flood plains along streams. These soils are frequently flooded. Elevations range from about 80 to 200 feet above sea level. Slopes range from 0 to 3 percent.

This map unit makes up about 23 percent of the parish. It is about 36 percent Ouachita soils, 31 percent Ochlockonee soils, 21 percent Guyton soils, and 12 percent soils of minor extent.

The Ouachita soils are gently undulating and well drained. They are on low ridges. They have a surface layer of brown silt loam. The subsoil is dark yellowish brown silt loam.

The Ochlockonee soils are gently undulating and well drained. They are on low ridges. They have a surface layer of brown silt loam. The underlying material is dark yellowish brown fine sandy loam, yellowish brown silt loam, light yellowish brown sandy loam, and yellowish brown fine sandy loam.

The Guyton soils are level and poorly drained. They are in low areas between ridges. They have a surface layer of dark grayish brown silt loam. The subsurface layer is light brownish gray, mottled silt loam. The next layer is light brownish gray silt loam and gray, mottled silty clay loam. The subsoil is gray and light brownish gray, mottled silty clay loam and clay loam. The substratum is gray, mottled clay loam.

Of minor extent in this map unit are Fluker and Kenefick soils and soils that are similar to the Guyton soils but have more sand throughout. Fluker and Kenefick soils are on ridges on terraces. Fluker soils are somewhat poorly drained, and Kenefick soils are well drained.

Most areas of this map unit are used as woodland. A small acreage is used as pasture.

The soils in this map unit are moderately well suited to woodland. The main concerns in producing and harvesting timber are compaction, seedling mortality, and an equipment limitation caused by wetness and flooding. Windthrow is a concern in areas of the Guyton soils. Competition from understory plants also can be a problem.

These soils are poorly suited to pasture. The wetness, low fertility, and the flooding are the main management concerns.

These soils generally are not suited to cultivated crops, urban uses, or intensive recreational uses. The wetness and the flooding generally are severe limitations.

These soils are well suited to habitat for deer, squirrels, rabbits, ducks, turkeys, and numerous other small birds and animals.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential 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 the heading "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, hazard of flooding, 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, Myatt fine sandy loam is a phase of the Myatt series.

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

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. Pits-Arents complex, 0 to 5 percent slopes, is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar. Ruston-Smithdale association, rolling, is an example.

An *undifferentiated group* is made up of two or more soils that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils in a mapped area are not uniform. An area can be made up of only one of the major soils, or it can be made up of all of them. Ouachita, Ochlockonee, and Guyton soils, frequently flooded, is an undifferentiated group in this survey area.

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. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. The Pits in areas of Pits-Arents complex, 0 to 5 percent slopes, are an example. Miscellaneous areas are shown on the soil maps.

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.

The boundaries of map units in St. Helena Parish were matched, wherever possible, with those of the previously completed surveys of Amite County, Mississippi, and Livingston and Tangipahoa Parishes, Louisiana. In a few places, however, the lines do not join and the names of the map units differ. These differences result mainly from changes in soil series concepts, differences in map unit design, and changes in soil patterns near survey area boundaries.

Bd—Bude silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is on slightly convex ridges on broad terraces. Areas range from about 20 to 200 acres in size.

Typically, the surface layer is very dark grayish brown silt loam about 4 inches thick. The next 16 inches is mottled silt loam. It is brown in the upper part and yellowish brown in the lower part. The next 10 inches is mottled brown and yellowish brown silt loam that has light brownish gray tongues. Below this to a depth of about 60 inches is a fragipan. The fragipan is silt loam. It is yellowish brown in the upper part and mottled yellowish brown, light brownish gray, and strong brown in the lower part.

Included with this soil in mapping are a few small areas of Calhoun and Toula soils. Calhoun soils are poorly drained. They are in depressions and along drainageways. They are gray throughout. Toula soils are moderately well drained. They are higher on the landscape than the Bude soil. They do not have gray mottles in the upper part of the subsoil. Included soils make up about 10 percent of the map unit.

The Bude soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through the upper part of this soil at a moderate rate and through the fragipan at a slow rate. Water runs off the surface at a slow or medium rate. A seasonal high water table is perched on the fragipan at a depth of about 0.5 foot to 1.5 feet from January through April. The surface layer dries quickly after rains. The shrink-swell potential is moderate in the subsoil.

Most of the acreage is used as woodland or pasture. A small acreage is used as cropland, for homesite development, or for recreational development.

This soil is moderately well suited to loblolly pine, slash pine, shumard oak, cherrybark oak, and yellow-poplar. The main concerns in producing and harvesting timber are compaction, an equipment limitation caused by wetness, and competition from understory plants. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees. Conventional methods of harvesting timber can be used, but they may be limited during rainy periods, generally from January through April.

This soil is moderately well suited to pasture. The main limitations are the wetness and the low fertility. Erosion can be a hazard in tilled areas until grasses are established. Suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, white clover, wild winterpea, vetch, tall fescue, and ryegrass. Excess surface water can be removed by field ditches and adequate outlets. A seedbed should be prepared on the contour or across the slope if possible. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly vegetables, corn, and grain sorghum. The main limitations are the wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone. Erosion is a hazard. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Field ditches and adequate outlets help to remove excess surface water. A seedbed should be prepared on the contour or across the slope if possible. Runoff and erosion can be controlled by plowing in the fall, applying fertilizer, and seeding a cover crop. Crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of exchangeable aluminum.

This soil is poorly suited to urban development. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities. The main limitations are the wetness, the slow permeability in the fragipan, and low strength on sites for roads and streets. Excess water can be removed by shallow ditches and proper grading. The slow permeability in the fragipan and the high water table increase the possibility that septic tank absorption fields will fail. Sewage lagoons or self-contained disposal units can be used to dispose of sewage. A drainage system can improve the suitability of the soil for most lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetable gardens.

This soil is poorly suited to recreational development, mainly because of the wetness. A good drainage system can improve the suitability for intensive recreational areas, such as playgrounds and campsites. A plant cover can be maintained by controlling traffic.

This soil can be used as habitat for ducks, deer, quail, turkey, dove, and small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants.

The capability subclass is IIw. The woodland ordination symbol is 10W.

Ch—Calhoun silt loam. This level, poorly drained soil is on broad flats, in depressions, and along drainageways on broad terraces. Areas are irregular in shape and range from about 10 to 200 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is gray, mottled silt loam about 13 inches thick. The next 10 inches is gray silty clay loam and light brownish gray, mottled silt loam. The subsoil to a depth of about 60 inches is gray, mottled silty clay loam.

Included with this soil in mapping are a few small areas of Bude and Toula soils. The included soils have a fragipan. Bude soils are on slightly convex ridges. Toula soils are on broad ridgetops. Included soils make up about 10 percent of the map unit.

The Calhoun soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow or very slow rate. A seasonal high water table is within a depth of about 1.5 feet from December through April. The shrink-swell potential is moderate in the subsoil.

Most of the acreage is used as woodland or pasture. A small acreage is used for vegetables, urban development, or recreational development.

This soil is moderately well suited to loblolly pine, slash pine, cherrybark oak, water oak, shumard oak, and sweetgum. The main concerns in producing and harvesting timber are compaction, an equipment limitation, windthrow, and the seedling mortality caused by wetness. Competition from understory plants is severe. Planting or harvesting trees during dry periods helps to prevent rutting and compaction. Conventional methods of harvesting timber generally can be used, but they may be limited during rainy periods, generally from December through April. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Special site preparation, such as harrowing and bedding, helps to establish seedlings, reduce seedling mortality, and increase early seedling growth.

This soil is moderately well suited to pasture. The main limitations are the low fertility and the wetness. Excess surface water can be removed by drainage ditches and suitable outlets. The main suitable pasture plants are common bermudagrass, Dallisgrass, bahiagrass, white clover, and wild winterpea. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly soybeans and vegetables. The main limitations are the wetness, the low fertility, and the high levels of exchangeable aluminum in the root zone. The soil is friable and can be easily kept in good tilth. Crusting of the surface layer may result during dry periods. Proper row arrangement, field ditches, and adequate outlets help to remove excess surface water. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which help to improve fertility and reduce the levels of exchangeable aluminum.

This soil is poorly suited to urban development and homesite development. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities. The main limitations are the wetness, the moderate shrink-swell potential, slow permeability, and low strength on sites for roads and streets. Excess water can be removed by shallow ditches and proper grading. Selection of adapted vegetation for planting is critical in areas used for lawns, shrubs, trees, and vegetable gardens. Low strength is a limitation on sites for local roads and streets. It can be overcome by using the proper engineering designs. The slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. Sewage lagoons or self-contained disposal units can be used to dispose of sewage. Buildings can be designed to offset the effects of shrinking and swelling.

Mainly because of the wetness, this soil is poorly suited to recreational development. Artificial drainage is needed in intensive recreational areas, such as playgrounds and campsites.

This soil can be used as habitat for ducks, quail, turkey, dove, deer, rabbit, and other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Shallow ponds can be constructed to provide open water areas for waterfowl and furbearers. In pine stands, prescribed burning that is applied every 3 years and is rotated among several small tracts of land can increase the amount of browse palatable to deer and the number of seed-producing plants available to quail and turkey.

The capability subclass is IIIw. The woodland ordination symbol is 9W.

Cn—Calhoun silt loam, occasionally flooded. This level, poorly drained soil is in broad depressional areas and along small drainageways on terraces. Areas are irregular in shape and are 20 to 200 acres in size. This soil is occasionally flooded. Slopes are 0 to 1 percent.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 11 inches thick. The next 11 inches is gray silty clay loam and light brownish gray, mottled silt loam. The subsoil to a depth of about 60 inches is gray, mottled silty clay loam. In places this soil is only subject to rare flooding.

Included with this soil in mapping are a few small areas of Bude and Toula soils. The included soils have a fragipan. Bude soils are on slightly convex ridges. Toula soils are on broad ridgetops. Included soils make up about 10 percent of the map unit.

The Calhoun soil is characterized by low fertility. Water and air move through this soil at a slow rate. Water runs off the surface at a slow or very slow rate. A seasonal high water table is within a depth of about 1.5 feet from December through April. This soil is subject to brief to long periods of flooding, mainly from December through June.

Most of the acreage is used as woodland or pasture. A small acreage is used as cropland, for urban development, or for recreational development.

This soil is moderately well suited to loblolly pine, slash pine, cherrybark oak, water oak, shumard oak, and sweetgum. The main concerns in producing and harvesting timber are an equipment limitation, compaction, windthrow, and seedling mortality caused by the flooding and the wetness. Competition from undesirable understory plants also can be a problem. Planting or harvesting trees during dry periods helps to prevent rutting and compaction. Conventional methods of harvesting timber generally can be used, but they may be limited during rainy periods, generally from December through April. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Artificial drainage and special site preparation, such as harrowing and bedding, can reduce the seedling mortality rate and increase early seedling growth.

This soil is moderately well suited to pasture. The main limitations are the low fertility and the wetness. Flooding is a hazard. The main suitable pasture plants are common bermudagrass, Dallisgrass, bahiagrass, white clover, and wild winterpea. The wetness limits the choice of plants and the period of grazing. Excess surface water can be removed by drainage ditches and adequate outlets. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is poorly suited to crops. Soybeans and vegetables, however, can be grown in places. The main limitations are the flooding, the wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone. The soil is friable and can be easily kept in good tilth; however, the surface layer tends to crust during dry periods. The flooding can be controlled by constructing major flood-control structures, such as levees. Proper row arrangement, field ditches, and adequate outlets help to remove excess surface water. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the high levels of exchangeable aluminum.

This soil is poorly suited to urban development. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities. Unless protected from flooding, this soil is generally not suited to dwellings. The main limitations are the wetness, a moderate shrink-swell potential, slow permeability, and low strength on sites for roads and streets. Flooding is a hazard. Drainage and protection from flooding improve the suitability of this soil for roads and building sites. Excess water can be removed by shallow ditches and proper grading. In areas not protected from flooding, roads and streets and dwellings can be constructed above the expected level of flooding. Selection of adapted vegetation for planting is critical in areas used for lawns, shrubs, trees, and vegetable gardens. The slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. If flooding is controlled, sewage lagoons or self-contained disposal units can be used to dispose of sewage.

This soil is poorly suited to recreational development. The main limitations are the flooding and the wetness. Protection from flooding and a good drainage system can be provided for intensive recreational areas, such as playgrounds and campsites.

This soil can be used as habitat for ducks, quail, turkey, dove, deer, rabbit, and numerous other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Shallow ponds can be constructed to provide open water areas for waterfowl and furbearers.

The capability subclass is IVw. The woodland ordination symbol is 9W.

Cy—Cypress mucky clay. This level, very poorly drained soil is in lake beds, in oxbows, and along stream channels. It is ponded most of the time and frequently flooded. Because of poor accessibility, the number of observations was fewer in areas of this soil than in other areas of the parish. The detail in mapping, however, is adequate for the expected use of the soil. Slopes are 0 to 1 percent.

Typically, the surface layer is dark grayish brown mucky clay about 4 inches thick. The underlying material to a depth of about 60 inches is dark gray silty clay in the upper part and gray, mottled silty clay in the lower part.

Included with this soil in mapping are a few small areas of Guyton soils. Guyton soils are higher on the landscape than the Cypress soil. They are loamy throughout. They make up about 10 percent of the map unit.

The Cypress soil is flooded for very long periods from January through December in most years. Depth of floodwater ranges from 1 to 4 feet. When the soil is not flooded, the water table ranges from 4 feet above the surface to 1 foot below. This soil is seldom dry enough to crack. The shrink-swell potential is moderate. Permeability is very slow. This soil has medium fertility.

Most of the acreage is woodland. The woodland is mainly used as habitat for wetland and woodland wildlife and as extensive recreational areas, such as areas for hunting.

This soil is poorly suited to woodland. Production is low, and managing woodland is difficult. Wetness and the flooding are the main management concerns. Unless this soil is drained and protected from flooding, an equipment limitation, a hazard of windthrow, plant competition, and seedling mortality are severe. Timber can be harvested only by special equipment. The natural vegetation consists mainly of baldcypress. The main understory and aquatic vegetation consists of buttonbush, palmetto, maidencane, lizard tail, duckweed, and swamp privet.

Unless drained and protected from flooding, this soil is generally not suited to cropland or pasture.

This soil is well suited to habitat for wetland wildlife (fig. 3). When flooded, it provides feeding and roosting areas for ducks and other waterfowl. It also provides habitat for deer, squirrel, alligator, mink, muskrat, and raccoon. The habitat can be improved by installing structures that control water levels. Timber management that propagates oaks and other mast-producing trees improves habitat for wood ducks, squirrel, deer, and nongame birds.

This soil is generally not suited to urban uses and intensive recreational purposes because of the ponding and the flooding. Other limitations are very slow permeability, low strength on sites for roads and streets, and a moderate shrink-swell potential. If drained and protected from flooding, this soil can be used as a site for local roads and streets or for dwellings without basements. Roads and foundations also can be designed to overcome the moderate shrink-swell potential and the low strength.

The capability subclass is VIIw. The woodland ordination symbol is 6W.

Dx—Dexter very fine sandy loam, 1 to 3 percent slopes. This very gently sloping, well drained soil is on ridges on terraces. Areas range from about 10 to 100 acres in size.

Typically, the surface layer is brown very fine sandy loam about 6 inches thick. The subsoil is yellowish red silty clay loam in the upper part and strong brown loam in the lower part. The substratum to a depth of about 60 inches is strong brown sandy loam. In places the soil has more sand throughout.

Included with this soil in mapping are a few small areas of Gilbert and Satsuma soils. Gilbert soils are in depressions, on broad flats, and along drainageways. They are poorly drained. They are gray throughout. Satsuma soils are lower on the landscape than the Dexter soil and are somewhat poorly drained. They have gray mottles in the upper part of the subsoil. Included soils make up about 10 percent of the map unit.

The Dexter soil is characterized by low fertility. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. Roots penetrate this soil easily, and the effective rooting depth is 60 inches or more. A seasonal high water table is at a depth of more than 60 inches. Plants can suffer from a shortage of water during dry periods in the summer and fall of some years. The surface layer dries quickly after rains. The shrink-swell potential is low.

Most of the acreage is used as pasture. A small acreage is used as woodland, as cropland, or for homesite development. In places sand and gravel are mined for use as construction material.

This soil is well suited to loblolly pine, slash pine, water oak, sweetgum, shumard oak, and cherrybark oak. Few limitations affect woodland use and management. Plant competition is moderate. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Conventional methods of harvesting timber generally can be used throughout the year.

This soil is well suited to pasture. Erosion is a moderate hazard in tilled areas until pasture grasses are established. The low fertility is the main limitation. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, and crimson clover. A seedbed should be prepared on the contour or across the slope. Proper stocking rates and pasture rotation help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to crops, mainly corn, grain sorghum, soybeans, and vegetables. The hazard of erosion is moderate. The soil also is limited

Figure 3.—A swamp in an area of Cypress mucky clay that provides excellent habitat for wildlife.

by the low fertility and the moderately high levels of exchangeable aluminum in the root zone. It is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Crops can suffer from a shortage of moisture during dry periods in some years. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to control erosion and maintain fertility and tilth. Contour farming and stripcropping also help to control erosion. Most crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the moderately high levels of exchangeable aluminum.

This soil is moderately well suited to urban development. It has slight limitations affecting sites for dwellings and moderate or severe limitations affecting sites for local roads and streets and most sanitary facilities. The main limitations are low strength on sites for roads and streets and moderate permeability. Preserving as many trees as possible on the building site helps to control erosion. Cutbanks of shallow excavations cave in easily. Carefully supporting the walls of excavations can help to prevent caving. Seepage can be a problem on sites for sewage lagoons. Sand and gravel are available in areas of this soil, but an excessive content of silt and clay is a common problem. Enlarging septic tank absorption fields helps to overcome the moderate permeability in the subsoil. The design of roads and streets can offset the low soil strength.

This soil is well suited to recreational development. The slope is a limitation on playgrounds. Erosion and sedimentation can be controlled by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic and applying fertilizer.

This soil is well suited to habitat for rabbits, quail, dove, deer, turkey, and numerous nongame birds. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants.

The capability subclass is IIe. The woodland ordination symbol is 12A.

Fk—Fluker silt loam, 0 to 2 percent slopes. This nearly level, somewhat poorly drained soil is on ridges on terraces. It is subject to rare flooding. Areas range from about 20 to 300 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsoil extends to a depth of about 26 inches. It is brown, mottled silt loam in the upper part and yellowish brown, mottled silty clay loam in the lower part. The next 4 inches is yellowish brown, mottled silt clay loam and light brownish gray silt loam. Below this to a depth of about 42 inches is a fragipan. The fragipan is strong brown silt loam in the upper part and strong brown loam in the lower part. The lowest layer in the subsoil to a depth of about 60 inches is yellowish brown, mottled loam. In some places the soil is only occasionally flooded. In other places the upper part of the subsoil has more sand.

Included with this soil in mapping are a few small areas of Guyton, Kenefick, Ouachita, Ochlockonee, and Prentiss soils. The included soils do not have a fragipan. Guyton soils are lower on the landscape than the Fluker soil and are poorly drained. Kenefick and Prentiss soils are in the higher landscape positions. Kenefick soils are well drained, and Prentiss soils are moderately well drained. Ochlockonee and Ouachita soils are on flood plains. They are well drained and frequently flooded. Included soils make up about 15 percent of the map unit.

The Fluker soil is characterized by low fertility. It has high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through the upper part of this soil at a moderate rate and through the fragipan at a slow rate. Water runs off the surface at a slow rate. A water table is perched on the fragipan at a depth of about 0.5 foot to 1.5 feet during December through April. The shrink-swell potential is low.

Most of the acreage is used as woodland or pasture. A small acreage is used for crops, homesite development, or recreational development.

This soil is moderately well suited to sweetgum, loblolly pine, longleaf pine, slash pine, shumard oak, southern red oak, green ash, and water oak. The main concerns in producing and harvesting timber are compaction, a moderate equipment limitation, a moderate hazard of windthrow, and severe competition from understory plants caused by wetness. When the soil is wet or moist, it is subject to rutting and compaction by logging equipment. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees. Conventional methods of harvesting timber can be used, but they may be limited during rainy periods, generally from December through April.

This soil is well suited to pasture. The main limitations are the wetness and the low fertility. The main suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, white clover, wild winterpea, vetch, and ryegrass. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to crops, mainly vegetables, soybeans, and corn. The main limitations are the low fertility, the wetness, and the potentially toxic levels of exchangeable aluminum in the root zone. Erosion is a minor hazard. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Proper row arrangement, field ditches, and adequate outlets help to remove excess surface water. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth and control erosion. Crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the high levels of exchangeable aluminum.

This soil is poorly suited to urban development. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities. The main limitations are the wetness, moderate or slow permeability, and low strength on sites for roads and streets. The main hazard is the flooding. Excess water can be removed by shallow ditches and proper grading. The design of the roads can offset the limited ability of the soil to support a load. The moderate or slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. The flooding can be controlled by levees and diversions. A drainage system can improve the suitability of the soil for most lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetable gardens. Sand is available in some areas of this soil, but the sand commonly has an excessive amount of fines.

Mainly because of the wetness, this soil is poorly suited to recreational development. A good drainage system can be provided for most recreational uses.

This soil is well suited to habitat for deer, rabbit, quail, turkey, dove, and numerous nongame birds. The habitat can be improved by maintaining the existing plant cover or by promoting the establishment of desirable plants. Timber should be selectively harvested so that large den and mast-producing trees remain. Prescribed burning that is applied every 3 years and is rotated among several small tracts of land can increase the amount of browse palatable to deer and the number of seed-producing plants available to quail and turkey.

The capability subclass is IIw. The woodland ordination symbol is 11W.

Gb—Gilbert silt loam. This level, poorly drained soil is on broad flats and in depressions on terraces. It has a high level of sodium in the lower part of the subsoil. The soil is subject to rare flooding. Areas are irregular in shape and range from 10 to several hundred acres in size. Slopes are less than 1 percent.

Typically, the surface layer is grayish brown silt loam about 3 inches thick. The subsurface layer is light brownish gray silt loam about 7 inches thick. The next 20 inches is light brownish gray silt loam and gray, mottled silty clay loam. The subsoil to a depth of about 60 inches is mottled silty clay loam. It is light brownish gray in the upper part and grayish brown in the lower part. In some places the soil is occasionally flooded. In other places the subsoil has less sand and less sodium.

Included with this soil in mapping are a few small areas of Dexter and Satsuma soils. Dexter soils are in the higher landscape positions. Satsuma soils are slightly higher on the landscape than the Gilbert soil. Dexter soils are well drained, and Satsuma soils are somewhat poorly drained. Included soils make up about 15 percent of the map unit.

The Gilbert soil is characterized by low fertility and moderately high levels of exchangeable aluminum that are potentially toxic to some crops. The lower part of the subsoil has high levels of sodium, which restrict root development and limit the amount of water available to some plants. Water and air move through this soil at a very slow rate. Water runs off the surface at a very slow rate. A seasonal high water table is within a depth of 1.5 feet from December through April. The flooding mainly occurs in winter and spring, but it can occur during the cropping season. The shrink-swell potential is moderate.

Most of the acreage is used as woodland. A small acreage is used as pasture, as cropland, for urban development, or for recreational development.

This soil is moderately well suited to loblolly pine, slash pine, water oak, shumard oak, and sweetgum (fig. 4). The main concerns in producing and harvesting timber are compaction, a severe equipment limitation, a severe hazard of windthrow, and moderate seedling mortality caused by wetness. The excess sodium in the lower part of the subsoil can limit tree growth in some years. Competition from understory plants also can be a concern. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Planting or harvesting trees only during dry periods helps to prevent compaction. Conventional methods of harvesting timber cannot be used during rainy periods, generally from December through April. Bedding and providing surface drainage can improve the survival rate of pine seedlings.

This soil is moderately well suited to pasture. The main limitations are the low fertility and the wetness. Excess surface water can be removed by field ditches and suitable outlets. The main suitable pasture plants are common bermudagrass, bahiagrass, white clover, and wild winterpea. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to crops, mainly soybeans and vegetables. The main limitations are the wetness, the low fertility, the potentially toxic levels of exchangeable aluminum in the root zone, and the high levels of sodium in the lower part of the subsoil. The soil is friable and can be easily worked; however, the surface layer tends to crust during dry periods. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the potentially toxic levels of exchangeable aluminum.

This soil is poorly suited to urban development. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities. The main limitations are the wetness, very slow permeability, low strength on sites for roads, a moderate shrink-swell potential, and the flooding. The flooding can be controlled by levees. Excess surface water can be

Figure 4.—A well managed stand of loblolly pine on Gilbert silt loam.

removed by shallow ditches and proper grading. Selection of adapted vegetation for planting is critical in areas used for lawns, shrubs, trees, and vegetable gardens. The design of local roads and streets can offset the limited ability of the soil to support a load. Building foundations can be strengthened to withstand the shrinking and swelling of the subsoil. The very slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. If flooding is controlled, lagoons or self-contained disposal units can be used to dispose of sewage.

This soil is poorly suited to recreational development. The main limitations are the wetness, the very slow permeability, and the flooding. A good drainage system and flood-control measures can improve the suitability for intensive recreational areas, such as playgrounds and campsites.

This soil is moderately well suited to habitat for ducks, quail, turkey, dove, deer, rabbit, and other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Habitat for wetland wildlife can be improved by constructing shallow ponds for use by waterfowl and furbearers.

The capability subclass is IIIw. The woodland ordination symbol is 6W.

Ge—Gilbert silt loam, occasionally flooded. This level, poorly drained soil is in depressions and along drainageways on terraces. It contains high levels of sodium in the lower part of the subsoil. Areas are irregular in shape and range from about 20 to several hundred acres in size. Slopes are less than 1 percent.

Typically, the surface layer is grayish brown silt loam about 5 inches thick. The subsurface layer is light brownish gray silt loam about 19 inches thick. The next 7 inches is gray, mottled silty clay loam and light brownish gray silt loam. The subsoil to a depth of about 60 inches is gray, mottled silty clay loam. In some places the soil is only rarely flooded. In other places the subsoil has less sand and less sodium.

Included with this soil in mapping are a few small areas of Satsuma soils. Satsuma soils are in the higher landscape positions and are somewhat poorly drained. They make up about 15 percent of the map unit.

The Gilbert soil is characterized by low fertility and moderately high levels of exchangeable aluminum that are potentially toxic to some plants. The lower part of the subsoil has high levels of sodium, which restrict root development and limit the amount of water available to plants. Water and air move through this soil at a very slow rate. Water runs off the surface at a very slow rate. A seasonal high water table is within a depth of about 1.5 feet from December through April. This soil is flooded for brief to long periods. The flooding occurs mainly in winter and spring, but it can occur during the cropping season. The shrink-swell potential is moderate.

Most of the acreage is used as woodland or pasture. A small acreage is used as cropland, for homesite development, or for recreational development.

This soil is moderately well suited to loblolly pine, slash pine, sweetgum, shumard oak, and water oak. The main concerns in producing and harvesting timber are compaction, a severe equipment limitation, a severe hazard of windthrow, and moderate seedling mortality caused by wetness and the flooding. Competition from understory plants also can be a concern. The excess sodium in the lower part of the subsoil can limit tree growth in some years. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Planting or harvesting trees only during dry periods helps to prevent compaction. Conventional methods of harvesting timber cannot be used during rainy periods, generally from December through April. Bedding and providing surface drainage can improve the survival rate of pine seedlings.

This soil is moderately well suited to pasture. The main limitations are the low fertility, the flooding, and the wetness. Suitable pasture plants are common bermudagrass, bahiagrass, tall fescue, white clover, vetch, ryegrass, and wild winterpea. The wetness limits the choice of plants and the period of grazing. Excess surface water can be removed by field ditches and suitable outlets. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is poorly suited to crops, mainly soybeans and vegetables. The main limitations are the flooding, the wetness, the low fertility, the potentially toxic levels of exchangeable aluminum in the root zone, and the excessive sodium in the lower part of the subsoil. The soil is friable and can be easily worked; however, the surface layer tends to crust during dry periods. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Major structures such as levees can provide protection from flooding. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which can overcome the low fertility, the high levels of sodium, and the moderately high levels of exchangeable aluminum.

Because of the flooding and the wetness, this soil is poorly suited to most urban uses. Unless protected from flooding, the soil is generally not suited to dwellings. A moderate shrink-swell potential, very slow permeability, and low strength on sites for roads are additional limitations. Drainage and protection from flooding improve the suitability for most uses. Major structures such as levees can control flooding. Excess water can be removed by shallow ditches and proper grading. Roads and streets can be constructed above the expected level of flooding. The design of the roads can offset the limited ability of the soil to support a load. Foundations of buildings can be strengthened to withstand the shrinking and swelling of the subsoil. Selection of adapted vegetation for planting is critical in areas used for lawns, shrubs, trees, and vegetable gardens. The very slow permeability and the high water table increase the possibility that septic tank absorption fields will fail.

Because of the flooding, the very slow permeability, and the wetness, this soil is poorly suited to recreational development. A good drainage system and flood-control measures can improve the suitability for most recreational uses.

This soil is well suited to habitat for wetland wildlife and moderately well suited to habitat for woodland and openland wildlife. It can provide suitable habitat for ducks, quail, turkey, dove, deer, rabbit, and numerous other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Oaks and other mast-producing trees are especially important to such wildlife species as deer and turkey. Shallow ponds can be constructed to provide open water areas for waterfowl and furbearers.

The capability subclass is IVw. The woodland ordination symbol is 6W.

Gt—Guyton silt loam. This level, poorly drained soil is on broad flats and in depressions on terraces. It is subject to rare flooding. Areas are irregular in shape and range from 10 to 200 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 18 inches thick. The next 12 inches is gray, mottled silty clay loam and light brownish gray silt loam. The subsoil to a depth of about 60 inches is gray, mottled silty clay loam in the upper part and gray, mottled clay loam in the lower part. In some places the soil is occasionally flooded. In other places the subsoil has less sand.

Included with this soil in mapping are a few small areas of Prentiss and Satsuma soils. The included soils are higher on the landscape than the Guyton soil. They are brownish throughout. Prentiss soils have a fragipan. Included soils make up about 10 percent of the map unit.

The Guyton soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow rate. A seasonal high water table is within a depth of about 1.5 feet from December through May. The flooding can occur during any part of the year but occurs mainly in winter and spring. The shrink-swell potential is low.

Most of the acreage is used as woodland. A small acreage is used as pasture, as cropland, for urban development, or for recreational development.

This soil is moderately well suited to loblolly pine, slash pine, water oak, cherrybark oak, willow oak, shumard oak, green ash, swamp chestnut oak, and sweetgum. The main concerns in producing and harvesting timber are compaction, a severe equipment limitation, a severe hazard of windthrow, and moderate seedling mortality caused by wetness. Competition from understory plants also can be a problem. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Planting or harvesting trees during dry periods helps to prevent rutting and compaction. Conventional methods of harvesting timber cannot be used during rainy periods, generally from December through May. Bedding and providing surface drainage can improve the survival rate of pine seedlings.

This soil is moderately well suited to pasture. The main limitations are the low fertility and the wetness. Excess surface water can be removed by field ditches and suitable outlets. Suitable pasture plants are common bermudagrass, bahiagrass, white clover, and wild winterpea. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to crops, mainly soybeans and vegetables. The main limitations are the wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone. The soil is friable and can be easily worked; however, the surface layer tends to crust during dry periods. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which can overcome the low fertility and the high levels of exchangeable aluminum.

This soil is poorly suited to urban development. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities. The main limitations are the wetness, the slow permeability, low strength on sites for roads, and the flooding. Excess water can be removed by shallow ditches and proper grading. Protection from flooding can be provided by levees and diversions. Selection of adapted vegetation for planting is critical in areas used for lawns, shrubs, trees, and vegetable gardens. The design of local roads and streets can offset the limited ability of the soil to support a load. Slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. If flooding is controlled, lagoons or self-contained disposal units can be used to dispose of sewage.

Mainly because of the wetness and the flooding, this soil is poorly suited to recreational development. A good drainage system and flood-control measures can improve the suitability for intensive recreational areas, such as playgrounds and campsites.

This soil is well suited to habitat for wetland wildlife and moderately well suited to habitat for openland and woodland wildlife. The soil can provide habitat for ducks, quail, turkey, dove, deer, rabbit, and other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Oak, hickory, and other mast-producing trees are especially important to deer and turkey. Constructing small ponds can improve the habitat for waterfowl and furbearers.

The capability subclass is IIIw. The woodland ordination symbol is 8W.

Gy—Guyton silt loam, occasionally flooded. This level, poorly drained soil is in depressions on terraces. Areas are irregular in shape and are 20 to several hundred acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 12 inches thick. The next 13 inches is gray, mottled silty clay loam and light brownish gray silt loam. The subsoil to a depth of about 60 inches is mottled silty clay loam. It is grayish brown in the upper part and gray in the lower part. In some places the soil is only rarely flooded. In other places the subsoil has more sand.

Included with this soil in mapping are a few small areas of Prentiss and Satsuma soils. The included soils are in the higher landscape positions. They have a subsoil that is brownish in the upper part. Prentiss soils have a fragipan. Included soils make up about 15 percent of the map unit.

The Guyton soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow rate. The soil is flooded for very brief to long periods. The flooding occurs mainly in winter and spring, but it can occur during any part of the year. A seasonal high water table is within a depth of about 1.5 feet from December through May. The shrink-swell potential is low.

Most of the acreage is used as woodland or pasture. A small acreage is used as cropland, for urban development, or for recreational development.

This soil is moderately well suited to loblolly pine, slash pine, water oak, shumard oak, cherrybark oak, swamp chestnut oak, green ash, and sweetgum. The main concerns in producing and harvesting timber are compaction, a severe equipment limitation, and moderate seedling mortality caused by the flooding and wetness. Windthrow and plant competition also can be problems. Planting or harvesting trees during dry periods helps to prevent compaction and rutting. Conventional methods of harvesting timber cannot be used during rainy periods, generally from December through May. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Bedding and providing surface drainage can improve the survival rate of pine seedlings.

Mainly because of the wetness, the low fertility, and the flooding, this soil is poorly suited to pasture. Suitable pasture plants are common bermudagrass, bahiagrass, white clover, vetch, and singletary pea. The wetness limits the choice of plants and the period of grazing. Excess surface water can be removed by field ditches and suitable outlets. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is poorly suited to cultivated crops. Vegetables and soybeans, however, are grown. The main limitations are the flooding, the wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone. The flooding can be controlled by major flood-control structures, such as levees. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. The soil is friable and can be easily kept in good tilth; however, the surface layer tends to crust during dry periods. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to fertilizer and lime, which help to overcome the low fertility and the high levels of exchangeable aluminum.

This soil is poorly suited to urban development. It is generally not suited to homesite development unless it is protected from flooding. The main limitations are the wetness, slow permeability, low strength on sites for roads, and the flooding. Drainage and flood control improve the suitability for roads and building foundations. Excess water can be removed by shallow ditches and proper grading. Flooding can be controlled by levees and diversions. Roads and streets can be constructed above the expected level of flooding. The design of the roads can offset the limited ability of the soil to support a load. Ring levees can be constructed around urban areas to protect buildings from overflow. Selection of adapted vegetation for planting is critical in areas used for lawns, shrubs, trees, and vegetable gardens. The slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. If flooding is controlled, lagoons and self-contained disposal units can be used to dispose of sewage.

Mainly because of the flooding and the wetness, this soil is poorly suited to recreational uses. Major flood-control structures can protect the soil from overflow. A good drainage system can improve the suitability for most recreational uses.

This soil provides habitat for ducks, quail, turkey, dove, deer, rabbit, and numerous other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. The habitat for ducks and most furbearers can be improved by constructing shallow ponds.

The capability subclass is IVw. The woodland ordination symbol is 8W.

Ke—Kenefick fine sandy loam, 1 to 3 percent slopes. This very gently sloping, well drained soil is on ridges on broad or narrow terraces. It is subject to rare flooding. Areas range from about 5 to 150 acres in size.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsoil extends to a depth of about 44 inches. It is yellowish red sandy clay loam in the upper part and strong brown sandy loam in the lower part. The substratum to a depth of about 60 inches is brownish yellow loamy sand. In places slopes are 4 or 5 percent.

Included with this soil in mapping are a few small areas of Fluker and Prentiss soils. The included soils are in the lower landscape positions. They have a fragipan. Fluker soils are somewhat poorly drained, and Prentiss soils are moderately well drained. In places small sand and gravel pits are also included in mapping. These pits are identified on the soil maps by a special symbol. Included areas make up about 10 percent of the map unit.

The Kenefick soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a slow rate. The water table is below a depth of 6 feet. Roots penetrate this soil easily. The surface layer dries quickly after rains. The effective rooting depth is 60 inches or more. The shrink-swell potential is moderate in the subsoil.

Most of the acreage is used as pasture or woodland. A small acreage is used for cultivated crops or homesite development. In places sand and gravel are mined.

This soil is well suited to loblolly pine, slash pine, sweetgum, and southern red oak. Few limitations affect woodland use and management. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Conventional methods of harvesting timber generally can be used throughout the year.

This soil is well suited to pasture. The low fertility is the main limitation. Erosion is a hazard in tilled areas until pasture grasses are established. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ball clover, crimson clover, and arrowleaf clover. Proper stocking rates and pasture rotation help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope if possible. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly corn, soybeans, and vegetables. Erosion is a hazard. The main limitations are the low fertility, droughtiness, and the potentially toxic levels of exchangeable aluminum in the root zone. The surface layer is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Crops suffer from a shortage of moisture during dry periods in some years. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to conserve moisture, maintain fertility and tilth, and control erosion. Contour farming and stripcropping help to control erosion. Most crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of exchangeable aluminum. Where adequate water is available, supplemental irrigation can prevent crop damage during dry periods.

This soil is moderately well suited to homesite development and other urban uses. It has moderate limitations affecting sites for dwellings and local roads and streets and severe limitations affecting most sanitary facilities. Moderate permeability limits septic tank absorption fields. It can be overcome by increasing the size of the absorption areas. The moderate shrink-swell potential in the subsoil is a limitation affecting dwellings, local roads and streets, and small commercial buildings. It can be overcome by using the proper engineering designs and backfilling with material that has low shrink-swell potential. Mulching, applying fertilizer, and irrigating can help to establish lawn grasses and other small-seeded plants. Sand and gravel are available in areas of this soil, but excess fines are a problem in places.

This soil is well suited to intensive recreational purposes. The moderate permeability in the subsoil is the main limitation. The slope is a minor limitation on playgrounds. If possible, a plant cover should be maintained to control erosion. The plant cover can be maintained by controlling traffic.

This soil is well suited to habitat for rabbits, quail, dove, deer, turkey, and numerous nongame birds. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Timber should be selectively harvested so that large den and mast-producing trees remain.

The capability subclass is IIe. The woodland ordination symbol is 11A.

Lt—Lytle silt loam, 1 to 3 percent slopes. This very gently sloping, well drained soil is on the tops of ridges in the uplands. Areas range from about 20 to 200 acres in size.

Typically, the surface layer is brown silt loam about 3 inches thick. The subsurface layer is yellowish brown silt loam about 3 inches thick. The subsoil extends to a depth of about 60 inches. It is yellowish red silty clay loam in the upper part, strong brown loam in the next part, and yellowish red sandy clay loam and red sandy clay in the lower part. In places the subsoil has a bisequum.

Included with this soil in mapping are a few small areas of Tangi soils. Tangi soils are in landscape positions similar to those of the Lytle soil. They have a fragipan. They make up about 10 percent of the map unit.

The Lytle soil is characterized by low fertility and moderately high or high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. The water table is at a depth of more than 6 feet. The soil dries quickly after rains. The shrink-swell potential is low in the upper part of the soil and moderate in the lower part of the subsoil.

Most of the acreage is used as woodland or pasture. A small acreage is used as cropland, for homesite development, or for intensive recreational purposes.

This soil is well suited to loblolly pine, slash pine, longleaf pine, sweetgum, southern red oak, and green ash. Few limitations affect timber production and harvesting. Plant competition can be a concern. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees.

This soil is well suited to pasture. The main limitations are the low fertility and the hazard of erosion. The main suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, ball clover, crimson clover, and arrowleaf clover. Proper stocking rates and pasture rotation help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope if possible. Periodic mowing and clipping helps to maintain uniform plant growth and helps to prevent selective grazing. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops. The main limitations are the low fertility, the potentially toxic levels of exchangeable aluminum, and the hazard of erosion. Corn and soybeans are the main crops. Runoff and erosion can be controlled by plowing in the fall, applying fertilizer, and seeding a cover crop. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and control runoff and erosion. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Most crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of exchangeable aluminum in the root zone.

This soil is moderately well suited to urban development. It has slight limitations affecting building site development and moderate or severe limitations affecting sites for local roads and streets and most sanitary facilities. Low strength is a limitation on sites for local roads and streets. The design of the roads can offset the limited ability of the soil to support a load. Seepage is a hazard on sites for sanitary landfills and sewage lagoons. It can be overcome by coating the bottom and sides of the sewage lagoons and sanitary landfills with impervious material. The moderate permeability increases the possibility that septic tank absorption fields will fail. It can be overcome by increasing the size of the absorption field. A plant cover can be established and maintained by properly applying fertilizer, seeding, mulching, and land shaping.

This soil is well suited to recreational development. Few limitations affect most recreational uses. Erosion can be a hazard on playgrounds. Erosion and sedimentation can be controlled by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic.

This soil is well suited to habitat for deer, squirrel, rabbit, turkey, dove, quail, and numerous other nongame birds and animals. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants.

The capability subclass is IIe. The woodland ordination symbol is 11A.

Ly—Lytle silt loam, 3 to 8 percent slopes. This gently sloping to strongly sloping, well drained soil is on side slopes in the uplands. Areas range from about 25 to 150 acres in size.

Typically, the surface layer is brown silt loam about 5 inches thick. Between the depths of about 5 and 30 inches, the subsoil is yellowish red silty clay loam. Between the depths of about 30 and 60 inches, it is reddish brown sandy clay loam in the upper part and red sandy clay loam in the lower part. In some places the surface layer is less than 3 inches thick. In other places the subsoil has a bisequum.

Included with this soil in mapping are a few small areas of Tangi soils. Tangi soils are in landscape positions similar to those of the Lytle soil. They have a fragipan. They make up about 10 percent of the map unit.

The Lytle soil is characterized by low fertility and moderately high or high levels of exchangeable aluminum that are potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. The shrink-swell potential is low in the upper part of the soil and moderate in the lower part of the subsoil. The water table is at a depth of more than 6 feet.

Most areas are used as woodland. A few areas are used as cropland, as pasture, or for homesite development.

This soil is well suited to loblolly pine, slash pine, longleaf pine, sweetgum, southern red oak, and green ash. Few limitations affect woodland management. Plant competition can be a problem. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees.

This soil is well suited to pasture. The main limitations are the slope and the low fertility. The main suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ryegrass, wheat, oats, ball clover, and crimson clover. A seedbed should be prepared on the contour or across the slope if possible. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to crops. The main limitations are the slope, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone. The main crops are corn, soybeans, grain sorghum, and vegetables. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Conservation practices, such as proper management of crop residue, stripcropping, contour farming, and terraces, help to control erosion. Most crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the moderately high or high levels of exchangeable aluminum.

This soil is moderately well suited to urban uses. The main limitations are the slope, the moderate permeability, and low strength on sites for roads. Septic tank absorption fields can be enlarged to overcome the moderate permeability. Seepage is a hazard on sites for sanitary landfills and sewage lagoons. It can be overcome by coating the bottom and sides of the sanitary landfills and sewage lagoons with impervious material. Revegetating disturbed areas around construction sites as soon as possible helps to control erosion. The design of the roads can offset the limited ability of the soil to support a load.

This soil is moderately well suited to most intensive recreational purposes. It has severe limitations affecting playgrounds because of the slope. Erosion and sedimentation can be controlled by maintaining an adequate plant cover.

This soil is well suited to habitat for openland and woodland wildlife. Wooded areas provide habitat for white-tailed deer, turkey, quail, squirrel, and many nongame birds and animals. Openland can provide habitat for rabbit, quail, and many nongame species. Habitat for openland wildlife can be improved by establishing small plots of the appropriate vegetation. Habitat for woodland wildlife can be improved by promoting the growth of oaks and other mast-producing trees.

The capability subclass is IIIe. The woodland ordination symbol is 11A.

Mt—Myatt fine sandy loam. This level, poorly drained soil is in broad depressional areas and along small drainageways on terraces. It is subject to rare flooding. Areas are irregular in shape and range from 20 to 500 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is dark grayish brown fine sandy loam about 5 inches thick. The subsurface layer is gray fine sandy loam about 4 inches thick. The subsoil extends to a depth of about 43 inches. It is gray, mottled loam in the upper part and grayish brown, mottled sandy clay loam in the lower part. The substratum to a depth of about 60 inches is gray, mottled sandy loam. In some places the soil is occasionally flooded. In other places the subsoil has less sand.

Included with this soil in mapping are a few small areas of Satsuma and Stough soils. The included soils are higher on the landscape than the Myatt soil and are somewhat poorly drained. They have a brownish subsoil. They make up about 15 percent of the map unit.

The Myatt soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow or very slow rate. The surface layer remains wet for long periods after heavy rains. A seasonal high water table ranges from near the surface to about 1 foot below from November through April. The flooding occurs mainly in winter and spring. The shrink-swell potential is low.

Most of the acreage is used as woodland. A small acreage is used as pasture, for truck crops, for homesite development, or for recreational development.

This soil is moderately well suited to loblolly pine, slash pine, sweetgum, water oak, southern red oak, white oak, American sycamore, blackgum, and shumard oak. Management problems, however, are severe. The main concerns in producing and harvesting timber are compaction, an equipment limitation, windthrow, and seedling mortality caused by wetness. Plant competition is also a common problem. Planting or harvesting trees during dry periods helps to prevent compaction and rutting. Conventional methods of harvesting timber generally can be used, except during some rainy periods from November through April. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees. Trees commonly are subject to windthrow during periods when the soil is excessively wet and winds are strong. Bedding and providing surface drainage can improve the survival rate of seedlings.

This soil is moderately well suited to pasture. The main limitations are the low fertility and the wetness. Suitable pasture plants are bahiagrass, common bermudagrass, white clover, wild winterpea, and vetch. Excess water can be removed by field ditches and suitable outlets. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Generally, applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly vegetables. The wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum are the main limitations. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Returning all crop residue to the soil and using a grass-legume mixture help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the high levels of aluminum in the root zone.

This soil is poorly suited to urban development. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities. The main limitations are the wetness, low strength on sites for roads, moderately slow permeability, and the flooding. A drainage system is needed if roads and building foundations are constructed. It also is needed in areas used for most lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetable gardens. Excess water can be removed by shallow ditches and proper grading. In areas not protected from flooding by levees, buildings and roads can be constructed above the normal level of flooding. The moderately slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. If flooding is controlled, lagoons or self-contained disposal units can be used to dispose of sewage.

Mainly because of the flooding and the wetness, this soil is poorly suited to recreational uses. A good drainage system can improve the suitability for most recreational uses. Flood control improves the suitability of the soil for campsites.

This soil is well suited to habitat for duck, quail, turkey, dove, deer, squirrel, rabbit, and numerous other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Controlled burning in areas of pine can increase the amount of browse palatable to deer and the number of seed-producing plants available to quail, turkey, and other nongame birds.

The capability subclass is IIIw. The woodland ordination symbol is 9W.

My—Myatt fine sandy loam, occasionally flooded. This level, poorly drained soil is in broad depressional areas and along small drainageways on terraces. Areas are irregular in shape and range from about 20 to several hundred acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is dark gray fine sandy loam about 6 inches thick. The subsurface layer is about 8 inches thick. It is gray sandy loam. The subsoil to a depth of about 60 inches is light brownish gray and mottled. It is sandy clay loam in the upper part and sandy loam in the lower part. In some places the soil is only rarely flooded. In other places the subsoil has less sand.

Included with this soil in mapping are a few small areas of Satsuma and Stough soils. The included soils are higher on the landscape than the Myatt soil and are somewhat poorly drained. They have a brownish subsoil. They make up about 10 percent of the map unit.

The Myatt soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow or very slow rate. The soil dries slowly after heavy rains. A seasonal high water table ranges from near the surface to about 1 foot below from November through April. This soil is subject to flooding for brief periods. The flooding occurs mainly in winter and spring. The shrink-swell potential is low.

Most of the acreage is used as woodland or pasture. A small acreage is used for crops, homesite development, or intensive recreational purposes, such as playgrounds and campsites.

This soil is moderately well suited to loblolly pine, slash pine, sweetgum, water oak, southern red oak, white oak, American sycamore, blackgum, and shumard oak. It has severe limitations affecting woodland use and management. The main concerns in producing and harvesting timber are compaction, a severe equipment limitation, and severe seedling mortality caused by the flooding and wetness. Planting or harvesting trees during dry periods helps to prevent rutting and compaction. Conventional methods of harvesting timber generally can be used, except during some rainy periods from November through April. Trees commonly are subject to windthrow during periods when the soil is excessively wet and winds are strong. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees.

This soil is moderately well suited to pasture. The main limitations are the low fertility and the wetness. Flooding is a hazard. Suitable pasture plants are common bermudagrass, bahiagrass, white clover, and wild winterpea. The wetness limits the choice of plants and the period of grazing. Excess surface water can be removed by field ditches and suitable outlets. Major flood-control structures can provide protection from flooding. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

Mainly because of the wetness, the flooding, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone, this soil is poorly suited to cultivated crops. Drainage and flood control improve the suitability for crops. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the high levels of exchangeable aluminum in the root zone.

This soil is poorly suited to most urban uses. Unless protected from flooding, the soil is generally not suited to dwellings. It has severe limitations affecting sites for buildings, local roads and streets, and most sanitary facilities mainly because of the flooding, the wetness, low strength on sites for roads, and moderately slow permeability. A drainage system can improve the suitability of the soil for roads and buildings. Major flood-control structures can help to control flooding. Excess water can be removed by shallow ditches and proper grading. Roads and streets can be constructed above the expected level of flooding. The design of the roads can offset the limited ability of the soil to support a load. Selection of adapted vegetation for planting is critical in areas used for lawns, shrubs, trees, and vegetable gardens. The moderately slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. If flooding is controlled, lagoons or self-contained disposal units can be used to dispose of sewage.

Mainly because of the wetness, this soil is poorly suited to recreational development. Flooding is a hazard on campsites. A good drainage system can improve the suitability for most recreational uses.

This soil is well suited to habitat for wetland wildlife and moderately well suited to habitat for openland wildlife and woodland wildlife. It can provide habitat for ducks, quail, turkey, dove, deer, rabbit, and numerous other small furbearers. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. The habitat for waterfowl and furbearers can be improved by constructing shallow ponds.

The capability subclass is IVw. The woodland ordination symbol is 9W.

OG—Ouachita, Ochlockonee, and Guyton soils, frequently flooded. These gently undulating and level soils are on flood plains along the major streams. The three soils were not mapped separately because of the frequent flooding, which limits the use and management. The Ouachita and Ochlockonee soils are well drained and are on low ridges. The Guyton soil is poorly drained and is in low landscape positions. Areas range from about 200 to several thousand acres in size. They are about 35 percent Ouachita soil, 30 percent Ochlockonee soil, and 20 percent Guyton soil. Most mapped areas contain all three soils, but some areas contain only one or two. Slopes are 1 to 3 percent on the ridges and are 0 to 1 percent in the low areas between the ridges.

Typically, the Ouachita soil has a surface layer of brown silt loam about 4 inches thick. The subsoil to a depth of about 60 inches is dark yellowish brown silt loam.

The Ouachita soil is characterized by low fertility and moderately high levels of exchangeable aluminum that are potentially toxic to crops. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. This soil is subject to very brief or brief periods of flooding. The flooding can occur during any part of the year but is more common in winter and spring. A seasonal high water table is at a depth of 6 feet or more throughout the year. The shrink-swell potential is low.

Typically, the Ochlockonee soil has a surface layer of brown silt loam about 5 inches thick. The underlying material extends to a depth of about 60 inches. It is dark yellowish brown sandy loam in the upper part; yellowish brown, stratified silt loam and light yellowish brown sandy loam in the next part; and yellowish brown fine sandy loam in the lower part.

The Ochlockonee soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to crops. Water and air move through the surface layer and the lower part of the profile at a moderately rapid rate and through the middle part of the profile at a moderate rate. Water runs off the surface at a slow rate. This soil is subject to very brief periods of flooding. The flooding can occur during any part of the year but is more common in winter and spring. A seasonal high water table is at a depth of 3 to 5 feet from December through April. Plants are damaged by a shortage of water during dry periods in the summer and fall of some years. The shrink-swell potential is low.

Typically, the Guyton soil has a surface layer of dark grayish brown silt loam about 4 inches thick. The subsurface layer is light brownish gray, mottled silt loam about 14 inches thick. The next 14 inches is light brownish gray silt loam and gray, mottled silty clay loam. The subsoil extends to a depth of about 53 inches. It is gray, mottled silty clay loam in the upper part and light brownish gray, mottled clay loam in the lower part. The substratum to a depth of about 60 inches is light brownish gray, mottled clay loam. In some places the surface layer is loam, fine sandy loam, or sandy loam. In other places the soil has these textures throughout.

The Guyton soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a slow rate. Water runs off the surface at a slow rate. A seasonal high water table is within a depth of about 1.5 feet from December through May. This soil is subject to very brief to long periods of flooding. The flooding can occur during any part of the year but is more common in winter and spring. The surface layer is wet for long periods in winter and spring. The shrink-swell potential is low.

Included with these soils in mapping are a few small areas of Dexter, Fluker, Kenefick, and Prentiss soils. The included soils are on terraces. They have a distinct subsoil. Fluker and Prentiss soils have a fragipan. Included soils make up about 15 percent of the map unit.

Most areas of this map unit are used as woodland. A small acreage is used as pasture.

The Ouachita and Ochlockonee soils are moderately well suited to loblolly pine, Nuttall oak, cherrybark oak, water oak, shumard oak, sweetgum, and eastern cottonwood. The Guyton soil is moderately well suited to loblolly pine, sweetgum, green ash, Nuttall oak, water oak, and willow oak. Managing woodland is difficult. The main concerns in producing and harvesting timber are compaction, a moderate or severe equipment limitation, and moderate or severe seedling mortality caused by wetness in the Guyton soil and flooding on all of the soils. Plant competition is an additional problem on all of the soils, and windthrow is a hazard on the Guyton soil. Conventional methods of harvesting timber cannot be used during rainy periods and periods of flooding, generally from December through May. Logging during the drier periods helps to prevent compaction and rutting.

These soils are poorly suited to pasture because of the low fertility and the flooding. In areas of the Guyton soil, the wetness limits the use of equipment. Suitable pasture plants are common bermudagrass, bahiagrass, singletary pea, and vetch. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Because of the frequent flooding, adding large amounts of fertilizer and lime to the soils generally is not practical.

These soils generally are not suited to cultivated crops, urban uses, or intensive recreational purposes, such as playgrounds and campsites. Flooding is a severe hazard.

These soils are well suited to habitat for ducks, turkey, deer, squirrel, rabbit, and numerous other small furbearers (fig. 5). The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. The habitat for waterfowl can be improved by constructing shallow ponds.

The capability subclass is Vw. The woodland ordination symbol assigned to the Ouachita and Ochlockonee soils is 11W, and that assigned to the Guyton soil is 6W.

PA—Pits-Arents complex, 0 to 5 percent slopes. This map unit consists open excavations from which sand, gravel, or loamy material has been removed and the piles of soil material that was left beside the pits after the sand, gravel, or loamy material was removed. The Pits and Arents occur as areas so closely intermingled that mapping them separately was not

Figure 5.—Wildlife habitat in an area of bottom-land hardwoods on Ouachita, Ochlockonee, and Guyton soils, frequently flooded.

practical at the scale selected for mapping. Areas range from about 5 to several hundred acres in size. The Pits make up about 65 percent of the map unit, and the Arents make up about 25 percent.

Gravel pits are open excavations from which gravel has been mined. Most of these pits are on terraces along the Amite River in the southern and central parts of the parish. Sand pits are areas from which only sand has been removed. Borrow pits are areas from which soil material and the underlying material have been removed for use in the construction of roads and as fill.

The floor and walls of most pits consist of exposed geologic strata. This material is characterized by low fertility and generally is droughty. Pits generally support little or no vegetation, but a few willow trees and annual weeds grow on the floor in some areas. During wet periods, some pits are subject to ponding of long duration.

Typically, the Arents consist of stratified and mixed, sandy and loamy material. These soils occur as spoil banks or piles of soil material left beside or in the pits.

The Arents are characterized by low fertility. A seasonal high water table is below a depth of 6 feet in most areas. The available water capacity and permeability vary within short distances. In many places the soils are droughty.

Included in this unit in mapping are a few small undisturbed areas of Dexter, Guyton, Kenefick, and Ochlockonee soils. Unlike the Arents, these soils have an orderly sequence of soil layers. They make up about 10 percent of the map unit.

Most areas of this map unit are idle or are used only as extensive recreational areas and as wildlife habitat. The natural vegetation is mainly annual and perennial grasses and forbs. Scrub pine grows in some areas of the Arents, and willow trees grow in many of the pits.

This map unit is poorly suited to cropland, pasture, woodland, and urban development. The uneven topography, restricted drainage, the ponding, and the hazard of erosion are the main limitations. Pits require major reclamation before they can be used for crops or pasture. Planting common bermudagrass or pine trees on the Arents can help to control erosion, but the trees and grasses grow slowly because of the low fertility and droughtiness. Water collects in some of the pits. These pits provide habitat for ducks.

No capability subclass or woodland ordination symbol is assigned.

Pr—Prentiss fine sandy loam, 0 to 2 percent slopes. This nearly level, moderately well drained soil is on ridges on broad terraces. Areas range from about 5 to 50 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 4 inches thick. The subsoil to a depth of about 23 inches is friable loam. It is yellowish brown in the upper part and yellowish brown and mottled in the lower part. The subsoil between depths of 23 and 60 inches is a firm and brittle fragipan. It is mottled yellowish brown and gray loam in the upper part; yellowish brown, mottled sandy loam in the next part; and light yellowish brown, mottled loam in the lower part.

Included with this soil in mapping are a few small areas of Fluker, Guyton, and Stough soils. The included soils are lower on the landscape than the Prentiss soil. Fluker and Stough soils are somewhat poorly drained, and Guyton soils are poorly drained. Included soils make up about 10 percent of the map unit.

The Prentiss soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through the surface layer and the upper part of the subsoil at a moderate rate and through the lower part of the subsoil at a moderately slow rate. Water runs off the surface at a medium rate. Water is perched above the fragipan at a depth of about 2.0 to 2.5 feet from January through March. The effective rooting depth and the available water capacity are restricted by the fragipan. Plants are damaged by a shortage of water during dry periods in the summer and fall of some years. The shrink-swell potential is low.

Most of the acreage is used as woodland or pasture. A small acreage is used for crops or homesite development.

This soil is well suited to loblolly pine, slash pine, shortleaf pine, sweetgum, cherrybark oak, and white oak. Few limitations affect woodland use and management. Timber production is limited somewhat by droughtiness and the moderately shallow rooting depth. The hazard of windthrow is moderate. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Conventional planting and harvesting equipment generally can be used throughout the year. Logging during the drier periods helps to prevent compaction.

This soil is well suited to pasture. The main limitation is the low fertility. Droughtiness in late summer limits forage production in some years. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, ball clover, crimson clover, and ryegrass. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly corn, soybeans, and vegetables. The main limitations are wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone. The fragipan limits the rooting depth and the available water capacity. Most crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of exchangeable aluminum. This soil generally is wet in spring; however, crops are damaged by the lack of water during dry periods in the summer and fall of some years. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Maintaining crop residue on or near the surface helps to conserve moisture and maintain tilth.

This soil is moderately well suited to rural homesite development and to urban development. It has moderate or severe limitations affecting building sites and sites for local roads and streets and most sanitary facilities. The wetness and moderately slow permeability are the main limitations. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. Mulching, applying fertilizer, and irrigating help to establish lawn grasses and other small-seeded plants. The moderately slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. Lagoons or self-contained disposal units can be used to dispose of sewage.

This soil is moderately well suited to recreational development. The main limitations are the wetness and the moderately slow permeability. A good drainage system can improve the suitability for most recreational uses. A plant cover can be maintained by controlling traffic and by adding fertilizer and lime. In the late summer and fall of most years, the soil can be somewhat droughty on sites for golf fairways. Where adequate water is available, irrigating golf fairways can ensure a good grass cover.

This soil is well suited to habitat for rabbits, squirrel, quail, dove, deer, and turkey. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. In wooded areas, prescribed burning that is rotated among several tracts of land can increase the amount of browse palatable to deer and the number of seed-producing plants available to quail and turkey.

The capability subclass is IIw. The woodland ordination symbol is 9A.

Rn—Ruston fine sandy loam, 1 to 3 percent slopes. This very gently sloping, well drained soil is on the tops of ridges in the uplands. Areas range from about 20 to several hundred acres in size.

Typically, the surface layer is brown fine sandy loam about 5 inches thick. The subsurface layer is yellowish brown fine sandy loam about 4 inches thick. The subsoil to a depth of about 40 inches is yellowish red sandy clay loam. The next 10 inches is yellowish red sandy clay loam and strong brown sandy loam. The lower part of the subsoil to a depth of about 60 inches is red sandy clay loam. In places the subsoil does not have a bisequum.

Included with this soil in mapping are a few small areas of Tangi soils. Tangi soils are in landscape positions similar to those of the Ruston soil. They have a fragipan. They make up about 10 percent of the map unit.

The Ruston soil is characterized by low fertility and moderately high or high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a medium rate. The high water table is below a depth of 6 feet. The soil dries quickly after rains. The shrink-swell potential is low.

Most of the acreage is used as woodland or pasture. A small acreage is used as cropland, for homesite development, or for intensive recreational purposes, such as playgrounds and campsites.

This soil is well suited to loblolly pine, slash pine, longleaf pine, southern red oak, sweetgum, and hickory. Few limitations affect timber production. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees.

This soil is well suited to pasture. The main concerns are the low fertility and a moderate hazard of erosion. Suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, ball clover, crimson clover, and arrowleaf clover. Proper stocking rates and pasture rotation help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope if possible. Periodic mowing and clipping help to maintain uniform plant growth and prevent selective grazing. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly corn and soybeans. The main limitations are the hazard of erosion, the low fertility, and the potentially toxic levels of exchangeable aluminum. Runoff and erosion can be controlled by plowing in the fall, applying fertilizer, and seeding a cover crop. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and control runoff and erosion. Most crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of aluminum in the root zone.

This soil is well suited to homesite development and urban development. The main limitations are low strength on sites for local roads and streets and moderate permeability. The design of the roads can offset the limited ability of the soil to support a load. Seepage is a hazard on sites for sewage lagoons. The moderate permeability increases the possibility that septic tank absorption fields will fail. It can be overcome by increasing the size of the absorption area.

This soil is well suited to recreational development. Few limitations affect most recreational uses. Erosion can be a hazard on playgrounds. Erosion and sedimentation can be controlled by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic.

This soil is well suited to habitat for deer, squirrel, rabbit, turkey, dove, quail, and numerous other nongame birds and animals. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants.

The capability subclass is IIe. The woodland ordination symbol is 10A.

RS—Ruston-Smithdale association, rolling. These rolling, well drained soils are on side slopes in the uplands. The soils were not mapped separately because of the slope and the shape of the areas, which limit the use and management. Areas are irregular in shape and range from about 20 to several hundred acres in size. They are about 60 percent Ruston soil and about 25 percent Smithdale soil. The Ruston soil has long, smooth slopes that range from 3 to 8 percent. The Smithdale soil has shorter and steeper slopes that range from 5 to 12 percent.

Typically, the Ruston soil has a surface layer of brown fine sandy loam about 4 inches thick. The subsurface layer is yellowish brown fine sandy loam about 11 inches thick. The subsoil to a depth of about 34 inches is yellowish red sandy clay loam. The next 14 inches is yellowish red loam and brown sandy loam. The lower part of the subsoil to a depth of about 60 inches is mottled sandy clay loam. It is red in the upper part and reddish brown in the lower part. In places the subsoil does not have a bisequum.

The Ruston soil is characterized by low fertility and moderately high or high levels of exchangeable aluminum that are potentially toxic to most crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a rapid rate. The soil dries quickly after rains. The high water table is below a depth of 6 feet. Roots penetrate this soil easily. The shrink-swell potential is low.

Typically, the Smithdale soil has a surface layer of brown fine sandy loam about 5 inches thick. The subsurface layer is yellowish brown sandy loam about 6 inches thick. The subsoil extends to a depth of about 60 inches. It is yellowish red and red sandy clay loam in the upper part and red sandy loam in the lower part. In places, slopes are 12 to 15 percent or the soil is eroded and the surface layer is less than 2 inches thick.

The Smithdale soil is characterized by low fertility and moderately high levels of exchangeable aluminum that are potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a rapid rate. The soil dries quickly after rains. The water table is below a depth of 6 feet. Roots penetrate this soil easily. The shrink-swell potential is low.

Included with these soils in mapping are a few small areas of Tangi soils. Tangi soils are on the upper parts of side slopes. They have a fragipan. They make up about 15 percent of the map unit.

Most areas of this map unit are used as woodland. A small acreage is used for pasture, homesite development, or recreational development.

The Ruston and Smithdale soils are well suited to loblolly pine, longleaf pine, slash pine, southern red oak, sweetgum, and hickory. Few limitations affect timber production. In some small areas, however, irregular slopes and gullies restrict the use of equipment. Conventional methods of harvesting timber generally can be used throughout the year.

These soils are well suited to pasture. The main concerns in managing pasture are a severe hazard of erosion, complex slopes, and the low fertility. The most suitable pasture plants are bahiagrass, improved bermudagrass, common bermudagrass, ball clover, crimson clover, arrowleaf clover, and ryegrass. Proper stocking rates and pasture rotation help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope if possible. Applications of fertilizer and lime can improve the production of grasses and legumes.

Mainly because of the low fertility, the potentially toxic levels of exchangeable aluminum, and the severe hazard of erosion, the Ruston soil is moderately well suited to cultivated crops and the Smithdale soil is poorly suited. Irregular slopes and gullies hinder tillage operations in some areas. Erosion-control practices include seeding early in fall, conservation tillage, and constructing terraces, diversions, and grassed waterways. These soils are friable and can be easily kept in good tilth. They can be worked throughout a wide range in moisture content. Most crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the moderately high or high levels of exchangeable aluminum in the root zone.

These soils are moderately well suited to urban development. The slope and low strength on sites for roads and streets are the main limitations. Seepage is a hazard affecting some sanitary facilities. The moderate permeability in the Ruston soil is a limitation affecting septic tank absorption fields. It can be overcome by enlarging the size of the absorption field. Preserving the existing plant cover during construction helps to control erosion. Only the part of the site that is used for construction should be disturbed. The design of roads and streets can offset the limited ability of the Ruston soil to support a load.

These soils are moderately well suited to recreational development. The slope is the main limitation. Erosion and sedimentation can be controlled by maintaining an adequate plant cover. The plant cover can be maintained by controlling traffic. Paths and trails can be established across the slope.

These soils are well suited to habitat for squirrel, rabbit, quail, dove, deer, turkey, and numerous other small nongame birds and animals. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Prescribed burning that is applied every 3 years and is rotated among several small tracts of land can increase the amount of browse palatable to deer and the number of seed-producing plants available to quail and turkey.

The Ruston soil is in capability subclass IIIe, and the Smithdale soil is in capability subclass IVe. The woodland ordination symbol for both soils is 10A.

Sa—Satsuma silt loam, 1 to 3 percent slopes. This very gently sloping, somewhat poorly drained soil is on broad, slightly convex ridges and on side slopes along drainageways on terraces. It is subject to rare flooding during unusually wet periods. Areas are irregular in shape and range from about 10 to 500 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 4 inches thick. The subsurface layer is brown silt loam about 4 inches thick. The next 5 inches is yellowish brown silt loam. The next 5 inches is yellowish brown, mottled silty clay loam and interfingers of light brownish gray silt loam. The subsoil to a depth of about 65 inches is yellowish brown, mottled loam. In places the soil has more sand throughout.

Included with this soil in mapping are few small areas of Dexter, Gilbert, Kenefick, and Myatt soils. Dexter and Kenefick soils are higher on the landscape than the Satsuma soil and are well drained. They have a reddish subsoil. Gilbert and Myatt soils are in depressions and along drainageways. They are poorly drained. They are grayish throughout. Included soils make up about 10 percent of the map unit.

The Satsuma soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Permeability is moderate in the upper part of the soil and slow in the lower part. Water runs off the surface at a medium rate. A seasonal high water table is at a depth of 1.0 to 2.5 feet from December through April. The shrink-swell potential is moderate in the subsoil. The flooding occurs mainly in winter and spring, but it can occur during any part of the year.

Most of the acreage is used as woodland or pasture. A few areas are used as cropland, for homesite development, or as extensive recreational areas.

This soil is well suited to sweetgum, loblolly pine, longleaf pine, southern red oak, green ash, water oak, shumard oak, and slash pine. The main limitations affecting timber production and harvesting are compaction and a moderate equipment limitation caused by wetness. Competition from understory plants is an additional concern. Conventional methods of harvesting timber generally can be used, except during some rainy periods from December through April. Using standard wheeled and tracked equipment when the soil is moist causes rutting and compaction. Puddling can occur when the soil is wet. Using low-pressure ground equipment or planting and harvesting only during dry periods help to minimize damage to the soil and maintain productivity.

This soil is well suited to pasture. The low fertility and a moderate hazard of erosion are the main limitations. A seedbed should be prepared on the contour or across the slope if possible. Suitable pasture plants are common bermudagrass, improved bermudagrass, bahiagrass, white clover, and vetch. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly corn, soybeans, and vegetables. The hazard of erosion, the wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum in the root zone are the main limitations. The soil is friable and can be easily worked; however, excessive cultivation can result in the formation of a tillage pan. This pan can be broken by subsoiling when the soil is dry. Minimizing tillage and returning all crop residue to the soil or regularly adding other organic material improve fertility and help to maintain tilth and the content of organic matter. Excess water can be removed by shallow ditches and suitable outlets. Most crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of exchangeable aluminum. The hazard of erosion can be reduced if fall grain or winter pasture grasses are seeded early and tillage and seeding are on the contour or across the slope.

Mainly because of the flooding, the wetness, the moderate shrink-swell potential, the moderate or slow permeability, and low strength on sites for roads, this soil is poorly suited to urban development. Seepage is a hazard on sites for sewage lagoons and sanitary landfills. Excess water can be removed by shallow ditches and proper grading. Preserving the existing plant cover during construction or revegetating disturbed areas around construction sites as soon as possible help to control erosion. The flooding can be controlled by levees. The design of local roads and streets can offset the limited ability of the soil to support a load. The moderate or slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. A plant cover can be established and maintained by properly applying fertilizer, seeding, mulching, and land shaping. Building foundations and footings can be designed to offset the effects of the moderate shrink-swell potential. The walls and floor of lagoons can be sealed with impervious material to prevent the contamination of ground water by effluent.

This soil is moderately well suited to recreational development. The main limitations are the wetness and the moderate or slow permeability. Flooding is a hazard on campsites. A good drainage system can improve the suitability for intensive recreational areas, such as playgrounds and campsites. Erosion can be a hazard on playgrounds. A plant cover can be maintained by applying fertilizer and controlling traffic.

This soil is well suited to habitat for deer, rabbit, quail, turkey, dove, and numerous nongame birds. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Controlled burning can increase the amount of browse palatable to deer and the number of seed-producing plants available to quail and turkey.

The capability subclass is IIe. The woodland ordination symbol is 11W.

SM—Smithdale fine sandy loam, 12 to 20 percent slopes. This moderately steep, well drained soil is on escarpments between uplands and flood plains and on side slopes along the major entrenched drainageways in the uplands. Because of the slope, which limits the use of the soil, the number of observations was fewer in areas of this soil than in other areas of the parish. The detail in mapping, however, is adequate for the expected use of the soil. Areas are irregular in shape and range from about 20 to 200 acres in size.

Typically, the surface layer is dark grayish brown fine sandy loam about 8 inches thick. The subsurface layer is yellowish brown sandy loam about 8 inches thick. The subsoil extends to a depth of about 60 inches. It is red sandy clay loam in the upper part; red, mottled sandy clay loam in the next part; and yellowish red sandy loam in the lower part. In some places slopes are 8 to 12 percent. In other places the surface layer and part of the subsoil have been removed by erosion.

Included with this soil in mapping are a few small areas of Ruston and Tangi soils. The included soils are on the less steep side slopes. Tangi soils have a fragipan in the subsoil. Ruston soils have a bisequum in the subsoil. Included soils make up about 10 percent of the map unit.

The Smithdale soil is characterized by low fertility and moderately high levels of exchangeable aluminum that are potentially toxic to crops. Water and air move through this soil at a moderate rate. Water runs off the surface at a rapid rate. A seasonal high water table is below a depth of 6 feet. The shrink-swell potential is low.

Most of the acreage is used as woodland or pasture. A small acreage is used for recreational development.

This soil is moderately well suited to loblolly pine, longleaf pine, slash pine, southern red oak, and sweetgum. The main concerns in producing and harvesting timber are a moderate equipment limitation and a moderate hazard of erosion caused by the slope. In places gullies also limit the use of equipment. Planting trees on the contour helps to control erosion. Constructing diversions and seeding cuts and fills help to control erosion on roads and landings. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees.

This soil is moderately well suited to pasture. The main management concerns are the low fertility and the hazard of erosion. In places the use of equipment is restricted by gullies. Suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, ball clover, and crimson clover. A seedbed should be prepared on the contour or across the slope if possible. Installing drop structures in grassed waterways helps to prevent gullying. Proper grazing management, weed control, and applications of fertilizer improve the production of forage.

This soil is generally not suited to cropland because of the slope and a severe hazard of erosion.

Mainly because of the slope, this soil is poorly suited to urban uses and intensive recreational purposes, such as playgrounds and campsites. Preserving the existing plant cover and revegetating disturbed areas around construction sites as soon as possible help to control erosion. The effluent from septic tank absorption fields can surface in downslope areas and thus create a health hazard. Self-contained disposal units can be used to dispose of sewage without the risk of seepage in downslope areas. Seepage is a hazard on sites for such sanitary facilities as sewage lagoons. Because of the slope, recreational uses are mainly limited to a few path and trails, which can be established across the slope.

This soil is well suited to habitat for deer, squirrel, rabbit, quail, turkey, and other nongame birds and animals. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Large mast-producing trees, such as oaks, should be excluded from harvesting if possible. Creating small openings in the wooded areas can encourage the growth of understory plants for wildlife.

The capability subclass is VIe. The woodland ordination symbol is 9R.

St—Stough fine sandy loam. This level, somewhat poorly drained soil is on broad, slightly convex ridges on terraces. It is subject to rare flooding. Areas range from about 20 to 40 acres in size. Slopes are 0 to 1 percent.

Typically, the surface layer is very dark grayish brown fine sandy loam about 5 inches thick. The subsoil to a depth of about 38 inches is light yellowish brown, mottled loam. The next part of the subsoil to a depth of about 60 inches is yellowish brown, mottled sandy clay loam. In places the soil has less sand.

Included with this soil in mapping are a few small areas of Myatt soils. Myatt soils are in depressions and are poorly drained. They are grayish throughout. They make up about 10 percent of the map unit.

The Stough soil is characterized by low fertility and moderately high levels of exchangeable aluminum that are potentially toxic to crops. Water and air move through this soil at a moderately slow rate. Water runs off the surface at a slow rate. A seasonal high water table is at a depth of about 1.0 to 1.5 feet from January through April. Flooding can occur during unusually wet periods, mainly in winter or spring. Plants generally are adversely affected by a shortage of water during dry periods in the summer and fall of most years. The soil dries quickly after rains. The shrink-swell potential is low.

Most of the acreage is used as woodland. A small acreage is used as pasture, as cropland, for homesite development, or for recreational development.

This soil is well suited to loblolly pine, slash pine, sweetgum, cherrybark oak, and water oak. The main concerns in producing and harvesting timber are compaction and an equipment limitation caused by wetness. Competition from understory plants can be severe. Trees commonly are subject to windthrow. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees. Planting or harvesting trees only during dry periods helps to prevent compaction and rutting. Conventional methods of harvesting timber generally can be used, except during some rainy periods from January through April.

This soil is well suited to pasture. The main limitations are the wetness and the low fertility. Droughtiness can be a problem in the late summer and fall of most years. Suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, white clover, wild winterpea, vetch, and tall fescue. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly corn, soybeans, and vegetables. The wetness, the low fertility, and the potentially toxic levels of exchangeable aluminum are the main limitations. The soil can be somewhat droughty in late summer and fall. It is friable and can be easily worked; however, the surface layer tends to crust. Proper row arrangement, field ditches, and suitable outlets help to remove excess surface water. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the moderately high levels of exchangeable aluminum.

Mainly because of the wetness, moderately slow permeability, and the flooding, this soil is poorly suited to urban development. The soil can be droughty in the late summer and fall of most years. A drainage system can improve the suitability of this soil for roads and building foundations. The flooding can be controlled by levees. The moderately slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. If the flooding is controlled, lagoons or self-contained disposal units can be used to dispose of sewage. A drainage system can improve the suitability of the soil for most lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetable gardens.

Mainly because of the wetness and the moderately slow permeability, this soil is moderately well suited to recreational development. Flooding is a hazard on campsites. A good drainage system can improve the suitability for most recreational uses. Flooding can be controlled, but major structures such as levees are needed. Droughtiness in summer and fall can limit the growth of grasses and ornamentals on lawns and golf fairways. Where adequate water is available, supplemental irrigation can reduce the droughtiness.

This soil is well suited to habitat for deer, rabbit, quail, turkey, dove, and numerous nongame birds. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Controlled burning in pine forests increases the amount of browse palatable to deer and the number of seed-producing plants available to quail and turkey.

The capability subclass is IIw. The woodland ordination symbol is 9W.

Ta—Tangi silt loam, 1 to 3 percent slopes. This very gently sloping, moderately well drained soil is on the narrow and broad tops of ridges in the uplands. Areas range from about 100 to 2,000 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The next 4 inches is yellowish brown silt loam. The subsoil extends to a depth of about 28 inches. It is yellowish brown, mottled silt loam in the upper part and strong brown, mottled silty clay loam in the lower part. Below this is a fragipan. The fragipan extends to a depth of about 60 inches. It is mottled yellowish brown, light brownish gray, pale brown, and strong brown silty clay loam in the upper part; yellowish red, mottled clay loam in the next part; and yellowish red, mottled clay in the lower part. In places the lower part of the subsoil has less sand and clay.

Included with this soil in mapping are a few small areas of Bude, Lytle, and Ruston soils. Bude soils are on terraces and are somewhat poorly drained. They have gray mottles in the upper part of the subsoil. Ruston and Lytle soils are in landscape positions similar to those of the Tangi soil. They do not have a fragipan. Included soils make up about 10 percent of the map unit.

The Tangi soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to crops. Permeability is moderate in the surface layer and the upper part of the subsoil and slow or very slow in the fragipan. Water runs off the surface at a medium rate. The soil dries quickly after rains. Water is perched above the fragipan at a depth of about 1.5 to 3.0 feet from December through April. The effective rooting depth is limited by the fragipan. Plants are damaged by a shortage of water during dry periods in the summer and fall of some years. The shrink-swell potential is moderate in the lower part of the subsoil.

Most of the acreage is used as woodland or pasture. A few areas are used as cropland, for homesite development, or for intensive recreational purposes, such as playgrounds and campsites.

This soil is well suited to loblolly pine, longleaf pine, slash pine, sweetgum, southern red oak, and green ash. Few limitations affect woodland use and management. Logging during the drier periods helps to prevent compaction. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees.

This soil is well suited to pasture. The main limitations are the low fertility and a moderate hazard of erosion. Suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, ball clover, crimson clover, arrowleaf clover, and ryegrass. A seedbed should be prepared on the contour or across the slope. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly soybeans and corn. The main limitations are the low fertility, the potentially toxic levels of exchangeable aluminum, and the moderate hazard of erosion. Runoff and erosion can be controlled by plowing in the fall, applying fertilizer, and seeding a cover crop. Contour farming and terraces also help to control erosion. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of aluminum in the root zone.

This soil is moderately well suited to urban development. The main limitations are low strength on sites for roads, the slow or very slow permeability in the fragipan, and the wetness. Seepage is a hazard affecting some sanitary facilities. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. Preserving the existing plant cover during construction helps to control erosion. The design of roads can offset the limited ability of the soil to support a load. The slow or very slow permeability in the fragipan and the high water table increase the possibility that septic tank absorption fields will fail. Self-contained disposal units can be used to dispose of sewage.

This soil is moderately well suited to recreational development. The wetness and the slow or very slow permeability are the main limitations. A good drainage system can improve the suitability for most intensive recreational purposes. Erosion is a hazard on playgrounds. Seeding or mulching cuts and fills helps to control erosion. A plant cover can be maintained by controlling traffic and applying fertilizer and lime.

This soil is well suited to habitat for deer, squirrel, rabbit, turkey, quail, dove, and other small birds and animals. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants.

The capability subclass is IIe. The woodland ordination symbol is 13A.

Tg—Tangi silt loam, 3 to 8 percent slopes. This moderately sloping, moderately well drained soil is on side slopes along drainageways. Areas range from about 100 to 2,000 acres in size.

Typically, the surface layer is dark brown silt loam about 5 inches thick. The subsoil extends to a depth of about 19 inches. It is yellowish brown silt loam in the upper part and yellowish brown, mottled silty clay loam in the lower part. The next 41 inches is a fragipan. The fragipan is yellowish brown, mottled sandy clay loam in the upper part; strong brown, mottled sandy clay loam in the next part; and yellowish red, mottled clay loam in the lower part. In places the fragipan has less sand and clay.

Included with this soil in mapping are a few small areas of Lytle, Ruston, and Smithdale soils. Lytle and Ruston soils are in landscape positions similar to those of the Tangi soil. They do not have a fragipan. Smithdale soils are on the steeper side slopes. They do not have a fragipan. Included soils make up about 10 percent of the map unit.

The Tangi soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to crops. Permeability is moderate in the surface layer and the upper part of the subsoil and slow or very slow in the fragipan. Water runs off the surface at a medium rate. Water is perched above the fragipan at a depth of about 1.5 to 3.0 feet from December through April. The effective rooting depth is restricted by the fragipan. Plants are damaged by a shortage of water during dry periods in the summer and fall of some years. The shrink-swell potential is moderate in the lower part of the subsoil.

Most of the acreage is used as woodland or pasture. A few areas are used as cropland, for homesite development, or for recreational development.

This soil is well suited to loblolly pine, longleaf pine, slash pine, sweetgum, southern red oak, and green ash. Few limitations affect woodland use and management. Logging during the drier periods helps to prevent compaction. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees.

This soil is well suited to pasture. The main limitations are the low fertility and the hazard of erosion. Suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, ball clover, crimson clover, arrowleaf clover, and ryegrass. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. A seedbed should be prepared on the contour or across the slope if possible. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly soybeans and corn. The main limitations are the low fertility, the potentially toxic levels of exchangeable aluminum, and the hazard of erosion. Practices that control erosion include early fall seeding, conservation tillage, and construction of terraces, diversions, and grassed waterways. The soil is friable and can be easily kept in good tilth. It can be worked throughout a wide range in moisture content. Returning all crop residue to the soil and including grasses, legumes, or a grass-legume mixture in the cropping system help to maintain fertility and tilth. Crops respond well to applications of fertilizer and lime, which help to overcome the low fertility and the high levels of exchangeable aluminum.

This soil is moderately well suited to urban development. The main limitations are the wetness, the slow or very slow permeability, and low strength on sites for roads. Seepage is a hazard affecting some sanitary facilities. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. The design of roads can offset the limited ability of the soil to support a load. The slow or very slow permeability and the high water table increase the possibility that septic tank absorption fields will fail. Self-contained disposal units can be used to dispose of sewage. Preserving the existing plant cover during construction helps to control erosion. The plant cover can be established and maintained by properly applying fertilizer, seeding, mulching, and land shaping.

This soil is moderately well suited to recreational development. The wetness and the slow or very slow permeability are moderate limitations affecting campsites, picnic areas, playgrounds, and path and trails. The slope and the hazard of erosion are severe limitations affecting playgrounds. Erosion and sedimentation can be controlled by maintaining an adequate plant cover. Cuts and fills should be seeded or mulched as soon as possible.

This soil is well suited to habitat for deer, squirrel, rabbit, turkey, quail, dove, and other small nongame birds and animals. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Oaks and other large, mast-producing trees should be excluded from harvesting if possible. Prescribed burning can increase the amount of browse palatable to deer and the number of seed-producing plants available to quail and turkey.

The capability subclass is IIIe. The woodland ordination symbol is 13A.

To—Toula silt loam, 1 to 3 percent slopes. This very gently sloping, moderately well drained soil is on the broad tops of ridges in the uplands. Areas range from about 20 to 1,000 acres in size.

Typically, the surface layer is dark grayish brown silt loam about 5 inches thick. The subsoil to a depth of about 21 inches is yellowish brown, mottled silt loam. Below this to a depth of about 60 inches is a fragipan. The fragipan is yellowish brown, mottled silt loam.

Included with this soil in mapping are a few small areas of Bude and Calhoun soils. The included soils are on terraces. Bude soils are somewhat poorly drained. They have grayish mottles in the upper part of the subsoil. Calhoun soils are poorly drained. They are grayish throughout. Included soils make up about 10 percent of the map unit.

The Toula soil is characterized by low fertility and high levels of exchangeable aluminum that are potentially toxic to most crops. Permeability is moderate in the surface layer and the upper part of the subsoil and slow in the fragipan. Water runs off the surface at a slow or medium rate. Water is perched above the fragipan at a depth of about 1.5 to 3.0 feet from December through April. The surface layer dries quickly after rains. Plants are damaged by a shortage of water during dry periods in the summer and fall of some years. The effective rooting depth is restricted by the fragipan. The shrink-swell potential is low.

Most of the acreage is used as woodland or pasture. A few areas are used as cropland, for homesite development, or as extensive recreational areas.

This soil is well suited to loblolly pine, slash pine, longleaf pine, sweetgum, green ash, and southern red oak. Few limitations affect woodland use and management. Competition from understory plants is moderate. After the trees are harvested, carefully managed reforestation can control competition from undesirable understory plants. Proper site preparation and spraying, cutting, or girdling can eliminate unwanted weeds, brush, or trees. Logging during the drier periods helps to prevent compaction.

This soil is well suited to pasture. The main limitations are the low fertility and the hazard of erosion. Suitable pasture plants are bahiagrass, common bermudagrass, improved bermudagrass, ball clover, crimson clover, arrowleaf clover, and ryegrass. A seedbed should be prepared on the contour or across the slope if possible. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition. Applications of fertilizer and lime can improve the production of grasses and legumes.

This soil is moderately well suited to cultivated crops, mainly corn, soybeans, grain sorghum, and vegetables. The low fertility, the potentially toxic levels of aluminum, and a moderate hazard of erosion are the main limitations. Practices that control erosion include early seeding, conservation tillage, and contour farming. The soil is friable and can be easily kept in good tilth. Crusting of the surface and compaction can be minimized by returning all crop residue to the soil and by applying a system of conservation tillage. Including grasses, legumes, or a grass-legume mixture in the cropping system helps to maintain fertility and tilth. Crops respond well to applications of lime and fertilizer, which help to overcome the low fertility and the high levels of exchangeable aluminum.

This soil is moderately well suited to urban development. The main limitations are low strength on sites for roads, the slow permeability in the fragipan, and the wetness. A seasonal high water table is perched above the fragipan, and drainage should be provided if buildings are constructed. Low strength is a limitation on sites for local roads and streets. The slow permeability in the fragipan and the high water table increase the possibility that septic tank absorption fields will fail. Seepage is a hazard on sites for sewage lagoons. The design of roads can offset the limited ability of the soil to support a load. Preserving the existing plant cover during construction helps to control erosion. The plant cover can be established and maintained by properly applying fertilizer, seeding, mulching, and land shaping.

This soil is moderately well suited to recreational development. The wetness and the slow permeability are the main limitations. The slope is a moderate limitation if the soil is used for playgrounds. Cuts and fills can be seeded or mulched. Erosion and sedimentation can be controlled by maintaining an adequate plant cover. A good drainage system can improve the suitability of this soil for most intensive recreational purposes, such as playgrounds and campsites.

This soil is well suited to habitat for deer, squirrel, rabbit, turkey, quail, dove, and numerous nongame birds and animals. The habitat can be improved by planting the appropriate vegetation, by maintaining the existing plant cover, or by promoting the establishment of desirable plants. Preserving oaks and other mast-producing trees improves the habitat for deer, squirrel, and turkey.

The capability subclass is IIe. The woodland ordination symbol is 13A.

Prime Farmland

In this section, prime farmland is defined and the soils in St. Helena Parish that are considered prime farmland are discussed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the Nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, State, and Federal levels, as well as individuals, must encourage and facilitate the wise use of our Nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to food, feed, forage, fiber, and oilseed crops. Such soils have properties that favor the economic production of sustained high yields of crops. The soils need only to be treated and managed by acceptable farming methods. The moisture supply must be adequate, and the growing season must be sufficiently long. Prime farmland soils produce the highest yields with minimal expenditure of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be used as cropland, pasture, or woodland or for other purposes. They are used for food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water-control structures. Public land is land not available for farming in National forests, National parks, military reservations, and State parks.

Prime farmland soils usually receive an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not frequently flooded during the growing season. The slope ranges mainly from 0 to 3 percent.

The map units in St. Helena Parish that are considered prime farmland are listed in table 6. Only the soils that have few limitations and do not need any additional improvements to qualify for prime farmland are included. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 5. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

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 potentials of natural resources and the environment. Also, it can help to prevent 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 behavioral 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 for 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 recreational facilities; and for wildlife habitat. It can be used to identify the potentials 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 that is in harmony with nature.

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

Charles Guillory, conservation agronomist, Natural Resources Conservation Service, helped prepare this section.

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 Natural Resources 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 the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

In 1987, about 63,000 acres in St. Helena Parish was farmland and about 30,000 acres was used for crops. In 1986, about 18,000 acres was used for pasture and hay.

Differences in the suitability of soils for crops and pasture and the management needed in areas of cropland or pasture are based on soil characteristics, such as the fertility level, erodibility, content of organic matter, availability of water to plants, drainage, and susceptibility to flooding. Each farm has a unique pattern; therefore, each has unique management problems. Some principles of farm management, however, apply only to specific soils and certain crops. This section describes the general principles of management that can be applied to the soils in St. Helena Parish.

Pasture and Hayland. Perennial grasses or legumes, or mixtures of both, are grown in the parish for pasture and hay. The mixtures generally consist of either a summer or a winter perennial grass and a suitable legume. Also, many farmers seed small grain or ryegrass in the fall for winter and spring forage. Excess grass in summer is harvested for hay for use in winter.

Common bermudagrass, improved bermudagrass, and Pensacola bahiagrass are the most commonly grown summer perennials. Improved bermudagrass and Pensacola bahiagrass produce good-quality forage (fig. 6). Tall fescue, the main winter perennial grass, grows well only on soils that have a favorable moisture

Figure 6.—Bahiagrass harvested for hay on Kenefick fine sandy loam, 1 to 3 percent slopes.

content. All of the grasses respond well to applications of fertilizer, particularly nitrogen.

White clover, crimson clover, vetch, and wild winterpea are the most commonly grown legumes. They respond well to applications of lime, particularly in areas of acid soils.

Proper grazing management is essential for high-quality forage, stand survival, and erosion control. Brush and weed control, applications of fertilizer and lime, and pasture renovation also are important.

Grazing the understory native plants in woodland provides additional forage. About 200 acres of woodland are grazed in St. Helena Parish. Forage volume varies with the woodland site, the condition of the native forage, and the density of the timber stand. Although most woodland areas are managed mainly for timber, these areas can provide substantial volumes of forage under proper management. Careful management of stocking rates and grazing periods ensures the optimum forage production and maintains an adequate cover of understory plants, which helps to control erosion. Additional information on the production of forage in woodland is given under the heading "Woodland Management and Productivity."

Applications of Fertilizer and Lime. The soils in St. Helena Parish range from extremely acid to neutral in the surface layer. They have a very low or low content of calcium. Most of the soils contain quantities of exchangeable aluminum and manganese that are potentially toxic to some crops. Adding lime to the surface layer helps to overcome the excessive levels of aluminum and manganese. If used for crops or pasture, the soils in the parish generally need applications of lime and a complete fertilizer. The amount of fertilizer needed depends on the kind of crop to be grown, past cropping history, the desired level of yields, and the kind of soil. The amount should be based on the results of soil tests. Information about collecting and testing soil samples can be obtained from the Cooperative Extension Service.

Organic matter is an important source of nitrogen for crops. It also increases the rate of water intake, minimizes surface crusting, and improves tilth. Most soils in St. Helena Parish that are used for crops are low in content of organic matter. The content can be maintained by growing crops that have an extensive root system and an abundance of foliage, by leaving plant residue on the surface, and by growing perennial grasses and legumes in rotation with other crops.

Tillage. Soils should be tilled only for seedbed preparation and weed control. Excessive tillage destroys soil structure. In some areas of loamy soils, a compacted layer, generally known as a traffic pan or plowpan, forms just below the plow layer. The formation of a plowpan can be prevented by plowing when the soil is dry or by varying the depth of plowing. If a plowpan develops, it can be broken up by subsoiling or chiseling. Tillage implements that stir the surface but leave crop residue in place protect the soil from beating rains and thus help to control erosion and runoff. The crop residue minimizes surface crusting and increases the rate of water infiltration.

Drainage and Flood Control. On some of the soils in St. Helena Parish, a surface drainage system is needed to improve the suitability for crops and pasture. A properly designed system of field ditches can remove excess water on seasonally wet soils, such as Bude, Calhoun, Fluker, Guyton, Myatt, and Stough soils. The soils in the parish are mainly drained by a gravity system consisting of row drains and field drains.

Control of Erosion. Water erosion is a major hazard on many of the soils in St. Helena Parish, especially on soils on terraces and uplands. Sloping soils, such as Ruston and Smithdale soils, are highly susceptible to erosion if they are left without a plant cover for extended periods. If the surface layer is lost through erosion, most of the available plant nutrients and most of the organic matter also are lost. Soils that have a fragipan, such as Bude, Fluker, Prentiss, Tangi, and Toula soils, should especially be protected against water erosion. Erosion also results in the sedimentation of drainage systems and the pollution of streams by sediments, nutrients, and pesticides.

Cropping systems that keep a plant cover on the soil for extended periods reduce the hazard of erosion. Growing cover crops of legumes or grasses helps to control water erosion, increases the content of organic matter and nitrogen in the soil, and improves tilth. Establishing terraces, diversions, and grassed waterways, applying a system of conservation tillage, farming on the contour, and using cropping systems in which grasses or close-growing crops are rotated with row crops also help to control erosion. Constructing water-control structures in drainageways that drop water to different levels can help to prevent gullying.

Cropping Systems. A good cropping system includes a legume, which provides nitrogen; a crop that requires cultivation, which aids in weed control; a deep-rooted crop, which uses nutrients in the subsoil and helps to maintain the permeability of the subsoil; and a close-growing crop, which helps to maintain the content of organic matter. The sequence of crops should keep the soil covered as much of the year as possible.

A suitable cropping system varies with the needs of the farmer and the characteristics of the soil. For example, the cropping systems used on livestock farms generally have higher percentages of pasture and annual forage than those used on cash-crop farms.

Additional information about erosion control, cropping systems, and drainage measures can be obtained from the local office of the Natural Resources Conservation Service, the Cooperative Extension Service, or the Louisiana Agricultural Experiment Station.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 7. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification also is given in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties 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 ensures 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 7 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 Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for use as cropland. 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 criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include 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 or 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.

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 few limitations that restrict their use.

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

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

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

Class V soils are not likely to erode, but they 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 hazard is the risk of erosion unless a 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.

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

The capability classification of each map unit is given in the section "Detailed Soil Map Units" and in the yields table.

Woodland Management and Productivity

Carl V. Thompson, Jr., state staff forester, Natural Resources Conservation Service, helped prepare this section.

This section provides information on the kind, amount, and condition of woodland resources in St. Helena Parish as well as soil interpretations that can be used in planning.

Soil directly influences the growth, management, harvesting, and multiple uses of forests. It is the medium in which a tree is anchored and from which it draws its nutrients and moisture. Soil characteristics, such as chemical composition, texture, structure, depth, and slope position, affect tree growth, seedling survival, species adaptability, and equipment limitations.

The ability of a soil to supply moisture and nutrients to trees is strongly related to its texture, structure, and depth. Generally, sandy soils are less fertile and have a lower available water capacity than clayey soils. However, aeration is often impeded in clayey soils, particularly under wet conditions.

The soil characteristics, in combination, largely determine the forest stand species composition and influence decisions for management and use. Sweetgum, for example, is tolerant of many soils and sites but grows best on the rich, moist, alluvial loamy soils on bottom land, such as Ouachita soils. The use of heavy logging and site-preparation equipment is more restricted on poorly drained soils, such as Calhoun soils, than on the better drained soils, such as Dexter and Lytle soils.

Woodland Resources

The topography and woodlands of St. Helena Parish vary from the piney woods in the uplands to the hardwood forests on stream bottoms, such as along the Amite and Tickfaw Rivers. The forest species that dominate are shortleaf pine and loblolly pine on the higher sites; sweetgum, red oak, white oak, elm, green ash, willow, and sycamore on the stream and river bottoms; and baldcypress and tupelo gum in the swamps.

St. Helena Parish was once covered by a vast virgin forest of pine. No virgin forests remain. Most of the forests were stripped of commercial trees during the "cut-out-get-out" period around the turn of the century. Cut areas regenerated naturally, and the second growth forests generally were unmanaged and subject to periodic wildfires. Forest management and reforestation began in the late 1940's and early 1950's. The Louisiana Office of Forestry (then known as the Louisiana Forestry Commission) provided effective fire protection. It also increased the production of pine seedlings, which were planted in cut-over areas. After timber and land values began to increase, landowners brought more of their property into production. Today, most of the forest land in St. Helena Parish is again producing commercial timber. A small part of the land is used for urban development, pasture, cropland, or other nonforest purposes.

In St. Helena Parish, about 178,600 acres, or about 68 percent of the total land area, is commercial woodland *(40)*. Commercial woodland is defined as land that produces or is capable of producing crops of industrial wood and that is not withdrawn from timber use. The commercial woodland decreased by about 5,000 acres between 1964 and 1974. Most areas of the cleared land were converted to pasture or cropland. Other areas were used for urban development or for transmission and transportation corridors. Between 1974 and 1984, about 19,400 more acres was cleared. The acreage of woodland in the parish continues to decrease as urban areas increase in size and as agricultural areas expand.

About 15 percent of the forest land in St. Helena Parish is owned by farmers, 22 percent is otherwise privately owned, and 63 percent is owned by the forest industry. The forest land in the parish is about 97 percent pine and 3 percent bottom-land hardwoods.

Commercial forests can be divided into forest types based on tree species, site quality, or age. In this survey, the forest types are named for the dominant trees growing in the tree stand. The stands are similar in character, composed of the same species, and growing under the same ecological and biological conditions.

The loblolly-shortleaf pine forest type comprises 63 percent of the forest land in the parish. Loblolly pine is generally dominant on sites that are not dry. On well drained soils, scattered hardwoods, such as sweetgum, blackgum, southern red oak, post oak, white oak, mockernut hickory, and pignut hickory, are mixed with the pines. On some of the more moist sites, sweetgum, red maple, water oak, and willow oak are mixed with the pines. Green ash and American beech are associated with this forest type in fertile, well drained coves and along stream bottoms.

The oak-hickory forest type comprises 22 percent of the forest land in the parish. Upland oaks or hickories, singly or in combination, dominate the stands. Elm and maple are commonly associated with this forest type.

The oak-pine forest type comprises 15 percent of the forest land in the parish. About 50 to 75 percent of the stand is hardwoods, generally upland oaks, and 25 to 50 percent is softwoods (baldcypress is not included). The species that comprise the oak-pine type are primarily determined by the soil, slope, and aspect. On the higher, drier sites, such as in areas of Dexter soils, the hardwood components tend to be upland oaks, such as post oak, southern red oak, and blackjack oak. On the more moist and fertile sites, white oak, southern red oak, and black oak are dominant. Blackgum, winged elm, red maple, and various hickories are associated with the oak-pine type on both of these broad sites.

The marketable timber volume is about 77 percent pine and 23 percent hardwoods (fig. 7). About 59 percent of the forest acreage is sawtimber, 15 percent is poletimber, and 26 percent is saplings and seedlings. About 22 percent of the forest land produces 165 cubic feet or more of wood per acre, 48 percent produces 120 to 165 cubic feet per acre, 26 percent produces 85 to 120 cubic feet per acre, and 4 percent produces 50 to 85 cubic feet per acre.

Timber production is important to the economy of the parish. The forest industry owns most of the upland

Figure 7.—An area of Ruston fine sandy loam, 1 to 3 percent slopes, where saw logs of loblolly pine are loaded onto transport trucks and hauled to nearby sawmills.

pine sites. The remaining forest land is privately owned. The privately owned tracts are mainly 500 acres or less in size, but several tracts are more than 1,000 acres in size. Most of the small, privately owned tracts and most of the bottom-land tracts are producing well below potential. Thinning out mature trees and undesirable species in stands can benefit most of these tracts. Planting trees and protecting the stands from grazing, fire, insects, and diseases also can improve the stands.

Environmental Impact

The Natural Resources Conservation Service, the Louisiana Office of Forestry, or the Louisiana Cooperative Extension Service can help to determine specific woodland management needs.

Woodlands provide wildlife habitat, recreation, and natural beauty and are vital to soil and water conservation efforts. The commercial forest land of St. Helena Parish provides food and shelter for wildlife and offers opportunities for sport and recreation to many people each year. Hunting and fishing clubs lease or otherwise use the forest land. Forest land provides watershed protection, helps to control soil erosion, reduces sedimentation, and enhances the quality and value of water resources.

Trees can be planted to screen distracting views of dumps and other unsightly areas, muffle the sound of traffic, reduce the velocity of winds, and lend beauty to the landscape. They produce fruits and nuts, which people as well as wildlife can use. Trees and forests help to filter out airborne impurities, help to convert carbon dioxide into oxygen, and provide shade.

Production of Forage in Woodland

The kind and amount of understory vegetation are related to the soils, climate, and amount of tree overstory in a particular area. Many pine woodlands can be used for cattle grazing, but grazing of hardwood forests is not recommended. If proper management is applied, the understory of grasses, legumes, forbs, and many woody browse species can be grazed without damage to the wood crop. In most areas of pine woodland, grazing reduces the amount of accumulated rough and thus helps to prevent wildfires. It also suppresses undesirable woody plants.

The effectiveness of a combined woodland and livestock program depends primarily on the degree and time of grazing of the forage plants. Controlled grazing helps to maintain a protective cover for the soil and maintains or improves the quantity and quality of trees and forage vegetation.

Forage production varies with the type of woodland and the amount of sunlight that reaches the understory vegetation during the growing season. Groups of soils that have the same potential for producing trees will also have the same potential for producing about the same kinds and amounts of understory vegetation. The vegetative community on these soils will reproduce itself as long as the environment does not change.

The total potential yields of grasses, legumes, and forbs on similar soils is closely related to the amount of sunlight reaching the ground in the forest at midday. As the forest canopy becomes denser, herbage production consequently declines.

Proper grazing management that keeps the woodland forage in excellent or good condition will conserve water, improve yields, and protect the soils.

Table 8 can be used by woodland managers planning ways to increase the productivity of forest land. Some soils respond better to applications of fertilization than others, and some are more susceptible to landslides and erosion after roads are built and timber is harvested. Some soils require special reforestation efforts. In the section "Detailed Soil Map Units," the description of each map unit in the survey area suitable for timber includes information about productivity, limitations in harvesting timber, and management concerns in producing timber. Table 8 summarizes this forestry information and rates the soils for a number of factors to be considered in management. *Slight, moderate,* and *severe* are used to indicate the degree of the major soil limitations to be considered in forest management.

Table 8 lists the *ordination symbol* for each soil. The first part of the ordination symbol, a number, indicates the potential productivity of a soil for the indicator species in cubic meters per hectare. The larger the number, the greater the potential productivity. Potential productivity is based on the site index and the point where mean annual increment is the greatest.

The second part of the ordination symbol, a letter, indicates the major kind of soil limitation affecting use and management. The letter *R* indicates a soil that has a significant limitation because of steepness of slope. The letter *X* indicates that a soil has restrictions because of stones or rocks on the surface. The letter *W* indicates a soil in which excessive water, either seasonal or year-round, causes a significant limitation. The letter *T* indicates a soil that has, within the root zone, excessive alkalinity or acidity, sodium salts, or other toxic substances that limit the development of desirable trees. The letter *D* indicates a soil that has a limitation because of a restricted rooting depth, such as a shallow soil that is underlain by hard bedrock, a hardpan, or other layers that restrict roots. The letter *C* indicates a soil that has a limitation because of the kind or amount of clay in the upper part of the profile. The letter *S* indicates a dry, sandy soil. The letter *F* indicates a soil that has a large amount of coarse fragments. The letter *A* indicates a soil having no significant limitations that affect forest use and management. If a soil has more than one limitation, the priority is as follows: R, X, W, T, D, C, S, and F.

Ratings of the *erosion hazard* indicate the probability that damage may occur if site preparation or harvesting activities expose the soil. The risk is *slight* if no particular preventive measures are needed under ordinary conditions; *moderate* if erosion-control measures are needed for particular silvicultural activities; and *severe* if special precautions are needed to control erosion for most silvicultural activities. Ratings of moderate or severe indicate the need for construction of higher standard roads, additional maintenance of roads, additional care in planning harvesting and reforestation activities, or the use of special equipment.

Ratings of *equipment limitation* indicate limits on the use of forest management equipment, year-round or seasonal, because of such soil characteristics as slope, wetness, stoniness, and susceptibility of the surface layer to compaction. As slope gradient and length increase, it becomes more difficult to use wheeled equipment. On the steeper slopes, tracked equipment is needed. On the steepest slopes, even tracked equipment cannot be operated and more sophisticated systems are needed. The rating is *slight* if equipment use is restricted by wetness for less than 2 months and if special equipment is not needed. The rating is *moderate* if slopes are so steep that wheeled equipment cannot be operated safely across the slope, if wetness restricts equipment use from 2 to 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. The rating is *severe* if slopes are so steep that tracked equipment cannot be operated safely across the slope, if wetness restricts equipment use for more than 6 months per year, if stoniness restricts the use of ground-based equipment, or if special equipment is needed to prevent or minimize compaction. Ratings of moderate or severe indicate a need to choose the best suited equipment and to carefully plan the timing of harvesting and other management activities.

Ratings of *seedling mortality* refer to the probability of the death of naturally occurring or properly planted seedlings of good stock in periods of normal rainfall, as influenced by kinds of soil or topographic features. Seedling mortality is caused primarily by too much water or too little water. The factors used in rating a soil for seedling mortality are texture of the surface layer, depth to the seasonal high water table and the length of the period when the water table is high, rock fragments in the surface layer, rooting depth, and the aspect of the slope. The mortality rate generally is highest on soils that have a sandy or clayey surface layer. The risk is *slight* if, after site preparation, expected mortality is less than 25 percent; *moderate* if expected mortality is between 25 and 50 percent; and *severe* if expected mortality exceeds 50 percent. Ratings of moderate or severe indicate that it may be necessary to use containerized or larger than usual planting stock or to make special site preparations, such as bedding, furrowing, installing a surface drainage system, and providing artificial shade for seedlings. Reinforcement planting is often needed if the risk is moderate or severe.

Ratings of *windthrow hazard* indicate the likelihood that trees will be uprooted by the wind. A restricted rooting depth is the main reason for windthrow. The rooting depth can be restricted by a high water table, a fragipan, or bedrock, or by a combination of such factors as wetness, texture, structure, and depth. The risk is *slight* if strong winds cause trees to break but do not uproot them; *moderate* if strong winds cause an occasional tree to be blown over and many trees to break; and *severe* if moderate or strong winds commonly blow trees over. Ratings of moderate or severe indicate that care is needed in thinning or that the stand should not be thinned at all. Special equipment may be needed to prevent damage to shallow root systems in partial cutting operations. A plan for the periodic removal of windthrown trees and the maintenance of a road and trail system may be needed.

Ratings of *plant competition* indicate the likelihood of the growth or invasion of undesirable plants. Plant competition is more severe on the more productive soils, on poorly drained soils, and on soils having a restricted root zone that holds moisture. The risk is *slight* if competition from undesirable plants hinders adequate natural or artificial reforestation but does not necessitate intensive site preparation and maintenance. The risk is *moderate* if competition from undesirable plants hinders natural or artificial reforestation to the extent that intensive site preparation and maintenance are needed. The risk is *severe* if competition from undesirable plants prevents adequate natural or artificial reforestation unless the site is intensively prepared and maintained. A moderate or severe rating indicates the need for site preparation to ensure the development of an adequately stocked stand. Managers must plan site preparation measures to ensure reforestation without delays.

The potential productivity of *common trees* on a soil is expressed as a *site index*. Common trees are listed in the order of their observed general occurrence. Generally, only two or three tree species dominate. The first tree listed for each soil is the indicator species for that soil. An indicator species is a tree that is common in the area and that is generally the most productive on a given soil.

The *site index* is determined by taking height measurements and determining the age of selected trees within stands of a given species. This index is the average height, in feet, that the trees attain in a specified number of years. This index applies to fully stocked, even-aged, unmanaged stands.

The *productivity class* is the yield likely to be produced by the most important trees, expressed in cubic meters per hectare per year.

Trees to plant are those that are used for reforestation or, under suitable conditions, natural regeneration. They are suited to the soils and can produce a commercial wood crop. The desired product, topographic position (such as a low, wet area), and personal preference are three factors among many that can influence the choice of trees for use in reforestation.

Recreation

In table 9, the soils of the survey area are rated according to the 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 sewer lines. 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 recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 9, 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 9 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 12 and interpretations for dwellings without basements and for local roads and streets in table 11.

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 gentle 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, 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 and horseback riding 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

Richard W. Simmering, state staff biologist, Natural Resources Conservation Service, helped prepare this section.

St. Helena Parish is mainly rural. It is rich in wildlife resources. The uplands are dominantly pine and mixed pine and hardwood forests. Hardwood forests are on the flood plains of the Amite and Tickfaw Rivers and along other smaller streams. Most areas in the uplands are used as woodland or pasture. Only a small acreage is used as cropland. Areas on the bottom land are primarily used for the production of hardwood timber. Habitat for numerous wildlife species is available because of the mixture of land uses and the diversity of vegetation in the survey area.

The parish is in the Mississippi Waterfowl Flyway. Wood ducks use the wooded swamps as nesting and wintering areas. Other species of ducks use farm ponds and rivers.

Furbearers in the survey area include raccoon, gray fox, red fox, mink, nutria, otter, and beaver. Coyotes also are numerous. The American alligator, a threatened species, inhabits most wooded swamps, rivers, and lakes.

The major game species in St. Helena Parish are white-tailed deer and eastern wild turkey. The numbers of white-tailed deer has reached or exceeded the carrying capacity of the habitat in most areas of the parish. The parish has high-quality habitat for wild turkey and provides some of the best turkey hunting in the State. Much of the land is leased for hunting. The leasing of hunting rights provides a substantial income for many landowners. Other important game species include bobwhite quail, American woodcock, fox squirrel, gray squirrel, and mourning dove. Cottontail rabbit and swamp rabbit also are plentiful.

The availability of food or cover is limited in some areas because of current management practices. The critical stress periods for deer are late summer and late winter. Deer habitat can be improved by proper forestry management. Practices such as selective thinning, prescribed burning, retaining mast-producing hardwoods, and establishing food plots, help to increase the carrying capacity of the habitat. Cooperative efforts among landowners for improving habitat and managing the harvest of deer also can improve the quality of hunting in the parish.

The optimum habitat for eastern wild turkey requires open woodland areas consisting of mature stands, daily supplies of water, and access to open fields. Proper forestry management can help to maintain a high population of turkey.

The population of bobwhite quail has declined since the 1950's because of a loss of habitat. Using land management practices, such as disking and prescribed burning, which promote the growth of weeds, and planting seed-producing crops can improve the habitat for quail.

Populations of squirrels are concentrated along stream bottoms, where oaks and other mast-producing trees grow. Excluding oaks, hickory, beech, and other hardwoods from harvest helps to maintain the habitat for squirrels.

Conservation practices can be adapted to maintain or enhance wildlife on most farms. Management practices include using pasture plants that are valuable to both livestock and wildlife. Properly managed timberland and pasture can increase both land values and the income derived from hunting leases.

The Amite River, the Tickfaw River, and numerous farm ponds have viable resources for fisheries. Largemouth bass, black crappie, white crappie, bluegill, redear sunfish, and catfish are the main game fish. Many recreational farm ponds are constructed annually. These ponds could be stocked and managed as fisheries.

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 10, 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 depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, rice, and grain sorghum.

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

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, surface stoniness, and flooding. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, paspalum, woolly croton, and uniola.

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, available water capacity, and wetness. Examples of these plants are oak, poplar, sugarberry, sweetgum, persimmon, hawthorn, dogwood, hickory, blackberry, and huckleberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are autumn-olive and blueberry.

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, cedar, and baldcypress.

Shrubs are bushy woody plants that produce fruit, buds, twigs, bark, and foliage. Soil properties and features that affect the growth of shrubs are depth of the root zone, available water capacity, salinity, and soil moisture. Examples of shrubs are American beautyberry, American elder, waxmyrtle, and sumac.

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, 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. 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, deer, and coyotes.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, nutria, mink, otter, 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. Ratings are given for 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 and test 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 should 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, depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, 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 kinds 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 evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and 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 11 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 the depth to bedrock, a cemented pan, or a very firm, dense layer; stone content; 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 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, shrinking and swelling, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 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. Depth to bedrock or to a cemented pan, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action 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, depth to a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 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 12 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and that 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, depth to a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

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 or fractured bedrock 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 filter the effluent effectively. 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 12 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, depth to a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage resulting from rapid permeability in 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 should be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, depth to a water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and content of salts and sodium affect trench 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 sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, 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 wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or 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 13 gives information about the soils as a source of roadfill and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. 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 to 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, a low shrink-swell potential, few cobbles and stones, 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 a 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, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

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 rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, 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, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. 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, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high 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 releases a variety of plant nutrients as it decomposes.

Water Management

Table 14 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; embankments, dikes, and levees; and aquifer-fed excavated ponds. 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 the restrictive features that affect each soil for 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 fractured bedrock or other 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 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 stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent water table, permeability of the aquifer, and the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

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 bedrock, to a cemented pan, or to other 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; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, 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 salts, sodium, or sulfur. 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 construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to control erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind erosion or water erosion, an excessively coarse texture, 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. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or 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 to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, 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 15 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 the heading "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 the content of particles coarser than sand is as much as 15 percent, 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 *(3)* and the system adopted by the American Association of State Highway and Transportation Officials *(2)*.

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 and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SC-SM.

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.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry 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.

Physical and Chemical Properties

Table 16 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, or component, 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 the shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving 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 ⅓-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 movement of water through the soil 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 and septic tank absorption fields.

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 in each major soil layer is stated in inches of water per inch of soil. 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 classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, more 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. Losses are expressed in tons per acre per year. These 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 0.02 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 over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in 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 17 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 are assigned to one of four groups. They are grouped according to the infiltration 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 covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 17 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 generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year). *Frequent* means that flooding occurs often under normal weather conditions (the chance of flooding is more than 50 percent in any year). Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding 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 little or no horizon development.

Also considered is 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 estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 17 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 highest. A water table that is seasonally high for less than 1 month is not indicated in table 17.

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.

Two numbers in the column showing depth to the water table indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot.

The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that it is within a depth of 6 feet for less than a month.

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 results in a severe hazard of corrosion. 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 the amount of sulfates in the saturation extract.

Soil Fertility Levels

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This section contains information on the environmental factors and physical and chemical properties that affect the potential of the soils for crop production. It also lists the methods used to obtain the chemical analyses of the soils that are sampled.

Factors Affecting Crop Production

Crop composition and yield function with many environmental, plant, and soil factors. This section gives a brief description of the more important factors.

Environmental factors. The main environmental factors are intensity and duration of light, temperature of air and soil, distribution and amount of precipitation, and atmospheric carbon dioxide concentration.

Plant factors. These factors are species and hybrid specific. They include the rate of nutrient and water uptake and the rate of growth and related plant functions.

Soil factors. These factors include both physical and chemical properties of the soils.

Physical properties. These are distribution, texture, structure, surface area, bulk density, water retention and flow, and aeration.

Chemical properties (soil fertility factors). The quantity of the chemical element, its intensity, the relationship of quantity and intensity, and the rate of replenishment of the elements to the soils are the factors of chemical properties. They affect crop growth.

Quantity factor. The quantity factor refers to the concentration of a nutrient ion adsorbed or held in exchangeable form on the solid phase of the soil. This form of nutrient ion is also available for plant uptake.

Intensity factor. The intensity factor refers to the concentration of a nutrient ion in soil solution. Because plant roots absorb nutrients directly from the soil solution, this factor quantifies the amount of a nutrient element immediately available for plant uptake.

Quantity/intensity relationship factor. The relationship between the quantity and intensity factors is sometimes called the buffer power. As plant roots absorb nutrients from soil solution, the concentration in solution is replenished by ions from the solid phase. If two soils have identical intensity factors, the soil having the greater quantity factor will provide more nutrients during the growing season because it can maintain the intensity factor level for a longer period.

Replenishment factor. This is the rate of replenishment of the available supply of nutrients in the solid and solution phases by weathering reactions, fertilizer additions, and transport by mass flow and diffusion.

These factors are interdependent. The magnitude of the factors and the interactions among them control crop response. The relative importance of each factor changes from soil to soil, crop to crop, and environment to environment. The soil factors are only part of the overall system.

Soil testing provides information for a soil and crop management program that establishes and maintains optimum levels and balance of the essential elements in the soil for crop and animal nutrition and protects the environment against the buildup of potentially toxic levels of essential and nonessential elements. Current soil tests measure the available supply of one or more nutrients in the plow layer. The available supply consists of nutrients characterized by both the intensity and quantity factors. If the available supply of one or more nutrients in the plow layer clearly limits crop production, existing soil tests can generally diagnose the problem and suggest reliable recommendations. Soil management systems are generally based on the physical and chemical alteration of the plow layer.

Characteristics of this layer can vary from one location to another, depending upon management practices and soil use.

Alteration of the plow layer produces little change in the subsurface horizons or changes them very slowly. These horizons reflect the soil's inherent ability to supply nutrients to plant roots and to provide a favorable environment for root growth. If soil fertility recommendations based on current soil tests are followed, major fertility problems in the plow layer are normally corrected. Other limitations for crop production are crop and environmental factors, physical properties of the plow layer, and physical and chemical properties of the subsoil.

Chemical Analysis Methods

Soil profiles were sampled during the soil survey and analyzed for reaction; organic matter; extractable phosphorus; exchangeable calcium, magnesium, potassium, sodium, aluminum, and hydrogen; total acidity; and cation-exchange capacity. These results are summarized in table 18. More detailed information on the chemical analysis of soils is available *(1, 8, 9, 10, 26, 28, 31, 32, 33, 38, 39, 43, 46)*. The methods used to obtain the data are listed below. The codes in parentheses refer to published methods *(43)*.

pH—1:1 soil/water solution (8C1a).
Organic carbon—acid-dichromate oxidation (6A1a).
Extractable phosphorus—Bray 2 extractant (0.03 molar ammonium fluoride-0.1 molar hydrochloric acid).
Exchangeable cations—pH 7, 1 molar ammonium acetate-calcium (6N2), magnesium (6O2), potassium (6Q2), sodium (6P2).
Exchangeable aluminum and hydrogen—1 molar potassium chloride (6G2).
Total acidity—pH 8.2, barium chloride-triethanolamine (6H1a).
Effective cation-exchange capacity—sum of bases plus exchangeable aluminum and hydrogen (5A3b).
Sum cation-exchange capacity—sum of bases plus total acidity (5A3a).
Base saturation—sum of cations/sum cation-exchange capacity (5C3).
Exchangeable sodium percentage—exchangeable sodium/sum cation-exchange capacity.
Aluminum saturation—exchangeable aluminum/effective cation-exchange capacity.

Characteristics of Soil Fertility

In general, four major types of nutrient distribution in soils of Louisiana can be identified. The first type includes soils that have relatively high levels of available nutrients throughout the profile. This type reflects the relatively high fertility status of the parent material from which soils developed and a relatively young age or a less intense degree of weathering of the soil profile. No soils of this type are in St. Helena Parish.

The second type includes soils that have relatively low levels of available nutrients in the surface layer, but these levels generally increase with increasing depth through the soil profile. These soils have relatively fertile parent material but are older soils that have been subjected to weathering over a longer period of time or to more intense weathering. If the levels of available nutrients in the surface layer are low, crops may exhibit deficiency symptoms early in the growing season. Deficiency symptoms often disappear if crop roots are able to penetrate to the more fertile subsoil as the growing season progresses. The majority of the soils in St. Helena Parish are of this type.

The third type includes soils that have adequate or relatively high levels of available nutrients in the surface layer but have relatively low levels in the subsoil. Such soils developed from parent material with low fertility, or they are older soils that have been subjected to more intense weathering over a longer period time. The higher nutrient levels in the surface layer generally are a result of fertilization in agricultural soils or biocycling in undisturbed soils. Bude, Lytle, and Myatt soils are of this type.

The fourth type includes soils that have relatively low levels of available nutrients throughout the soil profile. These soils developed from parent material with low fertility, or they are older soils that have been subjected to intense weathering over a long period of time. Neither fertilization nor biocycling has contributed to nutrient levels in the surface layer of these soils. Ochlockonee soils are of this type.

Soil reaction and acidity, organic matter content, sodium content, and cation-exchange capacity can also show the general nutrient distribution patterns in soils. These distributions are the result of the interactions of parent material, weathering (climate), time, and, to a lesser extent, organisms and topography.

Nitrogen. Generally, more than 90 percent of the nitrogen in the surface layer is organic nitrogen. Most of the nitrogen in the subsoil is fixed ammonium nitrogen. Although these forms of nitrogen are unavailable for plant uptake, they can be converted to readily available ammonium and nitrate species.

Nitrogen generally is the most limiting nutrient element in crop production because plants have a high demand of it. Nitrogen fertilizer recommendations are nearly always based on the nitrogen requirement of the crop rather than nitrogen soil test levels, since no reliable nitrogen soil tests have been developed for Louisiana soils.

The status of nitrogen fertility in the soil can be estimated from the amount of readily available ammonium and nitrate nitrogen in the soil, the amount of organic nitrogen, the rate of mineralization of organic nitrogen to available forms of inorganic nitrogen, and the rate of conversion of fixed ammonium nitrogen to available forms of nitrogen. Because the amounts and rates of transformation of the various forms of nitrogen in the soils of St. Helena Parish have not been determined, the nitrogen fertility status cannot be assessed. However, fertilizer nitrogen recommendations obtained from the Louisiana Cooperative Extension Service may be used to determine application rates.

Phosphorus. Phosphorus occurs in soils as inorganic phosphorus in soil solution; as discrete minerals, such as hydroxyapatite, variscite, and strengite; as occluded or coprecipitated phosphorus in other minerals; as phosphorus retained on the surfaces of minerals, such as carbonates, metal oxides, and layer silicates; and in organic compounds. Concentrations of phosphorus in soil solution generally are low. Because plant roots mainly obtain phosphorus from the soil solution, the plant uptake of phosphorus depends on the ability of the phosphorus in soil solid phase to maintain the phosphorus concentration in soil solution. Soil test procedures generally measure soil solution phosphorus and the readily available solid phase phosphorus that buffers the solution phase concentration.

The Bray 2 extractant tends to extract more phosphorus than the commonly used Bray 1, Mehlich 1, and Olsen extractants *(33, 43)*. The Bray 2 extractant provides an estimate of the readily available and the slowly available supplies of phosphorus in the soil. In most of the soils in St. Helena Parish, the content of Bray 2 extractable phosphorus is uniformly low throughout, except where additions of phosphorus fertilizer have raised the level of extractable phosphorus in the surface layer. These low levels of available phosphorus limit crop production. Continual additions of phosphorus fertilizer are needed to build up and maintain adequate levels of available phosphorus for sustained crop production.

Potassium. Potassium exists in four major forms in soils: soil solution potassium, exchangeable potassium associated with negatively charged sites on clay mineral surfaces, nonexchangeable potassium trapped between clay mineral interlayers, and structural potassium within the crystal lattice of minerals. Exchangeable potassium in soils can be replaced by other cations and is generally readily available for plant uptake. To become available to plants, nonexchangeable potassium and structural potassium must be converted to exchangeable potassium through weathering reactions.

The content of exchangeable potassium in soils is an estimate of the supply available to plants. The available supply of potassium in the soils of St. Helena Parish is very low or low throughout the soil profile. Low levels of exchangeable potassium indicate a general lack of micaceous minerals, which are a source of exchangeable potassium during the process of weathering.

On soils that have very low or low levels of exchangeable potassium, crops respond well to potassium fertilizer. On soils that have enough clay to hold the potassium, low levels can be gradually built up by additions of potassium fertilizer. Exchangeable potassium levels can be maintained by adding enough potassium fertilizer to account for the amount removed by crops, for fixation of exchangeable potassium to nonexchangeable potassium, and for leaching losses. The soils in St. Helena Parish that have a sandier texture, such as Kenefick and Stough soils, do not have a sufficient amount of clay to hold the potassium. Therefore, these soils do not have a cation-exchange capacity high enough to maintain adequate quantities of available potassium for sustained crop production. In areas of these soils, more frequent additions of potassium are needed to balance the amount of potassium lost through leaching.

Magnesium. Magnesium exists in soil solution, as exchangeable magnesium associated with negatively charged sites on clay mineral surfaces, and as structural magnesium in mineral crystal lattices. Solution magnesium and exchangeable magnesium generally are readily available for plant uptake, but structural magnesium must be converted to exchangeable magnesium during mineral weathering reactions.

According to guidelines for soil test interpretations, the content of exchangeable magnesium in the soils in St. Helena Parish is low, medium, or high, depending on the soil texture. Low levels of exchangeable magnesium are found throughout most of the soil profile in such soils as Kenefick soils. Calhoun soils have low levels in the upper part and medium or high levels in the lower part. Levels vary throughout the profile in Dexter soils. Higher levels of exchangeable magnesium in certain soil horizons are generally associated with a higher content of clay in those horizons.

The levels of exchangeable magnesium in most of the soils in St. Helena Parish are more than adequate for crop production, especially where the plant roots can exploit the high levels in the subsoil. Because magnesium deficiencies in plants are normally rare, fertilizer sources of magnesium are generally not needed for crop production.

Calcium. Calcium exists in soil solution, as exchangeable calcium associated with negatively charged sites on clay mineral surfaces, and as structural calcium in mineral crystal lattices. Exchangeable calcium generally is available for plant uptake, but structural calcium is not.

Calcium deficiencies in plants are extremely rare. Calcium is normally included with the material added to soils when lime is applied for the correction of acidity problems.

Some soils in St. Helena Parish, such as Cypress and Guyton soils, have low levels of calcium in the upper part and medium or high levels in the lower part. Other soils, such as Dexter and Ouachita soils, have varying levels throughout. Higher levels of exchangeable calcium in the surface layer are normally associated with soil reaction that is higher in the surface layer than in the subsoil, and they are probably the result of applications of lime. Exchangeable calcium levels that are higher in the subsoil than in the surface layer generally are associated with a higher content of clay in the subsoil.

Calcium is normally the most abundant exchangeable cation in soils. In Bude, Calhoun, and Fluker soils, however, the levels of exchangeable magnesium in the subsoil are greater than the exchangeable calcium levels. In other soils, the exchangeable calcium levels are greater than, or about the same as, the exchangeable magnesium levels.

Organic matter. The organic matter content in a soil greatly influences other soil properties. High organic matter content in mineral soils is desirable, and low organic matter content can lead to many problems. Increasing the organic matter content can greatly improve soil structure, drainage, and other physical properties. It can also increase the available water capacity, the cation-exchange capacity, and the content of nitrogen.

Increasing the organic matter content is very difficult because organic matter is continually subject to microbial degradation, especially in Louisiana, where higher soil temperatures and higher water content increase microbial activity. The rate at which organic matter in native plant communities breaks down is balanced by the rate at which fresh material is added. Disruption of this natural process can lead to a decline in the organic matter content. Management practices that cause erosion lead to a further decrease.

Even if no degradation of organic matter occurs, 10 tons of organic matter is needed to raise the organic matter content in the upper 6 inches of the soil by just 1 percent. Since breakdown of organic matter does occur in the soil, large amounts must be added for several decades before a small increase in the content can be achieved. Conservation tillage and cover crops can slowly increase the organic matter content over time or at least prevent further declines.

The organic matter content in the soils of St. Helena Parish is low. It decreases sharply with increasing depth because additions of fresh organic matter are confined to the surface layer. These low levels reflect a high rate of organic matter degradation, erosion, and cultural practices that make maintenance of a higher content of organic matter difficult.

Sodium. Sodium exists in soil solution, as exchangeable sodium associated with negatively charged sites on clay mineral surfaces, and as structural sodium in mineral crystal lattices. Because sodium is readily soluble and generally is not strongly retained by soils, well drained soils that are subject to moderate or high rainfall normally do not have significant amounts of sodium. Soils in low rainfall environments, soils that have restricted drainage in the subsoil, and soils of the coastal marshes may have significant amounts of sodium. High levels of exchangeable sodium in soils are associated with undesirable physical properties, such as poor structure, slow permeability, and restricted drainage.

Elevated levels of exchangeable sodium are below the surface layer in some soils, such as Calhoun, Fluker, Gilbert, Guyton, and Satsuma soils. Levels of exchangeable sodium that are higher than normal are associated with restricted drainage in the subsoil. Levels of exchangeable sodium that make up more than 6 percent of the sum of the cation-exchange capacity in the rooting depth of summer annuals can create undesirable physical soil properties, such as surface crusting, dispersion of soil particles, low rates of water infiltration, and low hydraulic conductivity.

Exchangeable aluminum, exchangeable hydrogen, pH, and exchangeable and total acidity. The pH of the soil solution in contact with the soil affects other soil properties. Soil pH is an intensity factor rather than a quantity factor. The lower the pH, the more acidic the soil. Soil pH controls the availability of essential and nonessential elements by controlling mineral solubility, ion exchange, and adsorption and desorption reactions with soil surfaces. It also affects microbial activity.

Aluminum occurs in soils as exchangeable polymeric hydrolysis species, aluminum oxides, and aluminosilicate minerals. Exchangeable aluminum in soils is determined by extraction with neutral salts, such as potassium chloride and barium chloride. The exchangeable aluminum in soils is directly related to pH. If pH is less than 5.5, the soils have significant amounts of exchangeable aluminum that has a charge of plus 3. This species of aluminum is toxic to plants. The toxic effects of aluminum on plants can be alleviated by adding lime to convert exchangeable aluminum to nonexchangeable polymeric hydrolysis species. High levels of organic matter can also alleviate aluminum toxicity.

Sources of exchangeable hydrogen in soils include hydrolysis of exchangeable and nonexchangeable aluminum and pH-dependent exchange sites on metal oxides, certain layer silicates, and organic matter. As determined by extraction with such neutral salts as potassium chloride, exchangeable hydrogen is normally not a major component of soil acidity because the hydrogen is not readily replaced by other cations unless accompanied by a neutralization reaction. Most of the neutral salt exchangeable hydrogen in soils apparently results from aluminum hydrolysis.

Acidity from hydrolysis of neutral salt exchangeable aluminum plus neutral salt exchangeable hydrogen from pH-dependent exchange sites makes up the exchangeable acidity in soils. Exchangeable acidity is determined by soil pH. Titratable acidity is the amount of acidity neutralized to a selected pH, generally 7 or 8.2, and constitutes the total potential acidity of a soil. All sources of soil acidity, including hydrolysis of monomeric and polymeric aluminum species and hydrogen from pH-dependent exchange sites on metal oxides, layer silicates, and organic matter, contribute to the total potential acidity. Total potential acidity in soils is determined by titration with bases or incubation with lime; extraction with a buffered extractant followed by titration of the buffered extractant (pH 8.2, barium chloride-triethanolamine method); or equilibration with buffers followed by estimation of acidity from changes in buffer pH.

Most of the soils in St. Helena Parish have a low pH, significant quantities of exchangeable aluminum, and high levels of total acidity in many horizons. Examples are Bude, Calhoun, and Myatt soils. High levels of exchangeable aluminum are a major limitation affecting crop production. The high levels can be reduced in the surface layer by adding lime, but no economical methods are presently available to neutralize acidity below the surface layer. Exchangeable aluminum levels below the surface layer can be reduced somewhat by applying gypsum so that the calcium leaches through the soil and replaces the exchangeable aluminum.

Cation-exchange capacity. The cation-exchange capacity represents the amount of nutrient and nonnutrient cations that a soil can hold in an exchangeable form. It depends on the number of negatively charged sites, both permanent and pH-dependent, that are present in the soil. Permanent charge cation-exchange sites occur because a net negative charge develops on a mineral surface from substitution of ions within the crystal lattice. A negative charge develops from ionization of surface hydroxyl groups on minerals. Organic matter also produces pH-dependent cation-exchange sites.

Methods for determining cation-exchange capacity are available and can be classified as one of two types: methods that use unbuffered salts to measure the cation-exchange capacity at the pH of the soil and methods that use buffered salts to measure the cation-exchange capacity at a specified pH. These methods produce different results since the unbuffered salt methods include only a part of the pH-dependent cation-exchange capacity and the buffered salt methods include all of the pH-dependent cation-exchange capacity up to the pH of the buffer (pH 7 or 8.2). Errors in the saturation, washing, and replacement steps can also cause different results.

The effective cation-exchange capacity is the sum of exchangeable bases (calcium, magnesium, potassium, and sodium) determined by extraction with 1 molar ammonium acetate at pH 7 plus the sum of neutral salt exchangeable aluminum and hydrogen (exchangeable acidity). The sum cation-exchange capacity is the sum of exchangeable bases plus the total acidity determined by extraction with pH 8.2, barium chloride-triethanolamine. The effective cation-exchange capacity is generally less than the sum cation-exchange capacity and includes only that part of the pH-dependent cation-exchange capacity that is determined by exchange of hydrogen with a neutral salt. The sum cation-exchange capacity includes all of the pH-dependent cation-exchange capacity up to pH 8.2. If a soil contains no pH-dependent exchange sites or the soil pH is about 8.2, the effective and sum cation-exchange capacities will be about the same. The larger the cation-exchange capacity, the larger the capacity to store nutrient cations.

The pH-dependent charge is a significant source of the cation-exchange capacity in most of the soils in St. Helena Parish. Because the pH-dependent cation-exchange capacity increases as pH increases, the cation-exchange capacity of many of the soils can be increased by adding lime. Increased cation-exchange capacities result in a greater storage capacity for nutrient cations, such as potassium, magnesium, and calcium.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(42)*. 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 on laboratory measurements. Table 19 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven 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 Fluvaquents (*Fluv*, meaning flood plains, plus *aquent*, the suborder of the Entisols that has 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 Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, 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, mixed, acid, thermic Typic Fluvaquents.

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. There can be some variation in the texture of the surface layer or of the substratum 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" *(44)*. Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" *(42)*. 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."

Bude Series

The Bude series consists of somewhat poorly drained soils that have a fragipan. These soils are moderately permeable in the upper part and slowly permeable in the fragipan. They formed in loess and underlying loamy sediments of Pleistocene age. The soils are on broad terraces. Slopes range from 0 to 2 percent.

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

Bude soils are similar to Fluker soils and commonly are near Calhoun and Toula soils. Calhoun soils are lower on the landscape than the Bude soils and are poorly drained. They are gray throughout. Fluker soils are in a different watershed than the Bude soils. They have siliceous mineralogy. Toula soils are in the higher areas and are moderately well drained. They do not have gray mottles in the upper part of the subsoil.

Typical pedon of Bude silt loam, 0 to 2 percent slopes; 3.6 miles southwest of Montpelier, 2,600 feet north of the Livingston Parish line, 400 feet west of Louisiana Highway 1036, Spanish Land Grant sec. 53, T. 4 S., R. 5 E.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) silt loam; weak fine granular structure; friable; many fine and common medium and coarse roots; strongly acid; clear smooth boundary.

Bw1—4 to 13 inches; brown (10YR 5/3) silt loam; common medium faint dark yellowish brown (10YR 4/4) mottles; weak fine subangular blocky structure; friable; common fine and few medium and coarse roots; few fine brittle bodies; many fine and medium black concretions; strongly acid; clear wavy boundary.

Bw2—13 to 20 inches; yellowish brown (10YR 5/4) silt loam; common medium distinct light brownish gray (10YR 6/2) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few medium and coarse roots; few fine and medium concretions of manganese; strongly acid; gradual wavy boundary.

B/E—20 to 30 inches; mottled brown (10YR 5/3) and yellowish brown (10YR 5/8) silt loam (Btx) and tongues of light brownish gray (10YR 6/2) silt loam (E); weak medium subangular blocky structure; friable; few medium and coarse roots in E material; common very firm and brittle bodies (Btx); few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Btx1—30 to 45 inches; yellowish brown (10YR 5/6) silt loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle; few fine roots in seams; few faint clay films on faces of peds; common black stains of manganese oxide; 15 percent few distinct light brownish gray (10YR 6/2) seams ½ inch wide surrounding prisms; medium acid; gradual wavy boundary.

2Btx2—45 to 60 inches; mottled yellowish brown (10YR 5/6), light brownish gray (10YR 6/2), and strong brown (7.5YR 5/6) silt loam having noticeable sand; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle; few distinct clay films on faces of peds; 15 percent distinct light brownish gray (10YR 6/2) seams ⅛ inch wide surrounding prisms; medium acid.

The thickness of the solum is more than 60 inches. Depth to the fragipan ranges from 18 to 40 inches. Reaction ranges from very strongly acid to medium acid throughout the solum unless the A horizon has been limed. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The A horizon has value of 4 and chroma of 2 or 3, or it has value of 3 and chroma of 1 or 2.

The Bw horizon has hue of 10YR, value of 4 to 6, and chroma of 3 to 8, or it has hue of 7.5YR, value of 5, and chroma of 6. The texture is silt loam or silty clay loam.

The Btx part of the B/E horizon is mottled in shades of brown, and the E part is mottled in shades of gray. The E part makes up 10 to 30 percent of the horizon.

The Btx horizon has hue of 10YR or 2.5Y, value of 6, and chroma of 2; has hue of 10YR, value of 5 or 6, and chroma of 1 to 6; or is mottled in shades of brown, yellow, and gray. The texture is silt loam or silty clay loam.

The 2Btx horizon has the same colors as the Btx horizon. The texture is silt loam, loam, silty clay loam, or clay loam.

Calhoun Series

The Calhoun series consists of poorly drained, slowly permeable soils that formed in loess. These soils are on broad terraces. In some areas they are occasionally flooded. Slopes are 0 to 1 percent.

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

Calhoun soils commonly are near Bude, Gilbert, and Toula soils. Bude and Toula soils are higher on the landscape than the Calhoun soils. They have a fragipan. Gilbert soils are in landscape positions similar to those of the Calhoun soils. They contain concentrations of sodium in the lower part of the subsoil.

Typical pedon of Calhoun silt loam, occasionally flooded; 4.7 miles southwest of Pine Grove, 7,600 feet south of Louisiana Highway 16, about 3,300 feet east of a gravel road, Spanish Land Grant sec. 51, T. 4 S., R. 4 E.

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

Eg—4 to 15 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; many fine roots; strongly acid; gradual irregular boundary.

B/E—15 to 26 inches; about 70 percent gray (10YR 6/1) silty clay loam (Bt) and 30 percent light brownish gray (10YR 6/2) silt loam (E); common medium distinct light olive brown (2.5YR 5/4) mottles; weak medium subangular blocky structure; firm; few distinct clay films on faces of some peds; the E material occurring as tongues 2 to 5 inches wide between Bt material; strongly acid; gradual irregular boundary.

Btg1—26 to 36 inches; gray (10YR 6/1) silty clay loam; common medium prominent yellowish brown (10YR 5/6) and light olive brown (2.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; strongly acid; gradual irregular boundary.

Btg2—36 to 48 inches; gray (10YR 6/1) silty clay loam; common medium prominent yellowish brown (10YR 5/6) and strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

BCg—48 to 60 inches; gray (10YR 6/1) silty clay loam; common medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; firm; strongly acid.

The thickness of the solum ranges from 40 to 80 inches. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The A horizon has value of 4 to 6 and chroma of 1 to 3. It is 3 to 8 inches thick. Reaction ranges from very strongly acid to medium acid.

The Eg horizon and the E part of the B/E horizon have hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. Reaction ranges from very strongly acid to medium acid. This horizon is 9 to 20 inches thick.

The Btg horizon and the Bt part of the B/E horizon have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. The number of mottles in shades of brown, yellow, or gray is common or many. The texture is silt loam or silty clay loam. Reaction ranges from extremely acid to strongly acid.

The BCg horizon and the Cg horizon, if it occurs, have hue of 10YR, 2.5Y, or 5Y, value of 5 or 6, and chroma of 1 or 2. The texture is silt loam or silty clay loam. Reaction ranges from extremely acid to mildly alkaline.

Cypress Series

The Cypress series consists of very poorly drained, very slowly permeable soils that formed mainly in clayey alluvium. These soils are in lakebeds, in oxbows, and along stream channels. Slopes are 0 to 1 percent.

Soils of the Cypress series are fine, mixed, acid, thermic Typic Fluvaquents.

Cypress soils commonly are near Dexter, Gilbert, Guyton, and Satsuma soils. The nearby soils are higher on the landscape than the Cypress soils. They are fine-silty. Dexter soils are well drained, Satsuma soils are somewhat poorly drained, and Gilbert and Guyton soils are poorly drained.

Typical pedon of Cypress mucky clay; 4.7 miles northeast of Weiss, 1.9 miles south of Louisiana Highway 16, about 300 feet west of a gravel road, Spanish Land Grant sec. 54, T. 4 S., R. 4 E.

A—0 to 4 inches; dark grayish brown (10YR 4/2) mucky clay; moderate medium subangular blocky structure; friable; extremely acid; clear smooth boundary.

Cg1—4 to 20 inches; gray (10YR 5/1) silty clay; few dark yellowish brown (10YR 4/4) mottles; massive; firm; many medium and coarse roots; very strongly acid; clear wavy boundary.

Cg2—20 to 32 inches; gray (10YR 5/1) silty clay; few fine distinct dark yellowish brown (10YR 4/4) mottles; massive; many medium and coarse roots; very strongly acid; clear wavy boundary.

Cg3—32 to 40 inches; gray (10YR 5/1) silty clay; few medium prominent light olive brown (2.5YR 5/6) mottles; massive; firm; common medium and coarse roots; very strongly acid; clear wavy boundary.

Cg4—40 to 60 inches; gray (10YR 6/1) silty clay; common medium distinct yellowish brown (10YR 5/4, 5/6) mottles; massive; firm; very strongly acid.

The thickness of the solum ranges from 3 to 8 inches. The average content of clay in the control section ranges from 35 to 50 percent. The content of organic carbon decreases irregularly with increasing depth or is more than 0.2 percent at a depth of about 50 inches. Reaction is extremely acid or very strongly acid throughout the profile. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

Some pedons have an Oi horizon, which consists of partially decomposed leaves, twigs, sticks, and roots.

The A horizon has hue of 10YR, 2.5Y, or 5Y, value of 4 or 5, and chroma of 1 or 2. The number of mottles in shades of brown or gray ranges from none to common.

The Cg horizon has hue of 10YR, 5Y, or 5GY, value of 5 or 6, and chroma of 1, or it is neutral in hue and has value of 5 or 6. This horizon has few or common mottles that are in shades of brown, gray, or olive or are neutral in color. The texture is clay loam, silty clay, or clay.

Dexter Series

The Dexter series consists of well drained, moderately permeable soils that formed in loamy sediments of Pleistocene age. These soils are on terraces. Slopes range from 1 to 3 percent.

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

The Dexter soils in St. Helena Parish are taxadjuncts to the Dexter series because they have base saturation that classifies them as Ultisols rather than Alfisols. This difference, however, does not significantly affect the use and management of the soils.

Dexter soils commonly are near Gilbert, Kenefick, and Satsuma soils. Gilbert soils are in depressions, on broad flats, and along drainageways. They are poorly drained. They are grayish throughout. Kenefick soils are in landscape positions similar to those of the Dexter soils. They are fine-loamy. Satsuma soils are lower on the landscape than the Dexter soils and are somewhat poorly drained. They have gray mottles in the upper part of the subsoil.

Typical pedon of Dexter very fine sandy loam, 1 to 3 percent slopes; 5.5 miles southwest of Pine Grove, 6,600 feet south of Louisiana Highway 16, about 7,200 feet north of the Livingston Parish line, Spanish Land Grant sec. 51, T. 4 S., R. 4 E.

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

Bt1—6 to 14 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; medium acid; clear wavy boundary.

Bt2—14 to 34 inches; yellowish red (5YR 5/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

2BC—34 to 42 inches; strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

2C—42 to 60 inches; strong brown (7.5YR 5/6) sandy loam; massive; friable; very strongly acid.

The thickness of the solum ranges from 32 to 60 inches. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 20 to 50 percent of the effective cation-exchange capacity.

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

The Bt horizon has value of 4 or 5 and chroma of 4 to 6. The texture is silt loam, silty clay loam, or clay loam. Reaction ranges from very strongly acid to medium acid.

The 2BC horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The texture is sandy loam, loam, clay loam, or sandy clay loam. Reaction ranges from very strongly acid to medium acid.

The 2C horizon has the same colors as the 2BC horizon. The texture is typically fine sandy loam or loamy fine sand, but the range includes sandy clay loam and clay loam. Reaction is very strongly acid or strongly acid.

Fluker Series

The Fluker series consists of somewhat poorly drained soils that have a fragipan. These soils are moderately permeable in the upper part and slowly permeable in the fragipan. They formed in a silty mantle and the underlying loamy sediments of Pleistocene age. The soils are on terraces and are subject to rare flooding. Slopes range from 0 to 2 percent.

Soils of the Fluker series are fine-silty, siliceous, thermic Glossaquic Fragiudalfs.

Fluker soils commonly are near Guyton, Kenefick, Ochlockonee, Ouachita, and Prentiss soils. Guyton, Kenefick, Ochlockonee, and Ouachita soils do not have a fragipan. Guyton soils are in the lower areas and are poorly drained. Kenefick soils are in the higher areas and are well drained. Ochlockonee and Ouachita soils are on flood plains. They are well drained and frequently flooded. Prentiss soils are coarse-loamy. They are higher on the landscape than the Fluker soils and are moderately well drained.

Typical pedon of Fluker silt loam, 0 to 2 percent slopes; 3.2 miles northeast of Grangeville, 2,200 feet north of Louisiana Highway 37, about 150 feet east of Louisiana Highway 448, Spanish Land Grant sec. 44, T. 3 S., R. 4 E.

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and common medium and coarse roots; very strongly acid; clear smooth boundary.

Bw—4 to 10 inches; brown (10YR 5/3) silt loam; few fine faint light brownish gray mottles; weak fine subangular blocky structure; friable; common fine and few medium and coarse roots; strongly acid; clear wavy boundary.

Bt1—10 to 16 inches; yellowish brown (10YR 5/4) silty clay loam; common coarse distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few medium and coarse roots; few faint clay films on faces of some peds; strongly acid; gradual wavy boundary.

Bt2—16 to 26 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct strong brown (7.5YR 5/6) and light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few medium and coarse roots; few faint clay films on faces of some peds; strongly acid; gradual wavy boundary.

B/E—26 to 30 inches; yellowish brown (10YR 5/6) silty clay loam (Bt); common medium distinct yellowish brown (10YR 5/8) and common medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of some peds; about 20 percent common vertical tongues of light brownish gray (10YR 6/2) silt loam (E) that are about 1½ inches wide; strongly acid; gradual wavy boundary.

2Btx1—30 to 37 inches; strong brown (7.5YR 5/6) silt loam; moderate very coarse prismatic structure parting to weak medium subangular blocky; very firm and brittle; few faint clay films on faces of some peds; noticeable sand increase from above horizon; common vertical seams of light brownish gray (10YR 6/2) silt loam ½ inch wide surrounding prisms; strongly acid; gradual wavy boundary.

Btx2—37 to 42 inches; strong brown (7.5YR 5/6) loam; moderate very coarse prismatic structure parting to moderate medium subangular blocky; very firm and brittle; few faint clay films on faces of some peds; common vertical seams of light gray (10YR 6/1) silt loam ¼ to ½ inch wide surrounding prisms; strongly acid; gradual wavy boundary.

BC—42 to 60 inches; yellowish brown (10YR 5/4, 5/6) loam; common medium distinct light brownish gray (10YR 6/2) mottles; weak fine subangular blocky structure; friable; strongly acid.

The thickness of the solum is more than 60 inches. Depth to the fragipan ranges from 18 to 40 inches. Reaction ranges from extremely acid to medium acid throughout the solum unless the surface layer has been limed. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The A horizon has value of 3 to 5 and chroma of 1 to 4. Where it has value of 3, the horizon is less than 6 inches thick.

The Bw horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 8. The number of mottles in shades of brown or gray ranges from few to many. The number of fine or very fine black and brown concretions ranges from none to common.

The Bt horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 8. The texture is silt loam or silty clay loam. The number of mottles in shades of brown or gray ranges from few to many. The number of fine and very fine black and brown concretions ranges from none to common.

The Bt part of the B/E horizon has value of 5 or 6 and chroma of 2 to 6. The E part has value of 6 or 7. Some pedons have a grayish E horizon or a mottled E/B horizon. Vertical tongues of E material range in width from ¼ inch to 2 inches and make up 10 to 30 percent of the horizon. The Bt part is silt loam or silty clay loam. Brownish and reddish mottles range from few to many and from fine to coarse.

The 2Btx horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 3 to 6, or it has hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. The texture is silt loam, sandy clay loam, loam, fine sandy loam, or sandy loam. The number of mottles in shades of brown or gray ranges from none to many. The total content of sand is typically more than 25 percent.

Some pedons have a 2B or 2BC horizon below the 2Btx horizon. This horizon has the same range in colors and reaction as the 2Btx horizon. The texture is sandy loam, fine sandy loam, or loam.

Gilbert Series

The Gilbert series consists of poorly drained, very slowly permeable soils that formed in mixed loess and loamy sediments of Pleistocene age. These soils have high levels of sodium in the lower part of the subsoil. They are on terraces and are subject to rare or occasional flooding. Slopes are less than 1 percent.

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

Gilbert soils commonly are near Calhoun, Dexter, Guyton, Kenefick, and Satsuma soils. Calhoun and Guyton soils are in landscape positions similar to those of the Gilbert soils. Calhoun, Guyton, and Satsuma soils do not have a high concentration of sodium in the lower part of the subsoil. Dexter and Kenefick soils are higher on the landscape than the Gilbert soils and are well drained. They have a yellowish red and strong brown subsoil. Satsuma soils are slightly higher on the landscape than the Gilbert soils and are somewhat poorly drained.

Typical pedon of Gilbert silt loam, occasionally flooded; 3.6 miles south of Pine Grove, 5,100 feet east of Louisiana Highway 499, about 2,000 feet north of the Livingston Parish line, 100 feet east of a parish road, Spanish Land Grant sec. 56, T. 4 S., R. 4 E.

A—0 to 5 inches; grayish brown (10YR 5/2) silt loam; weak fine granular structure; friable; common medium and coarse roots; very strongly acid; clear smooth boundary.

Eg—5 to 24 inches; light brownish gray (10YR 6/2) silt loam; weak fine subangular blocky structure; friable; common medium and coarse roots; very strongly acid; clear irregular boundary.

B/E—24 to 31 inches; about 80 percent gray (10YR 6/1) silty clay loam (Bt) and 20 percent light brownish gray (10YR 6/2) silt loam (E); common medium distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; firm (Bt) and friable (E); few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg—31 to 42 inches; gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4, 5/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btng—42 to 60 inches; gray (2.5YR 6/1) silty clay loam; common medium prominent yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; many black stains of manganese oxide; slightly acid.

The thickness of the solum ranges from 60 to 100 inches. Exchangeable sodium ranges from 15 to 35 percent in the part of the profile 17 to 40 inches below the upper boundary of the argillic horizon. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 20 to 50 percent of the effective cation-exchange capacity.

The A horizon has value of 4 to 6 and chroma of 2 or 3. Reaction ranges from very strongly acid to medium acid unless the surface layer has been limed. This horizon is 3 to 6 inches thick.

The Eg horizon and the E part of the B/E horizon have hue of 10YR or 2.5Y, value of 5 to 7, and chroma of 1 or 2. The number of mottles in shades of brown or gray ranges from none to common. Reaction ranges from very strongly acid to medium acid. The Eg horizon is 5 to 20 inches thick.

The Btg and Btng horizons and the Bt part of the B/E horizon have hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 or 2. The texture is silt loam or silty clay loam in the upper part of the B horizon and silt loam, silty clay loam, loam, or clay loam in the lower part. The number of mottles in shades of brown or gray ranges from few to many. Reaction ranges from very strongly acid to medium acid in the Btg and B/E horizons and from slightly acid to strongly alkaline in the Btng horizon.

Guyton Series

The Guyton series consists of poorly drained, slowly permeable soils that formed in loamy alluvium and in loamy sediments of Pleistocene age. These soils are on terraces and flood plains. They are subject to rare, occasional, or frequent flooding. Slopes are 0 to 1 percent.

Soils of the Guyton series are fine-silty, siliceous, thermic Typic Glossaqualfs.

Guyton soils commonly are near Dexter, Fluker, Kenefick, Ochlockonee, and Ouachita soils. Dexter, Fluker, and Kenefick soils are on ridges. Dexter and Kenefick soils are well drained. They have a yellowish red and strong brown subsoil. Fluker soils are somewhat poorly drained. They have a fragipan. Ochlockonee and Ouachita soils are on flood plains and are well drained. They are brownish throughout. Ochlockonee soils are coarse-loamy.

Typical pedon of Guyton silt loam, in an area of Ouachita, Ochlockonee, and Guyton soils, frequently flooded; 1 mile northwest of Coleman Town, 3,700 feet east of the Amite River, 1,600 feet north of Louisiana Highway 10, Spanish Land Grant sec. 71, T. 2 S., R. 4 E.

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; common medium and coarse roots; extremely acid; clear smooth boundary.

Eg—4 to 18 inches; light brownish gray (10YR 6/2) silt loam; common medium distinct yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; common medium and coarse roots; extremely acid; abrupt irregular boundary.

E/B—18 to 24 inches; about 80 percent light brownish gray (10YR 6/2) silt loam (Eg) and 20 percent gray (10YR 6/1) silty clay loam (Btg); common medium distinct yellowish brown (10YR 5/6) and few fine distinct dark yellowish brown (10YR 4/4) mottles; weak moderate subangular blocky structure; friable; few medium and coarse roots; few faint clay films on faces of peds; very strongly acid; gradual irregular boundary.

B/E—24 to 32 inches; about 80 percent gray (10YR 6/1) silty clay loam (Btg) and 20 percent tongues of light brownish gray (10YR 6/2) silt loam (Eg); common medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few medium and coarse roots; few faint clay films on faces of peds; tongues of E material ½ inch wide and 8 inches long; very strongly acid; gradual wavy boundary.

Btg1—32 to 42 inches; gray (10YR 6/1) silty clay loam; common medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; firm; few coarse roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Btg2—42 to 53 inches; light brownish gray (2.5Y 6/2) clay loam; common medium distinct yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; firm; few coarse roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Cg—53 to 60 inches; light brownish gray (2.5Y 6/2) clay loam; many coarse prominent yellowish brown (10YR 5/6, 5/8) mottles; massive; firm; very strongly acid.

The thickness of the solum ranges from about 50 to 80 inches. The content of sand, which is dominantly very fine sand, ranges from 10 to 40 percent in the family textural control section. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity. Exchangeable sodium makes up 5 to 40 percent of the sum cation-exchange capacity in the lower part of the solum.

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 2 or 3. It is 3 to 5 inches thick. Reaction ranges from extremely acid to medium acid unless the surface horizon has been limed.

The Eg horizon and the E part of the E/B and B/E horizons have hue of 10YR or 2.5Y, value of 5 to 8, and chroma of 1 or 2. The texture is silt loam, loam, or very fine sandy loam. Reaction ranges from extremely acid to medium acid. Tongues of E material extend into the Bt horizon. The Eg horizon is 11 to 20 inches thick.

The Btg horizon and the Btg part of the E/B and B/E horizons have hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 or 2. The texture is silt loam, silty clay loam, or clay loam. Reaction ranges from extremely acid to medium acid.

Some pedons have a BCg horizon. This horizon has the same range in colors as the Btg horizon. The texture is silt loam, silty clay loam, clay loam, or sandy clay loam. Reaction ranges from extremely acid to medium acid.

The Cg horizon has the same range in colors as the Btg horizon. The texture is silt loam, silty clay loam, clay loam, or sandy clay loam. Reaction ranges from strongly acid to moderately alkaline.

Kenefick Series

The Kenefick series consists of well drained, moderately permeable soils that formed in loamy and sandy sediments of Pleistocene age. These soils are on stream terraces. Slopes range from 1 to 3 percent.

Soils of the Kenefick series are fine-loamy, siliceous, thermic Ultic Hapludalfs.

Kenefick soils are similar to Smithdale soils and commonly are near Fluker, Guyton, Ochlockonee, Ouachita, and Prentiss soils. Fluker, Guyton, and Prentiss soils are lower on the landscape than the Kenefick soils. Fluker and Guyton soils are fine-silty, and Prentiss soils are coarse-loamy. Fluker and Prentiss soils have a fragipan. Guyton soils are poorly drained. They are gray throughout. Ochlockonee and Ouachita soils are on flood plains. They are brownish throughout. Smithdale soils are on uplands. They have a solum that is thicker than that of the Kenefick soils.

Typical pedon of Kenefick fine sandy loam, 1 to 3 percent slopes; 1.2 miles south of Hillsdale, 2,500 feet west of Louisiana Highway 441, about 100 feet south of a dirt road, Spanish Land Grant sec. 55, T. 4 S., R. 6 E.

Ap—0 to 5 inches; brown (10YR 4/3) fine sandy loam; weak fine granular structure; friable; many fine roots; strongly acid; clear wavy boundary.

Bt1—5 to 18 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—18 to 34 inches; yellowish red (5YR 4/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

BC—34 to 44 inches; strong brown (7.5YR 5/6) sandy loam; weak medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

C—44 to 60 inches; brownish yellow (10YR 6/6) loamy sand; massive; very friable; few thin layers of strong brown (7.5YR 4/6) loamy sand; strongly acid.

The thickness of the solum ranges from 40 to 70 inches. In at least one horizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap horizon has value of 3 or 4 and chroma of 2 to 4. It is 3 to 8 inches thick. Reaction ranges from very strongly acid to slightly acid.

Some pedons have a thin E or E/B horizon. The E horizon and the E part of the E/B horizon have hue of 10YR or 5YR, value of 5 or 6, and chroma of 3 or 4. The texture is loamy fine sand or fine sandy loam. Reaction ranges from very strongly acid to slightly acid.

The Bt horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 to 8. It is sandy clay loam or clay loam. The average content of clay ranges from 20 to 34 percent. Reaction ranges from very strongly acid to medium acid.

The BC horizon has hue of 7.5YR, 5YR, or 2.5YR, value of 4 to 6, and chroma of 6 to 8. It is sandy loam or fine sandy loam. Reaction is very strongly acid or strongly acid.

The C horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 to 8. The texture is loamy sand or sandy loam. Commonly, the C horizon has thin layers of sand, loamy sand, or fine sandy loam. Some pedons have few to many pebbles. Reaction is very strongly acid or strongly acid.

Lytle Series

The Lytle series consists of well drained soils that formed in loess and in the underlying loamy sediments of Pleistocene age. These soils are moderately permeable. They are on uplands. Slopes range from 1 to 8 percent.

Soils of the Lytle series are fine-loamy, siliceous, thermic Typic Paleudults.

Lytle soils commonly are near Ruston, Smithdale, and Tangi soils. Ruston and Tangi soils are in landscape positions similar to those of the Lytle soils. Ruston and Smithdale soils are fine-loamy. Smithdale soils are on the steeper side slopes. Tangi soils have a fragipan.

Typical pedon of Lytle silt loam, 3 to 8 percent slopes; 1.4 miles northwest of Chipola, 1,900 feet north of Louisiana Highway 432, about 4,200 feet west of Louisiana Highway 1044, about 250 feet east of a dirt road, Spanish Land Grant sec. 44, T. 1 S., R. 4 E.

A—0 to 5 inches; brown (10YR 4/3) silt loam; weak fine granular structure; friable; many fine and common medium and coarse roots; strongly acid; clear smooth boundary.

Bt1—5 to 20 inches; yellowish red (5YR 4/6) silty clay loam; moderate medium subangular blocky structure; friable; few fine and common medium and coarse roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—20 to 30 inches; yellowish red (5YR 5/8) silty clay loam; weak medium subangular blocky structure; friable; few medium and coarse roots; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Bt3—30 to 45 inches; reddish brown (2.5YR 4/4) sandy clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

2Bt4—45 to 60 inches; red (2.5YR 4/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) uncoated sand grains; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. The combined thickness of the A and B horizons, which have less than 15 percent sand, commonly is about 35 inches and ranges to about 48 inches. Reaction ranges from very strongly acid to medium acid throughout the profile. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 30 to 60 percent of the effective cation-exchange capacity.

The A horizon has value of 3 to 5 and chroma of 1 to 3. It is 2 to 5 inches thick. Where it has value of less than 3, the horizon is less than 6 inches thick.

The E horizon, if it occurs, has value of 5 or 6 and chroma of 3 or 4. The texture is very fine sandy loam or silt loam.

The Bt horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. It is loam, silt loam, or silty clay loam. The content of clay commonly is 20 to 30 percent, but it ranges from 18 to 34 percent.

A 2B/E horizon is in some pedons. The E material has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 6. The 2Bt material is sandy loam, loam, silt loam, or clay loam. The E material is sandy loam, loam, or silt loam.

The 2Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 4 to 8. The texture is loam, sandy clay loam, clay loam, sandy clay, or clay. Some pedons have few to many pockets of sand or loamy sand in shades of brown or yellow.

Myatt Series

The Myatt series consists of poorly drained, moderately slowly permeable soils that formed in loamy sediments of Pleistocene age. These soils are on broad terraces. They are subject to rare or occasional flooding. Slopes are 0 to 1 percent.

Soils of the Myatt series are fine-loamy, siliceous, thermic Typic Ochraquults.

The Myatt soils in St. Helena Parish are taxadjuncts to the Myatt series because they have base saturation that classifies them as Alfisols rather than Ultisols. This difference, however, does not significantly affect the use and management of the soils.

Myatt soils commonly are near Guyton, Satsuma, and Stough soils. Guyton soils are in landscape positions similar to those of the Myatt soils. They are fine-silty. Satsuma and Stough soils are higher on the landscape than the Myatt soils and are somewhat poorly drained. They are brownish throughout.

Typical pedon of Myatt fine sandy loam, occasionally flooded; 3 miles southeast of Montpelier, 3,900 feet east of Louisiana Highway 43, about 2,400 feet north of Louisiana Highway 40, sec. 33, T. 4 S., R. 6 E.

A—0 to 6 inches; dark gray (10YR 4/1) fine sandy loam; weak fine granular structure; friable; many fine and common medium and coarse roots; very strongly acid; clear smooth boundary.

Eg—6 to 14 inches; gray (10YR 6/1) sandy loam; weak fine granular structure; friable; common fine roots; extremely acid; gradual wavy boundary.

Btg—14 to 40 inches; light brownish gray (10YR 6/2) sandy clay loam; common medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few fine roots; few faint clay films on faces of peds; extremely acid; gradual wavy boundary.

BCg—40 to 60 inches; light brownish gray (10YR 6/2) sandy loam; common medium prominent strong brown (7.5YR 5/8) and common medium distinct yellowish brown (10YR 5/4, 5/6) mottles; weak medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum ranges from 40 to 60 inches. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The A horizon has value of 3 to 6 and chroma of 1 or 2. Reaction ranges from very strongly acid to medium acid. This horizon is 4 to 7 inches thick.

The Eg horizon has hue of 10YR or 2.5Y. It has value of 6 and chroma of 1 or 2 or has value of 5 and chroma of 1. The texture is loamy fine sand, sandy loam, fine sandy loam, very fine sandy loam, or loam. Reaction ranges from extremely acid to medium acid.

The Btg horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma or 1 or 2. The texture is sandy clay loam, loam, or clay loam. The number of mottles in shades of brown, red, or yellow ranges from few to many. Reaction ranges from extremely acid to strongly acid.

The BCg horizon has hue of 10YR, 2.5Y, or 5Y, value of 5 to 7, and chroma of 1 or 2. The texture is sandy loam, sandy clay loam, or clay loam. Reaction ranges from extremely acid to strongly acid.

The Cg horizon, if it occurs, has hue of 10YR, 2.5Y, or 5Y, value of 6 or 7, and chroma of 1 or 2. The texture is sandy loam, sandy clay loam, or clay loam. Thin strata of sand and gravel are in some pedons. The number of mottles in shades of brown ranges from few to many. Reaction ranges from extremely acid to strongly acid.

Ochlockonee Series

The Ochlockonee series consists of well drained soils that formed in loamy alluvium. These soils are moderately rapidly permeable in the surface layer and in the lower part of the profile and moderately permeable in the upper part of the profile. They are on flood plains and are frequently flooded. Slopes range from 1 to 3 percent.

Soils of the Ochlockonee series are coarse-loamy, siliceous, acid, thermic Typic Udifluvents.

Ochlockonee soils commonly are near Dexter, Fluker, Guyton, Kenefick, Ouachita, and Prentiss soils. Dexter, Fluker, Kenefick, and Prentiss soils are on terraces. Dexter and Fluker soils are fine-silty. Fluker and Prentiss soils have a fragipan. Kenefick soils are fine-loamy. Guyton soils are on flood plains in landscape positions lower than those of the Ochlockonee soils and on terraces. They are poorly drained. They are grayish throughout. Guyton and Ouachita soils are fine-silty. Ouachita soils are in landscape positions similar to those of the Ochlockonee soils.

Typical pedon of Ochlockonee silt loam, in an area of Ouachita, Ochlockonee, and Guyton soils, frequently flooded; 3.3 miles north of Louisiana Highway 38, about 4.43 miles northwest of Easleyville, 1.5 miles west of Louisiana Highway 43, Spanish Land Grant sec. 63, T. 1 S., R. 5 E.

A—0 to 5 inches; brown (10YR 4/3) silt loam; weak fine granular structure; very friable; common medium and fine roots; extremely acid; clear smooth boundary.

C1—5 to 22 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium granular structure; friable; common fine roots; very strongly acid; clear smooth boundary.

C2—22 to 40 inches; stratified yellowish brown (10YR 5/4) silt loam and light yellowish brown (10YR 6/4) sandy loam; weak medium granular structure; friable; few fine roots; very strongly acid; gradual wavy boundary.

C3—40 to 60 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium granular structure; very friable; very strongly acid.

Reaction ranges from extremely acid to strongly acid throughout the profile unless the A horizon has been limed. Some pedons have strata of contrasting texture, which have an irregular distribution of organic matter. Many pedons have gravelly strata below a depth of 40 inches. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The A horizon has hue of 10YR or 7.5YR, value of 3 to 6, and chroma of 2 to 4. It is 4 to 8 inches thick.

The C horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 3 to 6. In some pedons mottles with hue of 10YR, value of 4 to 6, and chroma of 1 or 2 are below a depth of 20 inches. The texture is sandy loam, fine sandy loam, silt loam, or loam. The textural family control section contains less than 18 percent clay and more than 15 percent sand that is coarser than very fine sand.

Ouachita Series

The Ouachita series consists of well drained, moderately slowly permeable soils that formed in loamy alluvium. These soils are on flood plains. They are frequently flooded. Slopes range from 1 to 3 percent.

Soils of the Ouachita series are fine-silty, siliceous, thermic Fluventic Dystrochrepts.

Ouachita soils commonly are near Dexter, Fluker, Guyton, Kenefick, Ochlockonee, and Prentiss soils. Dexter, Fluker, Kenefick, and Prentiss soils are on terraces at the higher elevations. Dexter soils have an argillic horizon. Fluker and Prentiss soils have a fragipan. Kenefick soils are fine-loamy. Guyton soils are poorly drained. They are on flood plains in landscape positions lower than those of the Ouachita soils and on stream terraces. They are grayish throughout. Ochlockonee soils are in landscape positions similar to those of the Ouachita soils. They are coarse-loamy.

Typical pedon of Ouachita silt loam, in an area of Ouachita, Ochlockonee, and Guyton soils, frequently flooded; 0.95 mile southwest of Chipola, 4,400 feet west of Louisiana Highway 38, about 100 feet north of a dirt road, Spanish Land Grant sec. 52, T. 1 S., R. 4 E.

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

Bw1—4 to 21 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine and common medium and coarse roots; very strongly acid; clear wavy boundary.

Bw2—21 to 40 inches; dark yellowish brown (10YR 4/4) silt loam; few fine distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few medium and coarse roots; very strongly acid; gradual wavy boundary.

Bw3—40 to 60 inches; dark yellowish brown (10YR 4/4) silt loam; common medium faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; few coarse roots; very strongly acid.

The thickness of the solum ranges from 40 to 80 inches. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 20 to 50 percent of the effective cation-exchange capacity.

The Ap horizon has value of 4 or 5 and chroma of 2 to 4. It is 1 to 6 inches thick. Reaction ranges from very strongly acid to medium acid unless the surface layer has been limed.

The Bw horizon has value of 4 or 5 and chroma of 3 to 8. The texture is silt loam, loam, or silty clay loam. Reaction is very strongly acid or strongly acid.

Some pedons have a C horizon. This horizon has the same colors and reaction as the Bw horizon.

Prentiss Series

The Prentiss series consists of moderately well drained soils that have a fragipan. These soils are moderately permeable in the upper part of the solum and moderately slowly permeable in the fragipan. They formed in loamy sediments of Pleistocene age. They are on broad terraces. Slopes range from 0 to 2 percent.

Soils of the Prentiss series are coarse-loamy, siliceous, thermic Glossic Fragiudults.

Prentiss soils commonly are near Fluker, Guyton, Myatt, and Stough soils. The nearby soils are lower on the landscape than the Prentiss soils. Fluker and Stough soils are somewhat poorly drained, and Guyton and Myatt soils are poorly drained. Fluker and Guyton soils are fine-silty. Myatt soils are fine-loamy. Stough soils do not have a fragipan.

Typical pedon of Prentiss fine sandy loam, 0 to 2 percent slopes; 1.3 miles northeast of Easleyville, 2,300 feet west of Louisiana Highway 441, about 2,200 feet east of Tickfaw, sec. 13, T. 1 S., R. 5 E.

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

Bt1—4 to 18 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; common fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—18 to 23 inches; yellowish brown (10YR 5/4) loam; common medium distinct strong brown (7.5YR 5/6) and pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btx1—23 to 36 inches; mottled yellowish brown (10YR 5/4, 5/6) and gray (10YR 6/1) loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; 80 percent strong brown (7.5YR 5/6) brittle bodies; few faint clay films on faces of peds; gray (10YR 7/1) seams of less clayey material between prisms; very strongly acid; gradual wavy boundary.

Btx2—36 to 48 inches; yellowish brown (10YR 5/4) sandy loam; many coarse distinct gray (10YR 6/1) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm; few faint clay films on faces of peds; 80 percent yellowish brown (10YR 5/4) brittle bodies; gray (10YR 7/1) seams of less clayey material between prisms; very strongly acid; gradual wavy boundary.

Btx3—48 to 60 inches; light yellowish brown (10YR 6/4) loam; common medium distinct yellowish brown (10YR 5/6) and gray (10YR 6/1) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; few faint clay films on faces of some peds; 75 percent light yellowish brown (10YR 6/4) brittle bodies; gray (10YR 7/1) seams of less clayey material between prisms; strongly acid.

The solum is more than 60 inches thick. The depth to the fragipan ranges from 20 to 32 inches. Reaction is very strongly acid or strongly acid throughout the profile. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap horizon has value of 3 to 5 and chroma of 1 to 3. It is 4 to 8 inches thick.

Some pedons have an E horizon. This horizon has hue of 10YR, value of 5 or 6, and chroma of 2 to 4. It is 2 to 6 inches thick. The texture is fine sandy loam, sandy loam, loam, or silt loam.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6, or it has hue of 2.5Y, value of 5 or 6, and chroma of 4 to 6. In the lower part of the horizon, the number of mottles in shades of brown or gray ranges from none to many. The texture is loam, fine sandy loam, or sandy loam.

The Btx horizon has the same colors as the Bt horizon. The number of mottles in shades of brown, red, or gray ranges from few to many. The texture is loam, sandy loam, or fine sandy loam.

Ruston Series

The Ruston series consists of well drained, moderately permeable soils that formed in loamy sediments of Pleistocene age. These soils are on uplands. Slopes range from 1 to 8 percent.

Soils of the Ruston series are fine-loamy, siliceous, thermic Typic Paleudults.

Ruston soils commonly are near Lytle, Smithdale, Tangi, and Toula soils. Lytle, Tangi, and Toula soils are in landscape positions similar to those of the Ruston soils. They are fine-silty. Tangi and Toula soils have a fragipan. Smithdale soils are on the steeper slopes. They do not have a bisequum.

Typical pedon of Ruston fine sandy loam, in an area of Ruston-Smithdale association, rolling; 5.2 miles east of the Amite River, 7,000 feet south of Mississippi State line, 5,300 feet west of Darling Creek, Spanish Land Grant sec. 62, T. 1 S., R. 4 E.

A—0 to 4 inches; brown (10YR 4/3) fine sandy loam; weak medium granular structure; friable; common fine, medium, and coarse roots; very strongly acid; clear smooth boundary.

E—4 to 11 inches; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine, medium, and coarse roots; very strongly acid; clear smooth boundary.

Bt1—11 to 24 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; firm; few fine roots; few distinct clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt2—24 to 34 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few coarse roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

B/E—34 to 48 inches; 70 percent yellowish red (5YR 5/6) loam (Bt) and 30 percent brown (7.5YR 5/4) sandy loam (E); weak fine subangular blocky structure; friable; few faint clay films on faces of some peds; strongly acid; gradual irregular boundary.

B′t1—48 to 54 inches; red (2.5YR 4/6) sandy clay loam; common medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

B′t2—54 to 60 inches; reddish brown (2.5YR 4/4) sandy clay loam; light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few strong brown (7.5YR 5/6) uncoated sand grains; very strongly acid.

The solum is more than 60 inches thick. The B/E horizon is definitive for the series. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 30 to more than 50 percent of the effective cation-exchange capacity.

The A horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 4. It is 3 to 6 inches thick. Reaction ranges from very strongly acid to slightly acid.

The E horizon has value of 5 or 6 and chroma of 3 or 4. It is as much as 15 inches thick. The texture is fine sandy loam, sandy loam, or loamy sand. Reaction ranges from very strongly acid to slightly acid. Some pedons have a thin BE horizon.

The Bt horizon, the Bt part of the B/E horizon, and the B′t horizon have value of 4 to 6 and chroma of 4 to 8. The texture is sandy clay loam, fine sandy loam, loam, or clay loam. Reaction ranges from very strongly acid to medium acid. In some pedons gravel makes up as much as 15 percent, by volume, of the Bt and B′t horizons.

The E part of the B/E horizon has value of 5 or 6 and chroma of 3 or 4. The texture is fine sandy loam, sandy loam, or loamy sand.

Satsuma Series

The Satsuma series consists of somewhat poorly drained soils that formed in mixed loess and loamy sediments of Pleistocene age. These soils are moderately permeable in the upper part of the solum and slowly permeable in the lower part. They are on terraces. Slopes range from 1 to 3 percent.

Soils of the Satsuma series are fine-silty, siliceous, thermic Glossaquic Hapludalfs.

Satsuma soils commonly are near Dexter, Gilbert, Kenefick, and Myatt soils. Dexter and Kenefick soils are higher on the landscape than the Satsuma soils and are well drained. They have a reddish subsoil. Gilbert and Myatt soils are on broad flats, in depressions, and along drainageways. They are poorly drained. They are grayish throughout.

Typical pedon of Satsuma silt loam, 1 to 3 percent slopes; 3.75 miles northeast of Weiss, 4,600 feet north of the Livingston Parish line, 1,000 feet south of a pipeline, Spanish Land Grant sec. 53, T. 4 S., R. 4 E.

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

E—4 to 8 inches; brown (10YR 5/3) silt loam; weak fine subangular blocky structure; friable; common fine roots; very strongly acid; clear wavy boundary.

EB—8 to 13 inches; yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; few black concretions; very strongly acid; clear wavy boundary.

Btn/E—13 to 18 inches; yellowish brown (10YR 5/4) silty clay loam (Bt) and light brownish gray (10YR 6/2) silt loam (E); common fine distinct strong brown (7.5YR 5/6) and fine medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable (E) and firm (B); few fine roots; about 15 percent interfingers of E material between peds; few distinct clay films on faces of peds; strongly acid; clear wavy boundary.

Btn1—18 to 33 inches; yellowish brown (10YR 5/6) silty clay loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; few black concretions; strongly acid; clear wavy boundary.

2Btn2—33 to 45 inches; yellowish brown (10YR 5/6) loam; common medium distinct light brownish gray (10YR 6/2) mottles; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; strongly acid; clear wavy boundary.

2Btnx—45 to 57 inches; yellowish brown (10YR 5/4) loam; common medium distinct light brownish gray (10YR 6/2) and common medium prominent strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; about 10 to 40 percent very firm and brittle bodies; few distinct clay films on faces of peds and in pores; strongly acid; clear wavy boundary.

BCn—57 to 65 inches; yellowish brown (10YR 5/6) loam; common medium prominent gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; strongly acid.

The thickness of the solum ranges from 30 to 70 inches. Reaction ranges from very strongly acid to medium acid throughout the solum unless the A horizon has been limed. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity.

The Ap horizon has value of 3 to 5 and chroma of 1 to 3. Where it has value of 3, the horizon is less than 6 inches thick.

The E horizon has value of 5 to 7 and chroma of 2 or 3. The number of mottles in shades of brown or gray ranges from none to many. The E part of the B/E horizon has the same colors and textures as the E horizon.

The EB horizon or the BE horizon, if it occurs, has value of 5 or 6 and chroma of 4 to 8. The number of mottles in shades of brown or gray ranges from none to many.

The Bt part of the Btn/E horizon and the Btn horizon have hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 3 to 8. They are mottled in shades of brown, gray, or red. The number of mottles with chroma of 2 or less ranges from few to many. The texture is silty clay loam or silty clay.

The 2Btn, 2Btnx, and 2BCn horizons have the same range in colors as the Btn horizon. The texture is silty clay loam, clay loam, silt loam, or loam. Firm and brittle bodies make up 10 to 40 percent of the horizontal cross section of the 2Btnx horizon.

Some pedons have a 2C horizon. This horizon has the same range in colors as the 2Btn, 2Btnx, and 2BCn horizons. The texture is loam or sandy loam.

Smithdale Series

The Smithdale series consists of well drained, moderately permeable soils that formed in loamy sediments of Pleistocene age. These soils are on uplands. Slopes range from 5 to 20 percent.

Soils of the Smithdale series are fine-loamy, siliceous, thermic Typic Hapludults.

Smithdale soils are similar to Kenefick soils and commonly are near Lytle, Ruston, and Tangi soils. Kenefick soils are on terraces at the lower elevations. They have a solum that is thinner than that of the Smithdale soils. Lytle, Ruston, and Tangi soils are in the less sloping areas. Lytle and Tangi soils are fine-silty. Ruston soils have a bisequum in the solum.

Typical pedon of Smithdale fine sandy loam, 12 to 20 percent slopes; 4.87 miles north of Chipola, 1.0 mile west of St. Helena Parish Highway 1044, about 4,300 feet east of the Amite River, Spanish Land Grant sec. 59, T. 1. S., R. 4 E.

A—0 to 8 inches; dark grayish brown (10YR 4/2) fine sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

E—8 to 16 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

Bt1—16 to 29 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; few distinct clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—29 to 50 inches; red (2.5YR 4/8) sandy clay loam; common medium prominent strong brown (7.5YR 5/6) and common medium distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few distinct clay films on faces of peds; common uncoated sand grains; very strongly acid; gradual wavy boundary.

Bt3—50 to 60 inches; yellowish red (5YR 5/6) sandy loam; very friable; weak medium subangular blocky structure; few distinct clay films on faces of peds; many uncoated sand grains; very strongly acid.

The solum is 60 to 120 inches thick. Reaction is very strongly acid or strongly acid throughout the profile unless the surface layer has been limed. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 20 to 50 percent of the effective cation-exchange capacity.

The A horizon has value of 3 or 4 and chroma of 1 to 3. It is 2 to 10 inches thick. Where it has value of 3, the horizon is less than 6 inches thick.

The E horizon has value of 5 or 6 and chroma of 2 to 4. It is 2 to 8 inches thick. The texture is fine sandy loam or sandy loam. Some pedons do not have an E horizon.

Some pedons have a BA or BE horizon. This horizon has hue of 7.5YR, 10YR, or 5YR, value of 4 or 5, and chroma of 4 to 8. It has the same range in texture as the E horizon.

The Bt horizon is clay loam, sandy clay loam, loam, or sandy loam. The number of mottles in shades of brown or red ranges from none to many. The content of gravel ranges, by volume, from 0 percent to as much as 10 percent.

Stough Series

The Stough series consists of somewhat poorly drained, moderately slowly permeable soils that formed in loamy sediments of Pleistocene age. These soils are on terraces. They are subject to rare flooding. Slopes are 0 to 1 percent.

Soils of the Stough series are coarse-loamy, siliceous, thermic Fragiaquic Paleudults.

Stough soils commonly are near Myatt and Satsuma soils. Myatt soils are lower on the landscape than the Stough soils and are poorly drained. They are grayish throughout. Satsuma soils are in landscape positions similar to those of the Stough soils. They are fine-silty.

Typical pedon of Stough fine sandy loam; 2.5 miles southeast of Montpelier, 500 feet north of the Livingston Parish line, 150 feet west of Louisiana Highway 43, Spanish Land Grant sec. 50, T. 4 S., R. 6 E.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; friable; many medium and coarse roots; very strongly acid; clear smooth boundary.

Bt—5 to 12 inches; light yellowish brown (10YR 6/4) loam; common medium faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; common medium and coarse roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btx1—12 to 22 inches; light yellowish brown (10YR 6/4) loam; common medium distinct light brownish gray (10YR 6/2) and common medium faint yellowish brown (10YR 5/4) mottles; weak medium subangular blocky structure; friable; common fine and many medium and coarse roots; few faint clay films on faces of peds; about 40 percent yellowish brown material that is very firm and brittle; very strongly acid; clear wavy boundary.

Btx2—22 to 27 inches; light yellowish brown (10YR 6/4) loam; common medium distinct light brownish gray (10YR 6/1) and yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; firm; few coarse roots; few faint clay films on faces of peds; about 40 percent yellowish brown material that is very firm and brittle; very strongly acid; clear wavy boundary.

Btx3—27 to 38 inches; light yellowish brown (10YR 6/4) loam; many coarse distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; about 40 percent strong brown material that is very firm and brittle; very strongly acid; clear wavy boundary.

Btx4—38 to 55 inches; yellowish brown (10YR 5/4) sandy clay loam; common medium distinct light brownish gray (10YR 6/2) and few medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; few faint clay films on faces of peds; about 40 percent strong brown material that is very firm and brittle; very strongly acid; clear wavy boundary.

Btx5—55 to 60 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; few faint clay films on faces of peds; about 40 percent strong brown material that is very firm and brittle; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid throughout the profile unless the surface layer has been limed. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 20 to 50 percent of the effective cation-exchange capacity.

The A horizon has value of 3 or 4 and chroma of 1 or 2. It is 3 to 6 inches thick.

The Bt and Btx horizons have hue of 10YR or 2.5Y and value and chroma of 4 to 6. They have few to many grayish and brownish mottles. The Btx horizon is 40 to 55 percent, by volume, very firm and brittle. The upper 20 inches of the Bt horizon has less than 18 percent clay. The Bt horizon is fine sandy loam, loam, or sandy loam. The Btx horizon is fine sandy loam, loam, sandy loam, or sandy clay loam.

Tangi Series

The Tangi series consists of moderately well drained soils that have a fragipan. These soils are moderately permeable in the upper part of the subsoil and slowly permeable or very slowly permeable in the fragipan. They formed in a moderately thick mantle of loess and in the underlying loamy and clayey sediments of Pleistocene age. The soils are on uplands. Slopes range from 1 to 8 percent.

Soils of the Tangi series are fine-silty, siliceous, thermic Typic Fragiudults.

Tangi soils commonly are near Fluker, Ruston, Smithdale, and Toula soils. Fluker soils are on terraces and are somewhat poorly drained. They have gray mottles in the upper part of the subsoil. Ruston and Toula soils are in landscape positions similar to those of the Tangi soils. Ruston and Smithdale soils are fine-loamy. They do not have a fragipan. Toula soils have less sand and less clay in the fragipan than the Tangi soils. Smithdale soils are on the steeper side slopes.

Typical pedon of Tangi silt loam, 1 to 3 percent slopes; 1.8 miles west of Easleyville, 4,000 feet north of Louisiana Highway 38, about 1.1 miles west of Louisiana Highway 43, Spanish Land Grant sec. 28, T. 1 S., R. 5 E.

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

BE—5 to 9 inches; yellowish brown (10YR 5/4) silt loam; weak fine granular structure; friable; very strongly acid; clear smooth boundary.

Bt1—9 to 18 inches; yellowish brown (10YR 5/6) silt loam; few medium distinct pale brown (10YR 6/3) and strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—18 to 28 inches; strong brown (7.5YR 5/8) silty clay loam; common medium prominent light yellowish brown (10YR 6/4) and yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; many fine roots; few faint clay films on faces of peds; strongly acid; clear wavy boundary.

2Btx1—28 to 37 inches; yellowish brown (10YR 5/6) silty clay loam; many medium and coarse distinct light brownish gray (10YR 6/2), pale brown (10YR 6/3), and strong brown (7.5YR 5/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm; noticeable sand increase from above horizon; few fine roots in seams between prisms; light brownish gray (10YR 6/2) vertical and horizontal seams of silt loam and uncoated sand grains surrounding some faces of peds; many medium and coarse strong brown (7.5YR 5/6) brittle bodies making up about 70 percent of the cross section; few distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

2Btx2—37 to 49 inches; yellowish red (5YR 5/8) clay loam; many medium distinct strong brown (7.5YR 5/6, 5/8), few fine distinct red (2.5YR 5/6), and few medium prominent gray (10YR 6/1) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; compact and brittle in about 70 percent of the cross section and friable in 30 percent; few fine roots in seams between prisms; few distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

2Btx3—49 to 60 inches; yellowish red (5YR 5/6) clay; few fine prominent gray (10YR 6/1), common medium faint red (5YR 4/6), and common medium prominent yellowish brown (10YR 5/6) mottles; moderate very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle in about 80 percent of the cross section and friable in 20 percent; few fine roots in seams between prisms; few distinct clay films on faces of peds; strongly acid.

The solum is more than 60 inches thick. The depth to the fragipan ranges from 18 to 38 inches. Reaction ranges from very strongly acid to medium acid throughout the profile unless the surface layer has been limed. In at least one subhorizon within a depth of 30 inches, exchangeable aluminum makes up 50 percent or more of the effective cation-exchange capacity. The content of total sand in the family textural control section ranges from 10 to 25 percent. Less than 15 percent of the sand in the family textural control section is fine sand or coarser material.

The Ap horizon has value of 3 to 5 and chroma of 1 to 4. It is 3 to 7 inches thick. Where it has value of 3, the horizon is less than 6 inches thick.

The BE horizon has hue of 10YR or 7.5YR, value or 5 to 6, and chroma of 3 to 8.

The Bt horizon has value of 5 or 6 and chroma of 4 to 8. The number of mottles in shades of brown or red is few or common.

The 2Btx horizon has hue of 10YR or 7.5YR, value of 4 to 6, and chroma of 2 to 8; has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 to 8; or is mottled in these colors. Hues of 10YR and 7.5YR are only in the uppermost subhorizon of the 2Btx horizon. The number of mottles in shades of brown, gray, or red ranges from few to many. The texture is loam, silty clay loam, clay loam, sandy clay loam, sandy clay, or clay. The content of total sand ranges from 25 to 60 percent. The content of clay in the 2Btx horizon ranges from 20 to 55 percent. At least one subhorizon of the 2Btx horizon contains more than 35 percent clay.

Toula Series

The Toula series consists of moderately well drained soils that have a fragipan. These soils are moderately permeable in the upper part of the subsoil and slowly permeable in the fragipan. They formed in a moderately thick mantle of loess over loamy sediments of Pleistocene age. The soils are on uplands. Slopes range from 1 to 3 percent.

Soils of the Toula series are fine-silty, siliceous, thermic Typic Fragiudults.

Toula soils commonly are near Bude, Calhoun, Fluker, and Tangi soils. Bude, Calhoun, and Fluker soils are on terraces. Bude and Fluker soils are somewhat poorly drained. They have grayish mottles within a depth of 16 inches. Calhoun soils are poorly drained. They are grayish throughout. They do not have a fragipan. Tangi soils are in landscape positions similar to those of the Toula soils. They have more sand and more clay in the lower part of the subsoil than the Toula soils.

Typical pedon of Toula silt loam, 1 to 3 percent slopes; 1.2 miles north of Pine Grove, 200 feet west of Louisiana Highway 449, about 50 feet north of a gravel road, sec. 6, T. 4 S., R. 5 E.

A—0 to 5 inches; dark grayish brown (10YR 4/2) silt loam; weak fine granular structure; friable; many fine and common medium and coarse roots; very strongly acid; clear smooth boundary.

Bt—5 to 21 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; friable; common fine and few medium and coarse roots; few faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Btx1—21 to 31 inches; yellowish brown (10YR 5/6) silt loam; few fine distinct dark yellowish brown (10YR 4/4) mottles; weak very coarse prismatic structure parting to moderate medium subangular blocky; firm and brittle; about 15 percent seams of light brownish gray (10YR 6/2) silt loam surrounding prisms; few fine and medium roots in seams around peds; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Btx2—31 to 44 inches; yellowish brown (10YR 5/8) silt loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; compact and brittle; noticeable sand increase from above horizon; about 10 percent seams of light brownish gray (10YR 6/2) silt loam surrounding prisms; few fine roots in gray seams around peds; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

2Btx3—44 to 60 inches; yellowish brown (10YR 5/8) silt loam; weak very coarse prismatic structure parting to moderate medium subangular blocky; compact and brittle; seams of light brownish gray (10YR 6/2) silt loam surrounding peds; few faint clay films on faces of peds; very strongly acid.

The thickness of the solum is more than 60 inches. The depth to the fragipan ranges from 18 to 38 inches. The depth to mottles with chroma of 2 or less is typically more than 20 inches but ranges from 17 to 30 inches. Reaction ranges from very strongly acid to medium acid throughout the solum unless the surface layer has been limed. In at least one subhorizon within a depth or 30 inches, exchangeable aluminum makes up 50 percent of more of the effective cation-exchange capacity. The content of total sand in the textural family control section (Bt horizon) typically is less than 15 percent but ranges from 5 to 25 percent. Less than 15 percent of the sand in the textural family control section is fine sand or coarser material.

The A horizon has value of 3 to 5 and chroma of 1 to 4. It is 3 to 7 inches thick. Where it has value of 3, the horizon is less than 6 inches thick.

Some pedons have a BE horizon. This horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma 3 to 8. The texture is silt loam.

The Bt horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 4 to 8. The texture is silt loam or silty clay loam. The number of mottles in shades of brown or red ranges from few to many. In some pedons this horizon has gray mottles below a depth of 16 inches.

The Btx and 2Btx horizons have the same range in colors as the Bt horizon. They are mottled in shades of brown, gray, or red. The Btx horizon is silt loam or silty clay loam. The 2Btx horizon is silt loam, loam, silty clay loam, or clay loam. The content of total sand in the 2Btx horizon ranges from 20 to 30 percent. The content of clay in the fragipan ranges from 18 to 35 percent.

Some pedons have a 2Bt horizon. This horizon has the same range in colors and textures as the 2Btx horizon. The number of brittle bodies is none or few.

Formation of the Soils

W.M. Hudnall, Agronomy Department, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center, prepared this section.

This section explains soil genesis and the processes and factors of soil formation as they relate to the soils of St. Helena Parish. It also describes the landforms and surface geology of the survey area.

Genesis of the Soils

Soil genesis is the phase of soil science that deals with the processes and factors of soil formation *(5)*. It is the study of the formation of soils on the land surface and of changes in soil bodies. It is the science of the evolution of soils that are conceived of as natural units *(11, 34)*.

Internal and external forces influence soils. Generally, the internal forces are synonymous with soil-forming processes and the external forces are synonymous with soil-forming factors. Soils generally are perceived to be a stable component of our environment; unless the soils are disturbed, they show very little change. Soil scientists, however, view soils as a dynamic system and can observe minute but important changes in the composition of the soil, depending upon when and how samples are taken *(25)*. The following information can give a better understanding of how the soil survey can be used and how interpretations can be derived from it.

Processes of Soil Formation

The complex soil-forming processes are the gains, losses, translocations, and transformations that occur in the soil. These also influence the kind and degree of development of soil horizons *(36)*. Soil-forming processes result in either additions to or losses from the soil of organic, mineral, and gaseous materials; translocations of materials from one point to another within the soil; and physical and chemical transformations of mineral and organic materials within the soil.

The addition of organic material to the soil is an important process that occurs to some extent in all soils. However, more organic matter accumulates in some soils than in others. Organic matter increases the available water and cation-exchange capacities of the soil, helps granulate the soil, and releases plant nutrients in the soil. Organic matter accumulates mainly in and above the surface horizon; consequently, the surface horizon is higher in organic matter content and is darker than the lower horizons. The accumulations of organic matter are significant only in the Cypress soils in St. Helena Parish. In most of the other soils in the parish, accumulated organic matter has only slightly darkened the surface layer.

Leaving crop residue on the surface and allowing leaf litter and other organic material to accumulate on the surface can help to maintain or increase the content of organic matter in the soil. Living organisms, through their activities, decompose these accumulations and mix them into the soil. Increasing the content of organic matter in the soil helps to control erosion.

The addition of mineral material on the surface has been important in the formation of some soils in St. Helena Parish. The added material, generally in the form of alluvium, provides new parent material in which the processes of soil formation can occur. In many cases, new material has accumulated faster than the processes of soil formation could appreciably alter the material. As a result, depositional strata formed in the lower horizons of many of the alluvial soils. Even though most of the soils in St. Helena Parish are alluvial, these depositional strata are evident only in Ochlockonee and Ouachita soils. These soils have been forming in recent or relatively young alluvial sediments. Liquids or gases added to the soil are generally compounds of nitrates and sulfates dissolved or trapped in rainwater.

The loss of components from the soil also is important in the overall process of soil development, although it is generally less noticeable than the addition of materials to the soils during soil formation. For example, as organic matter decomposes, carbon dioxide is emitted into the atmosphere. Water also escapes from the soil by evaporation and transpiration from plants. On some soils, erosion has removed both mineral and organic materials. These losses are natural, to some extent, but in some places they are accelerated by human activities. In St. Helena Parish, moving water is the greatest cause of erosion.

Leaching removes many water-soluble compounds and elements from the soil. Water moving through the soil carries these soluble elements out of the soil. In many soils, the soluble elements have been moved completely out of the soil profile. In loamy soils, such as Dexter, Kenefick, Ochlockonee, and Ouachita soils, which are permeable, most soluble bases are leached in a relatively short time. In the more clayey soils, which are less permeable, slowly moving water leaches smaller amounts of soluble elements. In areas where rainfall is sufficient, however, the soluble elements have been completely leached out of these less permeable soils. Relatively young soils that were initially high in bases show the least amount of leaching.

The translocation of material in the soil, either in eluviation or illuviation, has been an important process in the development of most of the soils in the parish. Eluviation is the moving of solids out of part of the soil profile, and illuviation is the moving of solids into a lower part of the soil profile. In soils that have large pores, soil material that is small enough to go through these pores can be suspended in water as it moves downward. Clay particles, because of their small size, move downward in this manner. The translocation and accumulation of clay in the profile is evident in most of the soils in St. Helena Parish.

In many soils in the parish, iron and manganese move to and accumulate in the lower part of the profile. These accumulations result from alternating oxidizing and reducing conditions that are related primarily to the fluctuations of water-saturated zones within the soils. Reduction occurs when water saturates the soil for relatively long periods and when low amounts of oxygen are in the soil. It results in gray compounds of iron and manganese, which are characteristic of the Btg and BCg horizons in Calhoun and Guyton soils. Prevailing reduced conditions and a fluctuating water table can translocate iron and manganese to a lower horizon and can precipitate them at the top of the saturated zone. Bude, Fluker, and Stough soils commonly have brownish or reddish mottles in grayish horizons.

The transformation of mineral and organic substances in soils is also a major process of soil formation. Transformation processes include oxidation and reduction, both in alternating cycles; hydration; solution; and hydrolysis. Oxidation is geochemical reduction in well aerated soils and parent material. It is important in Dexter soils. The easily recognizable oxidation of the ferrous ion to the ferric ion is most common in ferrous, iron-rich soils. Ferrous iron, the mineral species of high iron-bearing hornblende and pyroxene of the primary mineral group, is a component of soils that formed in glauconite or siderite.

Hydration occurs when water molecules or hydrozyl groups are united with minerals but do not become part of the mineral itself. It generally occurs on the surfaces or edges of mineral grains or, partly, as the structure in simple salts. For example, after hydration, anhydrite mineralizes. Gypsum is commonly in clayey soils that contain sulfate, presumably from marine sediments, and calcium, either from marine sediments or mineral weathering. Few, if any, of the soils in St. Helena Parish contain gypsum.

Hydrolysis is the chemical reaction of the hydrogen ion with individual elements within crystal structures. The highly reactive hydrogen ion replaces one of the basic ions in the structure of the mineral. Hydrolysis generally is the most important chemical weathering process; it completely disintegrates primary minerals in all soils, thus making plant nutrients available to plants.

Solution is the simple process of water functioning as the dissolving agent of salts, such as carbonates and sulfates. In solution, salts move through the soil and are either removed from the soil profile or deposited at a lower depth.

Fragipans formed in soils through chemical reactions, physical reactions, or both. Fragipans occur as dense, brittle layers in the subsoil of some soils, such as Bude, Tangi, and Toula soils. The material in fragipans has many vesicular pores and restricts water movement.

Factors of Soil Formation

External factors control the character and development of soils *(17)*. These factors are important in understanding soil genesis. They may be an agent, force, condition, relationship, or a combination of these influencing parent material *(11)*. The five factors of soil formation are climate, organisms, parent material, relief, and time *(23)*. They determine the characteristics of the soil, but not in terms of processes, causes, or forces active in the system. They can vary either singly or collectively.

Climate

Detailed information on the climate in St. Helena Parish is given in the section "General Nature of the Parish."

Rainfall and temperature are the most commonly measured features of climate and have been the most closely correlated to soil properties *(11)*. Although average climatic conditions are often given for a region, the extremes of climate in that region may have more influence in the development of certain soil properties.

Rainfall and temperature can change, depending upon the relief or elevation within a general area.

Rainfall is relatively uniform throughout St. Helena Parish. Major differences within the soils in the parish are not a result of variances in rainfall amounts. Kenefick and Lytle soils are some of the most highly leached soils, but they are different because they have different parent material. The solubility of elements in minerals increases as the temperature increases in summer. When temperatures are below freezing, the physical action of water, primarily in the form of ice, plays an important role in the physical destruction of the soil. This process, however, has minimal influence in the survey area, which does not experience extremely cold conditions. To a degree, the intensity and annual distribution of rainfall are more important than the absolute amount of rainfall. Rainfall in the parish is not equally distributed throughout the year, and some storms are severe. The intensity of rainfall has an effect on the type and rate of reactions.

Water erodes and deposits soil material, but its most important functions are within the soil profile. Some morphological characteristics result from excessive or inadequate amounts of water. In soils that are highly leached and acid, excessive amounts of water are indicated by grayish colors in the profile. The gray color is caused by reduction. Inadequate amounts of water are indicated by the tendency of very clayey soils to shrink as they dry and swell when they become wet.

Temperature is considered an independent soil-forming factor that influences reactions in the soil-forming process. It is the driving force in most models of evapotranspiration. The combination of evapotranspiration and uneven rainfall distribution is perhaps the most important climatic factor in the soil-forming process. For every 10-degree rise in temperature, the speed of a chemical reaction increases by a factor of 2 to 3 *(45)*. Solar radiation generally increases with increasing elevation. It increases at the most rapid rate in the lower, dust-filled layers of the air. The absorption of solar radiation at the soil surface is affected by many variables, such as soil color, plant cover, and aspect. South-facing slopes are always warmer than north-facing slopes. Temperature, unlike solar radiation, generally decreases with increasing elevation. The changes in elevation in St. Helena Parish are not sufficient enough to significantly affect the mean annual soil temperature.

Organisms

The effect of organisms as a soil-forming factor is indicated by the presence or absence of major horizons in the soil profile. Properties associated with living organisms also are important to soil formation. For example, living organisms play a significant role in the cycling of carbon.

The carbon cycle takes place mainly in the biosphere. In photosynthesis the sun's energy, in the form of carbon, produces organic material. Nitrogen, a major plant nutrient, is used in photosynthesis to produce organic material. As organic matter decomposes, it releases nitrogen for plant use and returns carbon dioxide directly to the atmosphere. Humus, a somewhat resistant organic material, stays in the soil. Because of its size and chemical composition, humus increases infiltration, available water capacity, cation-exchange capacity, and the absorption and storage capabilities of such nutrients as calcium, magnesium, and potassium. It also improves soil tilth.

The natural vegetation in St. Helena Parish is quite diverse. The low flats and drainageways primarily support hardwoods. The gently sloping areas support mixed hardwoods and pine, and areas on the upper slopes and ridges support pine and a few hardwoods. For soils that have the same parent material, the reaction generally is slightly higher in soils in areas of hardwoods than in soils in areas of pine. Soils that formed under hardwoods, pines, and mixed pines and hardwoods generally have a thicker eluvial horizon than soils that formed under prairie vegetation. Soils that formed under grasses generally have a surface layer that is thicker and has more organic matter than the surface layer in soils that formed under pine or under mixed hardwoods and pines.

The amount of organic matter accumulated in the soils depends on such factors as temperature and rainfall. Under the optimal conditions for microbial activity, the production and decomposition of organic matter are in equilibrium. The accumulation of organic matter does not occur unless the factor controlling the equilibrium changes. The content of organic matter increases when the annual production of organic matter is high and conditions do not favor its decomposition. In St. Helena Parish, most of the soils occur in an ecosystem in which the rate of decomposition of organic matter exceeds the ability of the vegetation to return organic matter to the soils; therefore, most of the soils are low in organic matter. However, in Cypress soils, which are in swamps and are continuously saturated, organic matter decomposes (oxidizes) slowly.

Parent Material

Parent material has been defined as "the state of the soil system at time zero of soil formation" *(23)*. It is that physical body and its associated chemical and mineralogical properties at the starting point that are changed by the other soil-forming factors over time. The influence of parent material on soil properties is greater on young soils than on old soils. For example, the young Ochlockonee soils exhibit more properties associated with initial deposits than the much older Stough soils, which may have very few properties in common with the initial parent material. In weathered soils, however, the influence of the parent material may be visible and the parent material can still be an independent factor in soil formation. The nature of the parent material can be expressed in the color, texture, and mineralogy of the soils. These properties can be related to physical and chemical properties, such as heat absorption, susceptibility to erosion, shrink-swell potential, and cation-exchange capacity. The characteristics associated with parent material in the parish are described in the section "Landforms and Surface Geology."

Relief

The relief in St. Helena Parish ranges from low on flood plains to moderate in the uplands. Relief associated with the physiographic and geologic units within the parish is described in more detail in the section "Landforms and Surface Geology."

Relief and the geologic physiographic units influence soil formation as a result of their effects on drainage, runoff, and erosion. Within specific geographic regions, several soil properties associated with relief are depth of the solum, thickness of the A horizon and its content of organic matter, wetness or dryness, color of the profile, degree of horizon differentiation, soil reaction, and content of soluble salts.

Relief also affects the moisture relationships in the soil, either in the form of ground water or in the amount of water available for photosynthesis. The water table is closer to the surface in depressions than on high points on the landscape. For soils that have the same parent material, the seasonal high water table is more commonly close to the surface in soils in areas of low relief than in soils on convex landscapes. If the parent material is clayey and has low relief, the soils on ridgetops may be the wettest on the landscape.

Time

When considering soil formation, a pedologist normally does not think in terms of depth in inches or centimeters but rather in terms of horizons, sola, and profile development. Rather than absolute time, the rate of change is what affects soil properties. Time as a rate of change can be described in terms of relative stages of development, absolute dating of horizons and profiles, the rate of soil formation, and the relation to the age and slope of the landform and associated weathering complex *(15, 19, 22)*.

Several hypotheses or models in regard to time have been developed. The hypothesis of the continuous steady state system is that time is uninterrupted and that soil development begins at time zero *(7, 24)*. The continuous steady state model shows that once a process or feature has begun, it continues to develop over time until one of the soil-forming factors greatly changes. Assuming no major change, the morphological feature in time would develop to the maximum extent without giving way to other features. At time zero, for example, Ochlockonee soils have no subhorizons. As the processes of soil development begin, a cambic horizon forms. In the steady state concept, this horizon would develop over time until it reached its maximum. According to this theory, no additional change takes place in the other soil-forming processes and time is the only thing that changes. Because soils represent a dynamic system, however, the continuous steady state hypothesis probably errs in the way it relates time to pedogenic development.

Another hypothesis of soil formation is the sequential model *(4, 12, 13)*. In this model all stages of soil development operate concurrently. Some processes of soil development proceed so slowly that they have very little effect, whereas others are so rapid that they determine the dominant features of the soil. As long as the relative rates of the process continue unchanged, a given set of properties expresses soil development. The sequential model, sometimes referred to as polygenesis, has two major characteristics. First, a soil morphological entity may be a consequence of a combination of several genetic factors. Second, the morphological expression of soil processes may be a result of several pathways. For example, a given soil begins to form in loamy parent material on gently sloping uplands covered with pine forest in a climate similar to that of the present. A darkened surface horizon may form because of the accumulation of organic carbon. Subsequently, an E horizon and an argillic horizon may form. The result is a soil similar to Lytle soils. As long as the parent material, climate, organisms, and relief did not change substantially over time, the soil would have formed sequentially. The factors, however, possibly could have changed. When some major factor changes, time as a factor of soil formation returns to zero. Because the changes made in a soil by any particular factor remain even after that factor changes, the total amount of time that the factors of soil formation were acting on the soil might not appear to differ from one soil to another.

Several methods can be used to determine the actual age of soils. Morphological properties, however, are most commonly used as a basis for dating soils. For example, Satsuma soils, which have a thick E horizon, would normally be considered older than Dexter soils, which have a relatively thin E horizon. Other factors, however, such as parent material, climate, and living organisms, also are important in determining horizon thickness. Although geology can indicate in gross terms the relative age of the soil, pedogenic time returns to zero each time major or catastrophic events affect the landscape. These events generally begin a major geologic period.

The rate of change in weathering decreases over time *(16)*. It becomes constant only when the soil material has been weathered to the maximum extent possible under the effects of a given combination of soil-forming factors. Soil formation is seldom a uniform process over time. Minor fluctuations can constantly readjust the environmental conditions in the system. The relative ages of the soils and their parent materials are described in the section "Landforms and Surface Geology."

Landforms and Surface Geology

Whitney J. Autin, Louisiana Geological Survey, prepared this section.

St. Helena Parish covers about 410 square miles in southeastern Louisiana. Tangipahoa Parish borders St. Helena Parish on the east, and Livingston Parish borders it on the south. East Baton Rouge and East Feliciana Parishes border it on the west. Amite County, Mississippi, borders it on the north.

St. Helena Parish is drained by the Amite, Tickfaw, and Natalbany Rivers, which flow southward and empty into coastal Lake Maurepas in southern Livingston Parish. Many smaller streams originate in the parish and join these larger rivers. Elevations range from near 70 feet above sea level on the Amite River flood plain in the southwestern corner of the parish to about 350 feet in the northeastern part of the parish.

The four general physiographic regions in the parish are characterized by soils that formed in different kinds or ages of parent material. These regions are the High Terraces, Intermediate Terraces, Prairie Terraces, and Holocene alluvial valleys *(37)*.

High Terraces. This physiographic region makes up the majority of the land area of St. Helena Parish. It is in a belt along the northern part of the parish. It occurs as part of a regional, coast-trending terrace that extends across southern Louisiana and as a fluvial terrace that extends along the flanks of the Mississippi River valley *(6, 37)*. Areas of this region correspond to the Tangi-Ruston-Smithdale general soil map unit.

In St. Helena Parish, the High Terraces are very gently sloping to moderately steep uplands. Elevations range from about 170 to 350 feet. Streams have maturely dissected the surface of the terraces. Local relief is slightly more than 150 feet. Very gently sloping surfaces are in some of the larger interfluve areas.

The surface deposits in the larger interfluve areas consist of relatively thin deposits of Sicily Island loess that are 75,000 to 95,000 years old *(29)*. They have a combined thickness of about 3 feet. The loess overlies the Citronelle Formation of early Pleistocene or Pliocene age and probably was deposited about 1 to 2 million years ago. The Citronelle Formation is mainly coarse-textured fluvial deposits. These deposits consist of interstratified gravelly sands that have lesser amounts of silts and clays and in places contain clayey lenses *(13)*. Mineralogical studies indicate that the source of the sediments is the western slopes of the Appalachain mountain range to the far east *(35)*.

A consistent relationship occurs between stratigraphic units at or near the surface, topographic patterns, and the mapped soils. In very gently sloping interfluve areas, thin loess deposits overlie soil profiles that developed in the Citronelle Formation. Tangi soils formed in these areas. On gently sloping to moderately sloping side slopes, most of the loess has been eroded. Ruston soils formed on these slopes in parent material of the Citronelle Formation. On moderately steep side slopes, the loess and part of the Citronelle Formation has been eroded away. Smithdale soils formed in these areas.

Intermediate Terraces. This physiographic region is in a belt along the southern part of St. Helena Parish and trends north along the flanks of the Amite River valley in the western part of the parish. It is part of a regional, coast-trending terrace that extends across southern Louisiana *(6, 37)*. Areas of the Intermediate Terraces correspond to the Toula-Tangi and Bude-Calhoun-Tangi general soil map units.

In St. Helena Parish, the Intermediate Terraces are nearly level to moderately sloping uplands. Elevations range from about 100 to 200 feet. Streams have slightly dissected the surface of the terraces. Local relief ranges from 25 to 50 feet. Nearly level surfaces are in some of the larger interfluve areas.

The surface deposits consist of relatively thin deposits of Sicily Island loess that are 75,000 to 95,000 years old *(29)*. They have a combined thickness of about 3 feet. The loess overlies loamy to clayey sediments of mid- to late-Pleistocene age. Pedogenic processes mixed the loess with underlying sediments to form the parent material of the soils of this region. Toula and Tangi soils on very gently sloping to moderately sloping landscapes formed in loamy to clayey parent material beneath the loess. Bude, Toula, and Calhoun soils on level to gently sloping landscapes formed in loamy parent material beneath the loess. The preloess sediments were previously considered to have been part of the Montgomery Formation *(21)*. Though not exposed as a surface soil anywhere in St. Helena Parish, a distinct soil profile is at the top of this preloess sediment sequence. These sediments are probably a combination of fluvial and slope deposits *(30)*.

Prairie Terraces. This physiographic region is in southern St. Helena Parish where local fluvial terraces and the regionally extensive, coast-trending terraces merge *(6, 37)*. The terraces occur mostly along the flanks of the Amite, Tickfaw, and Natalbany Rivers. Areas of the Prairie Terraces correspond to the Gilbert-Satsuma and Myatt-Satsuma general soil map units.

The Prairie Terraces are level to very gently sloping and range in elevation from 80 to 125 feet. Streams dissect the surface to a minimal extent; however, local escarpments with generally less than 20 feet of relief are adjacent to the principal river valleys. The sediments of the Prairie Terraces are of late-Pleistocene age. Reworked and pedogenically mixed Peoria loess blankets these sediments. This loess is 1 to 3 feet thick in the western part of St. Helena Parish and less than 1 foot thick in the eastern part. The loess overlies stream alluvium derived mostly from the High Terraces to the north. The stream alluvium is sandy at the base of the deposit and becomes finer toward the top. Gilbert and Satsuma soils formed in alluvium derived mostly from the Amite River, and Myatt soils and some of the Satsuma soils formed in alluvium derived mostly from the Tickfaw and Natalbany Rivers.

Holocene alluvial valleys. Alluvial deposits on the flood plains of the principal rivers and smaller streams are Holocene in age and less than 10,000 years old. Flood plains are annually subject to repeated flooding, local erosion, and deposition of sediments. Typically, their topography is level to gently undulating. Abandoned stream channels are easily identified in the large valleys, such as the flood plains of the Amite River. The Holocene alluvial valleys correspond to the Ouachita-Ochlockonee-Guyton general soil map unit. The streams in the parish mainly drain areas of weathered, acid soils of the High Terraces. These soils are the source of the alluvial sediments. The soils of the alluvial valleys have minimal profile development and are mostly classified as Inceptisols or Entisols. Depositional strata commonly are identifiable within 5 feet of the land surface.

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Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

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.

Bedding planes. Fine stratifications, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediments.

Bisequum. Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Bottom land. The normal flood plain of a stream, subject to flooding.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

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.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures 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. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

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.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.
Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically 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 human or animal activities or of a catastrophe in nature, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay in the soil. The soil is not a source of gravel or sand for construction purposes.

Excess sodium (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

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.

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase 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.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or 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, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.5	high
More than 2.5	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

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.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

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.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan.*

Parent material. The unconsolidated organic and mineral material in which soil forms.

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.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 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, such as slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed 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.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, 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 the 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 degrees of acidity or alkalinity, expressed as pH values, are:

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.

Rill. A steep-sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (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.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Seepage (in tables). The movement of water through the soil 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 surface runoff.

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.

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.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of 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.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

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, E, 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.

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. Breaking up a compact subsoil by pulling a special chisel through the soil.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in organic matter content 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 on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

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."

Thin layer (in tables). An otherwise suitable soil material that is too thin for the specified use.

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.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1951-79 at Amite, Louisiana)

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	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-----	60.5	28.0	49.3	80	16	149	5.42	2.88	7.63	7	0.1
February----	64.5	40.4	52.5	82	20	171	6.04	2.65	8.93	7	.3
March-------	71.6	47.1	59.4	86	26	310	5.30	2.49	7.72	7	.0
April-------	79.4	55.6	67.5	89	36	525	6.25	2.47	9.42	5	.0
May---------	85.7	62.1	73.9	95	44	741	5.34	2.54	7.76	6	.0
June--------	91.4	67.9	79.7	99	55	891	4.55	1.94	6.77	6	.0
July--------	92.7	70.8	81.8	100	64	986	7.47	4.65	10.01	11	.0
August------	92.1	70.3	81.2	98	60	967	4.87	2.81	6.70	8	.0
September---	88.5	66.4	77.5	96	50	825	5.22	1.96	7.94	7	.0
October-----	80.8	54.2	67.5	93	33	543	2.61	.51	4.26	3	.0
November----	70.2	45.5	57.9	86	25	257	4.59	1.66	7.02	6	.0
December----	63.4	40.0	51.7	82	18	138	5.94	3.34	8.23	7	.0
Yearly:											
Average---	78.4	54.9	66.7	---	---	---	---	---	---	---	---
Extreme---	---	---	---	101	14	---	---	---	---	---	---
Total-----	---	---	---	---	---	6,503	63.60	51.66	74.96	80	.4

* 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 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1951-79 at Amite, Louisiana)

Probability	Temperature		
	24 °F or lower	28 °F or lower	32 °F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	Mar. 1	Mar. 22	Mar. 25
2 years in 10 later than--	Feb. 20	Mar. 12	Mar. 20
5 years in 10 later than--	Feb. 3	Feb. 23	Mar. 10
First freezing temperature in fall:			
1 year in 10 earlier than--	Nov. 19	Nov. 6	Oct. 28
2 years in 10 earlier than--	Nov. 27	Nov. 13	Nov. 2
5 years in 10 earlier than--	Dec. 14	Nov. 26	Nov. 13

TABLE 3.--GROWING SEASON

(Recorded in the period 1951-79 at Amite, Louisiana)

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	279	246	223
8 years in 10	291	256	232
5 years in 10	314	275	247
2 years in 10	336	294	263
1 year in 10	348	304	271

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR MAJOR LAND USES

Map unit	Percent of area	Cultivated crops	Pasture	Woodland	Urban uses	Intensive recreational uses
Tangi-Ruston-Smithdale	49	Tangi and Ruston: moderately well suited--slope, low fertility, potential aluminum toxicity. Smithdale:[1] poorly suited--slope, low fertility, potential aluminum toxicity.	Well suited[2]	Well suited[3]	Tangi and Smithdale:[4] moderately well suited--slope, low strength for roads, slow and very slow permeability, wetness, seepage. Ruston:[5] well suited.	Tangi and Smithdale:[4] moderately well suited--slope, slow and very slow permeability, wetness. Ruston:[5] well suited.
Toula-Tangi	17	Moderately well suited: slope, low fertility, potential aluminum toxicity.	Well suited	Well suited	Moderatley well suited: wetness, low strength for roads, slow and very slow permeability, seepage.	Moderately well suited: slope, wetness, slow and very slow permeability.
Bude-Calhoun-Toula	3	Moderately well suited:[6] wetness, low fertility, potential aluminum toxicity, erosion.	Moderately well suited:[7] wetness, low fertility, slope.	Bude and Toula: well suited. Calhoun: moderately well suited--compaction, seedling mortality, equipment use limitation, plant competition, windthrow.	Bude and Calhoun:[8] poorly suited--flooding, wetness, moderate and slow permeability, shrink-swell potential, low strength for roads. Toula: moderately well suited--flooding, wetmess. moderate and slow permeability, shrink-swell potential, low strength for roads.	Bude and Calhoun: poorly suited--wetness, flooding, restricted permeability, moderate shrink-swell potential. Toula: moderately well suited--wetness, flooding, restricted permeability, moderate shrink-swell potential.

See footnotes at end of table.

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR MAJOR LAND USES--Continued

Map unit	Percent of area	Cultivated crops	Pasture	Woodland	Urban uses	Intensive recreational uses
Gilbert-Satsuma	4	Moderately well suited:[9] wetness, flooding, low fertility, potential aluminum toxicity, erosion.	Gilbert: moderately well suited--wetness, low fertility, flooding, erosion. Satsuma: well suited.	Gilbert: moderately well suited-- compaction, windthrow, equipment use limitation, seedling mortality, plant competition, sodium, flooding. Satsuma: well suited.	Poorly suited:[10] wetness, flooding, slow and very slow permeability, shrink-swell potential, low strength for roads, slope.	Gilbert: poorly suited-- flooding, wetness, slow and very slow permeability. Satsuma: moderately well suited-- flooding, wetness, slow and very slow permeability.
Myatt-Satsuma	4	Moderately well suited:[11] wetness, flooding, slope, low fertility, potential aluminum toxicity.	Myatt: moderately well suited--wetness, flooding, low fertility. Satsuma: well suited.	Myatt: moderately well suited-- equipment use limitation, compaction, windthrow, seedling mortality, plant competition. Satsuma: well suited.	Poorly suited:[12] wetness, flooding, moderately slow and slow permeability, shrink-swell potential, low strength for roads.	Myatt: poorly suited-- wetness, moderately slow and slow permeability, flooding. Satsuma: moderately well suited-- wetness, moderately slow and slow permeability, flooding.

See footnotes at end of table.

TABLE 4.--SUITABILITY AND LIMITATIONS OF GENERAL SOIL MAP UNITS FOR MAJOR LAND USES--Continued

Map unit	Percent of area	Cultivated crops	Pasture	Woodland	Urban uses	Intensive recreational uses
Ouachita-Ochlockonee-Guyton--	23	Not suited: flooding, wetness.	Poorly suited: wetness, flooding, low fertility.	Moderately well suited: compaction, seedling mortality, windthrow, equipment use limitation, plant competition.	Not suited: flooding, wetness.	Not suited: flooding, wetness.

[1] The moderately steep Smithdale soils are generally not suited.
[2] The moderately steep Smithdale soils are moderately well suited because of the slope and low fertility.
[3] The moderately steep Smithdale soils are moderately well suited.
[4] The moderately steep Smithdale soils are poorly suited.
[5] Where slopes are more than 5 percent, the Ruston soils are moderately well suited.
[6] The occasionally flooded Calhoun soils are poorly suited.
[7] Flooding is a hazard in some areas of the Calhoun soils.
[8] The occasionally flooded Calhoun soils are not suitable as sites for dwellings.
[9] The occasionally flooded Gilbert soils are poorly suited.
[10] The occasionally flooded Gilbert soils are not suitable as sites for dwellings.
[11] The occasionally flooded Myatt soils are poorly suited.
[12] The occasionally flooded Myatt soils are not suitable as sites for dwellings.

TABLE 5.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
Bd	Bude silt loam, 0 to 2 percent slopes	5,400	2.1
Ch	Calhoun silt loam	1,400	0.5
Cn	Calhoun silt loam, occasionally flooded	1,300	0.5
Cy	Cypress mucky clay	300	0.1
Dx	Dexter very fine sandy loam, 1 to 3 percent slopes	1,400	0.5
Fk	Fluker silt loam, 0 to 2 percent slopes	8,600	3.3
Gb	Gilbert silt loam	2,500	1.0
Ge	Gilbert silt loam, occasionally flooded	7,900	3.0
Gt	Guyton silt loam	800	0.3
Gy	Guyton silt loam, occasionally flooded	900	0.3
Ke	Kenefick fine sandy loam, 1 to 3 percent slopes	1,800	0.7
Lt	Lytle silt loam, 1 to 3 percent slopes	1,400	0.5
Ly	Lytle silt loam, 3 to 8 percent slopes	2,100	0.8
Mt	Myatt fine sandy loam	2,400	0.9
My	Myatt fine sandy loam, occasionally flooded	7,000	2.7
OG	Ouachita, Ochlockonee, and Guyton soils, frequently flooded	63,400	24.3
PA	Pits-Arents complex, 0 to 5 percent slopes	1,900	0.7
Pr	Prentiss fine sandy loam, 0 to 2 percent slopes	800	0.3
Rn	Ruston fine sandy loam, 1 to 3 percent slopes	7,700	2.9
RS	Ruston-Smithdale association, rolling	42,100	16.1
Sa	Satsuma silt loam, 1 to 3 percent slopes	4,400	1.7
SM	Smithdale fine sandy loam, 12 to 20 percent slopes	2,000	0.8
St	Stough fine sandy loam	100	*
Ta	Tangi silt loam, 1 to 3 percent slopes	37,000	14.1
Tg	Tangi silt loam, 3 to 8 percent slopes	34,500	13.2
To	Toula silt loam, 1 to 3 percent slopes	22,900	8.7
	Total	262,000	100.0

* Less than 0.1 percent.

TABLE 6.--PRIME FARMLAND

(Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland)

Map symbol	Soil name
Bd	Bude silt loam, 0 to 2 percent slopes
Ch	Calhoun silt loam
Dx	Dexter very fine sandy loam, 1 to 3 percent slopes
Fk	Fluker silt loam, 0 to 2 percent slopes
Gb	Gilbert silt loam
Gt	Guyton silt loam
Ke	Kenefick fine sandy loam, 1 to 3 percent slopes
Lt	Lytle silt loam, 1 to 3 percent slopes
Mt	Myatt fine sandy loam
Pr	Prentiss fine sandy loam, 0 to 2 percent slopes
Rn	Ruston fine sandy loam, 1 to 3 percent slopes
Sa	Satsuma silt loam, 1 to 3 percent slopes
St	Stough fine sandy loam
Ta	Tangi silt loam, 1 to 3 percent slopes
To	Toula silt loam, 1 to 3 percent slopes

TABLE 7.--LAND CAPABILITY AND 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)

Soil name and map symbol	Land capability	Corn	Soybeans	Bahiagrass	Common bermudagrass	Improved bermudagrass
		Bu	Bu	AUM*	AUM*	AUM*
Bd------------------------ Bude	IIw	85	25	7.0	5.5	11.0
Ch------------------------ Calhoun	IIIw	---	25	6.5	5.0	---
Cn------------------------ Calhoun	IVw	---	20	5.0	4.0	---
Cy------------------------ Cypress	VIIw	---	---	---	---	---
Dx------------------------ Dexter	IIe	90	30	10.0	6.0	15.0
Fk------------------------ Fluker	IIw	80	25	7.5	6.0	11.0
Gb------------------------ Gilbert	IIIw	---	20	6.0	5.0	---
Ge------------------------ Gilbert	IVw	---	15	5.0	4.5	---
Gt------------------------ Guyton	IIIw	---	25	6.5	5.0	---
Gy------------------------ Guyton	IVw	---	20	5.0	4.5	---
Ke------------------------ Kenefick	IIe	---	30	8	6.0	13.0
Lt------------------------ Lytle	IIe	90	35	10.0	6.0	13.5
Ly------------------------ Lytle	IIIe	80	30	9.5	6.0	13.0
Mt------------------------ Myatt	IIIw	---	20	7.5	5.5	---
My------------------------ Myatt	IVw	---	---	6.0	5.0	---
OG**---------------------- Ouachita, Ochlockonee, and Guyton	Vw	---	---	8.5	5.0	---
PA**. Pits-Arents						
Pr------------------------ Prentiss	IIw	85	30	9.0	6.0	12.0
Rn------------------------ Ruston	IIe	80	30	9.5	5.5	12.0

See footnotes at end of table.

TABLE 7.--LAND CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability	Corn	Soybeans	Bahiagrass	Common bermudagrass	Improved bermudagrass
		Bu	Bu	AUM*	AUM*	AUM*
RS**:						
Ruston	IIIe	75	25	9.5	5.5	12.0
Smithdale	IVe	70	25	8.0	5.0	9.0
Sa Satsuma	IIe	80	25	7.5	6.0	11.0
SM Smithdale	VIe	---	---	6.5	4.5	9.0
St Stough	IIw	80	25	7.5	5.0	11.0
Ta Tangi	IIe	85	25	10.0	6.0	14.0
Tg Tangi	IIIe	80	20	9.5	5.5	13.5
To Toula	IIe	85	25	10.0	6.5	14.0

* 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.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--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)

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Bd----------------- Bude	10W	Slight	Moderate	Slight	Slight	Severe	Loblolly pine-------	98	10	Loblolly pine, slash pine, shumard oak, cherrybark oak.
							Slash pine----------	---	---	
							Cherrybark oak------	---	---	
							Yellow-poplar-------	---	---	
Ch----------------- Calhoun	9W	Slight	Moderate	Moderate	Severe	Severe	Loblolly pine-------	90	9	Loblolly pine, slash pine, water oak, cherrybark oak, shumard oak.
							Cherrybark oak------	---	---	
							Water oak-----------	---	---	
							Sweetgum------------	---	---	
							Slash pine----------	90	11	
Cn----------------- Calhoun	9W	Slight	Severe	Moderate	Severe	Severe	Loblolly pine-------	90	9	Loblolly pine, slash pine, water oak, cherrybark oak, shumard oak.
							Slash pine----------	90	11	
							Cherrybark oak------	---	---	
							Water oak-----------	---	---	
							Sweetgum------------	---	---	
Cy----------------- Cypress	6W	Slight	Severe	Severe	Severe	Severe	Baldcypress---------	100	6	Baldcypress.
Dx----------------- Dexter	12A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	110	12	Loblolly pine, slash pine, water oak, cherrybark oak, shumard oak.
							Slash pine----------	110	14	
							Cherrybark oak------	---	---	
							Water oak-----------	---	---	
							Sweetgum------------	---	---	
Fk----------------- Fluker	11W	Slight	Moderate	Slight	Moderate	Severe	Slash pine----------	90	11	Loblolly pine, slash pine, water oak, shumard oak.
							Loblolly pine-------	90	9	
							Longleaf pine-------	---	---	
							Sweetgum------------	90	7	
							Southern red oak----	---	---	
							Green ash-----------	---	---	
							Water oak-----------	90	6	
Gb, Ge------------- Gilbert	6W	Slight	Severe	Moderate	Severe	Severe	Sweetgum------------	80	6	Sweetgum, water oak, loblolly pine, slash pine, shumard oak.
							Water oak-----------	80	5	
							Loblolly pine-------	78	8	
							Slash pine----------	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Management concerns: Equipment limitation	Management concerns: Seedling mortality	Management concerns: Windthrow hazard	Management concerns: Plant competition	Potential productivity: Common trees	Potential productivity: Site index	Potential productivity: Productivity class*	Trees to plant
Gt, Gy------------- Guyton	8W	Slight	Severe	Moderate	Severe	Severe	Loblolly pine-------	85	8	Loblolly pine, water oak, cherrybark oak, Shumard oak, swamp chestnut oak, slash pine.
							Slash pine----------	90	11	
							Sweetgum------------	---	---	
							Green ash-----------	---	---	
							Cherrybark oak------	---	---	
							Water oak-----------	---	---	
							Willow oak----------	78	5	
Ke----------------- Kenefick	11A	Slight	Slight	Slight	Slight	Moderate	Loblolly pine-------	100	11	Loblolly pine, slash pine, sweetgum, southern red oak.
							Sweetgum------------	---	---	
							Southern red oak----	---	---	
							Slash pine----------	---	---	
Lt, Ly------------- Lytle	11A	Slight	Slight	Slight	Slight	Severe	Loblolly pine-------	101	11	Loblolly pine, slash pine, longleaf pine, sweetgum, southern red oak.
							Slash pine----------	90	9	
							Longleaf pine-------	---	---	
							Sweetgum------------	---	---	
							Southern red oak----	---	---	
							Green ash-----------	---	---	
Mt, My------------- Myatt	9W	Slight	Severe	Severe	Moderate	Severe	Loblolly pine-------	88	9	Loblolly pine, slash pine, sweetgum, shumard oak, water oak.
							Slash pine----------	92	12	
							Sweetgum------------	92	8	
							Water oak-----------	86	6	
							Southern red oak----	---	---	
							White oak-----------	---	---	
							American sycamore---	---	---	
							Blackgum------------	---	---	
							Shumard oak---------	---	---	
OG**:										
Ouachita----------	11W	Slight	Moderate	Moderate	Slight	Severe	Loblolly pine-------	100	11	Loblolly pine, cherrybark oak, Nuttall oak, eastern cottonwood, water oak.
							Sweetgum------------	100	10	
							Eastern cottonwood--	100	9	
							Cherrybark oak------	100	10	
							Nuttall oak---------	---	---	
							Water oak-----------	---	---	
Ochlockonee-------	11W	Slight	Moderate	Moderate	Slight	Moderate	Loblolly pine-------	100	11	Loblolly pine, cherrybark oak, Nuttall oak, water oak.
							Cherrybark oak------	---	---	
							Nuttall oak---------	---	---	
							Water oak-----------	---	---	
							Sweetgum------------	---	---	
							Eastern cottonwood--	---	---	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
OG**:										
Guyton	6W	Slight	Severe	Severe	Severe	Severe	Willow oak	93	6	Willow oak, water oak, Nuttall oak, green ash.
							Sweetgum	---	---	
							Green ash	---	---	
							Nuttall oak	---	---	
							Eastern cottonwood	---	---	
							Water oak	---	---	
							Loblolly pine	95	10	
Pr: Prentiss	9A	Slight	Slight	Slight	Moderate	Moderate	Loblolly pine	88	9	Loblolly pine, slash pine, cherrybark oak.
							Shortleaf pine	79	9	
							Sweetgum	90	7	
							Cherrybark oak	90	8	
							White oak	80	4	
Rn: Ruston	10A	Slight	Slight	Slight	Slight	Slight	Loblolly pine	96	10	Loblolly pine, slash pine, longleaf pine.
							Slash pine	91	12	
							Longleaf pine	76	6	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Hickory	---	---	
RS**:										
Ruston	10A	Slight	Slight	Slight	Slight	Slight	Loblolly pine	96	10	Loblolly pine, slash pine, longleaf pine.
							Slash pine	91	12	
							Longleaf pine	76	6	
							Southern red oak	---	---	
							Sweetgum	---	---	
							Hickory	---	---	
Smithdale	10A	Slight	Slight	Slight	Slight	Slight	Loblolly pine	95	10	Loblolly pine, longleaf pine, slash pine.
							Longleaf pine	69	5	
							Slash pine	85	11	
							Southern red oak	---	---	
							Sweetgum	---	---	
Sa: Satsuma	11W	Slight	Moderate	Slight	Slight	Severe	Slash pine	90	11	Loblolly pine, slash pine, water oak, shumard oak.
							Loblolly pine	90	9	
							Longleaf pine	---	---	
							Sweetgum	90	7	
							Southern red oak	---	---	
							Green ash	---	---	
							Water oak	90	6	

See footnotes at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns: Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Plant competition	Potential productivity: Common trees	Site index	Productivity class*	Trees to plant
SM----------------- Smithdale	9R	Moderate	Moderate	Slight	Slight	Slight	Loblolly pine-------	86	9	Loblolly pine, longleaf pine, slash pine.
							Longleaf pine-------	69	5	
							Slash pine----------	85	11	
							Southern red oak----	---	---	
							Sweetgum------------	---	---	
St----------------- Stough	9W	Slight	Moderate	Slight	Moderate	Severe	Loblolly pine-------	90	9	Loblolly pine, slash pine, water oak, cherrybark oak.
							Cherrybark oak------	85	7	
							Slash pine----------	86	11	
							Sweetgum------------	85	6	
							Water oak-----------	80	5	
Ta, Tg------------- Tangi	13A	Slight	Slight	Slight	Slight	Moderate	Slash pine----------	100	13	Loblolly pine, slash pine.
							Loblolly pine-------	109	12	
							Longleaf pine-------	---	---	
							Sweetgum------------	---	---	
							Southern red oak----	---	---	
							Green ash-----------	---	---	
To----------------- Toula	13A	Slight	Slight	Slight	Slight	Moderate	Slash pine----------	100	13	Loblolly pine, slash pine.
							Loblolly pine-------	101	11	
							Longleaf pine-------	74	6	
							Sweetgum------------	---	---	
							Southern red oak----	---	---	
							Green ash-----------	---	---	

* Productivity class is the yield in cubic meters per hectare per year calculated at the age of culmination of mean annual increment for fully stocked natural stands.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Bd-------------------- Bude	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ch-------------------- Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Cn-------------------- Calhoun	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Cy-------------------- Cypress	Severe: flooding, ponding, percs slowly.	Severe: ponding, percs slowly.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
Dx-------------------- Dexter	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Fk-------------------- Fluker	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Gb, Ge---------------- Gilbert	Severe: flooding, wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.
Gt, Gy---------------- Guyton	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Ke-------------------- Kenefick	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope.	Slight----------	Slight.
Lt, Ly---------------- Lytle	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Mt, My---------------- Myatt	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
OG*:					
Ouachita-------------	Severe: flooding.	Moderate: flooding, percs slowly.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Ochlockonee----------	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Guyton---------------	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
PA*. Pits-Arents					

See footnote at end of table.

TABLE 9.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Pr-------------------- Prentiss	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight----------	Moderate: droughty.
Rn-------------------- Ruston	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
RS*:					
Ruston----------------	Slight----------	Slight----------	Moderate: slope.	Slight----------	Slight.
Smithdale------------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
Sa-------------------- Satsuma	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
SM-------------------- Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
St-------------------- Stough	Severe: flooding, wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
Ta, Tg---------------- Tangi	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: slope, wetness, percs slowly.	Moderate: wetness.	Moderate: wetness.
To-------------------- Toula	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly, slope.	Moderate: wetness.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--WILDLIFE HABITAT

(See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
Bd----------------- Bude	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ch----------------- Calhoun	Poor	Fair	Fair	Good	Fair	Good	Good	Good	Fair	Fair	Good.
Cn----------------- Calhoun	Very poor.	Fair	Fair	Good	Fair	Good	Good	Good	Poor	Fair	Good.
Cy----------------- Cypress	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
Dx----------------- Dexter	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Fk----------------- Fluker	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Gb, Ge------------- Gilbert	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Gt----------------- Guyton	Fair	Fair	Fair	Fair	Fair	Good	Good	Good	Fair	Fair	Good.
Gy----------------- Guyton	Fair	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
Ke----------------- Kenefick	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Lt----------------- Lytle	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Ly----------------- Lytle	Fair	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Mt, My------------- Myatt	Poor	Fair	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
OG*:											
Ouachita-----------	Poor	Fair	Fair	Good	Poor	Good	Good	Fair	Fair	Good	Fair.
Ochlockonee--------	Poor	Fair	Fair	Good	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Guyton-------------	Poor	Fair	Fair	Fair	Fair	Poor	Good	Good	Poor	Fair	Good.
PA*. Pits-Arents											
Pr----------------- Prentiss	Fair	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Rn----------------- Ruston	Good	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

See footnote at end of table.

TABLE 10.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements: Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Shrubs	Wetland plants	Shallow water areas	Potential as habitat for--: Openland wildlife	Woodland wildlife	Wetland wildlife
RS*:											
Ruston	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Smithdale	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Sa: Satsuma	Fair	Good	Good	Good	Good	Good	Fair	Poor	Fair	Good	Poor.
SM: Smithdale	Poor	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
St: Stough	Fair	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Ta: Tangi	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Tg: Tangi	Fair	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
To: Toula	Good	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
Bd: Bude	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Ch: Calhoun	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
Cn: Calhoun	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
Cy: Cypress	Severe: ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: low strength, ponding, flooding.	Severe: ponding, flooding.
Dx: Dexter	Severe: cutbanks cave.	Slight	Slight	Severe: low strength.	Slight.
Fk: Fluker	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.	Severe: low strength, wetness.	Severe: wetness.
Gb: Gilbert	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Ge: Gilbert	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, low strength, wetness.	Severe: wetness.
Gt: Guyton	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness.	Severe: wetness.
Gy: Guyton	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
Ke: Kenefick	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
Lt: Lytle	Slight	Slight	Slight	Severe: low strength.	Slight.
Ly: Lytle	Slight	Slight	Moderate: slope.	Severe: low strength.	Slight.
Mt: Myatt	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
My: Myatt	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.
OG*:					
Ouachita	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Ochlockonee	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Guyton	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness, flooding.
PA*. Pits-Arents					
Pr: Prentiss	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: droughty.
Rn: Ruston	Slight	Slight	Slight	Moderate: low strength.	Slight.
RS*:					
Ruston	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Smithdale	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Sa: Satsuma	Severe: wetness.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Moderate: wetness.
SM: Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
St: Stough	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Moderate: wetness, flooding.	Moderate: wetness, droughty.
Ta: Tangi	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.
Tg: Tangi	Severe: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Severe: low strength.	Moderate: wetness.
To: Toula	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Severe: low strength.	Moderate: wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
Bd: Bude	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: hard to pack, wetness.
Ch: Calhoun	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Cn: Calhoun	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Cy: Cypress	Severe: flooding, ponding, percs slowly.	Severe: flooding, ponding.	Severe: flooding, ponding, too clayey.	Severe: flooding, ponding.	Poor: too clayey, hard to pack, ponding.
Dx: Dexter	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too sandy.
Fk: Fluker	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gb: Gilbert	Severe: wetness, percs slowly.	Slight	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ge: Gilbert	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Gt: Guyton	Severe: wetness, percs slowly.	Moderate: seepage.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Gy: Guyton	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Ke: Kenefick	Severe: percs slowly.	Severe: seepage.	Severe: seepage.	Slight	Fair: too clayey.
Lt, Ly: Lytle	Moderate: percs slowly.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Fair: too clayey, thin layer.
Mt: Myatt	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
My------------------ Myatt	Severe: flooding, wetness, percs slowly.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
OG*:					
Ouachita-----------	Severe: flooding, percs slowly.	Severe: flooding.	Severe: flooding, seepage.	Severe: flooding.	Fair: too clayey.
Ochlockonee--------	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, wetness.	Fair: wetness.
Guyton-------------	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
PA*. Pits-Arents					
Pr------------------ Prentiss	Severe: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Fair: wetness.
Rn------------------ Ruston	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
RS*:					
Ruston-------------	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
Smithdale----------	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
Sa------------------ Satsuma	Severe: wetness, percs slowly.	Severe: seepage, wetness.	Severe: seepage, wetness.	Moderate: flooding, wetness.	Fair: too clayey, wetness.
SM------------------ Smithdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
St------------------ Stough	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
Ta, Tg-------------- Tangi	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness, thin layer.
To------------------ Toula	Severe: wetness, percs slowly.	Moderate: seepage, slope.	Severe: wetness.	Moderate: wetness.	Fair: too clayey, wetness.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Topsoil
Bd: Bude	Poor: low strength, wetness.	Poor: wetness.
Ch, Cn: Calhoun	Poor: low strength, wetness.	Poor: wetness.
Cy: Cypress	Poor: low strength, wetness.	Poor: too clayey, wetness.
Dx: Dexter	Good	Fair: too clayey.
Fk: Fluker	Poor: wetness.	Poor: wetness.
Gb, Ge: Gilbert	Poor: wetness, low strength.	Poor: wetness.
Gt, Gy: Guyton	Poor: wetness.	Poor: wetness.
Ke: Kenefick	Good	Fair: too clayey.
Lt, Ly: Lytle	Fair: shrink-swell.	Fair: too clayey.
Mt, My: Myatt	Poor: wetness.	Poor: wetness.
OG*:		
Ouachita	Good	Fair: too clayey.
Ochlockonee	Good	Good.
Guyton	Poor: wetness.	Poor: wetness.
PA*. Pits-Arents		
Pr: Prentiss	Fair: wetness.	Good.
Rn: Ruston	Fair: low strength.	Fair: small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Topsoil
RS*:		
Ruston	Fair: low strength.	Fair: small stones.
Smithdale	Good	Fair: too clayey, small stones, slope.
Sa: Satsuma	Fair: wetness.	Poor: too clayey.
SM: Smithdale	Fair: slope.	Poor: slope.
St: Stough	Fair: wetness.	Good.
Ta, Tg: Tangi	Poor: low strength.	Fair: area reclaim, too clayey.
To: Toula	Fair: low strength, wetness.	Poor: area reclaim.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the "Glossary." See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Terraces and diversions	Features affecting-- Grassed waterways
Bd---------------- Bude	Moderate: seepage.	Severe: wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Ch---------------- Calhoun	Slight---------	Severe: piping, wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
Cn---------------- Calhoun	Slight---------	Severe: piping, wetness.	Severe: no water.	Percs slowly, flooding.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness.	Wetness, erodes easily, percs slowly.
Cy---------------- Cypress	Slight---------	Severe: ponding.	Severe: slow refill.	Ponding, percs slowly, flooding.	Ponding, percs slowly, flooding.	Ponding, percs slowly.	Wetness, erodes easily, percs slowly.
Dx---------------- Dexter	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Fk---------------- Fluker	Moderate: seepage.	Severe: wetness, piping.	Severe: no water.	Percs slowly---	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Wetness, erodes easily, rooting depth.
Gb---------------- Gilbert	Slight---------	Severe: wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ge---------------- Gilbert	Slight---------	Severe: wetness.	Severe: no water.	Flooding, percs slowly.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Gt---------------- Guyton	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly---	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Gy---------------- Guyton	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly, flooding.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
Ke---------------- Kenefick	Moderate: seepage.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Soil blowing---	Soil blowing---	Favorable.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--: Pond reservoir areas	Limitations for--: Embankments, dikes, and levees	Limitations for--: Aquifer-fed excavated ponds	Features affecting--: Drainage	Features affecting--: Irrigation	Features affecting--: Terraces and diversions	Features affecting--: Grassed waterways
Lt: Lytle	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily	Erodes easily.
Ly: Lytle	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
Mt: Myatt	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Favorable	Wetness	Wetness	Wetness.
My: Myatt	Moderate: seepage.	Severe: piping, wetness.	Severe: slow refill.	Flooding	Wetness, flooding.	Wetness	Wetness.
OG*:							
Ouachita	Slight	Severe: piping.	Severe: no water.	Deep to water	Erodes easily, flooding.	Erodes easily	Erodes easily.
Ochlockonee	Severe: seepage.	Severe: piping.	Severe: cutbanks cave.	Deep to water	Flooding	Favorable	Favorable.
Guyton	Moderate: seepage.	Severe: piping, wetness.	Severe: no water.	Percs slowly, flooding.	Wetness, percs slowly, erodes easily.	Erodes easily, wetness, percs slowly.	Wetness, erodes easily, percs slowly.
PA*. Pits-Arents							
Pr: Prentiss	Moderate: seepage.	Severe: piping.	Severe: no water.	Favorable	Wetness, droughty.	Wetness, rooting depth.	Droughty, rooting depth.
Rn: Ruston	Moderate: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Favorable	Favorable	Favorable.
RS*:							
Ruston	Moderate: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope	Favorable	Favorable.
Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
Sa: Satsuma	Severe: seepage.	Moderate: wetness, thin layer, piping.	Severe: no water.	Percs slowly	Percs slowly, erodes easily, wetness.	Erodes easily, percs slowly.	Wetness, erodes easily, percs slowly.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Terraces and diversions	Grassed waterways
SM: Smithdale	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope	Slope.
St	Slight	Moderate: piping, wetness.	Severe: no water.	Favorable	Wetness, droughty.	Erodes easily, wetness.	Wetness, erodes easily, droughty.
Ta: Tangi	Moderate: seepage.	Moderate: piping, wetness.	Severe: no water.	Percs slowly	Wetness, percs slowly, rooting depth.	Erodes easily, wetness, rooting depth.	Erodes easily, percs slowly, rooting depth.
Tg: Tangi	Moderate: slope, seepage.	Moderate: piping, wetness.	Severe: no water.	Percs slowly, slope.	Slope, wetness, percs slowly.	Erodes easily, wetness, rooting depth.	Erodes easily, percs slowly, rooting depth.
To: Toula	Moderate: seepage.	Moderate: wetness, piping.	Severe: no water.	Percs slowly	Wetness, percs slowly.	Erodes easily, wetness, rooting depth.	Erodes easily, percs slowly, rooting depth.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
Bd-------------- Bude	0-20	Silt loam--------	CL	A-6	100	100	95-100	85-96	25-40	11-25
	20-45	Silt loam, silty clay loam.	CL	A-6, A-7	100	100	95-100	84-98	35-50	15-30
	45-60	Silt loam, clay loam, silty clay loam.	CL, CH	A-7, A-6	100	100	95-100	75-90	35-65	15-40
Ch-------------- Calhoun	0-17	Silt loam--------	CL-ML, ML, CL	A-4	100	100	100	95-100	<31	NP-10
	17-49	Silty clay loam, silt loam.	CL	A-6, A-7-6	100	100	95-100	95-100	30-45	11-24
	49-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	100	100	100	90-100	25-40	5-20
Cn-------------- Calhoun	0-15	Silt loam--------	CL-ML, ML, CL	A-4	100	100	100	95-100	<31	NP-10
	15-48	Silty clay loam, silt loam.	CL	A-6, A-7-6	100	100	95-100	95-100	30-45	11-24
	48-60	Silt loam, silty clay loam.	CL, CL-ML	A-6, A-4	100	100	100	90-100	25-40	5-20
Cy-------------- Cypress	0-4	Mucky clay-------	CH, CL	A-7-5	100	100	90-100	85-95	48-66	25-39
	4-60	Clay loam, clay, silty clay.	CL, CH	A-7-6	100	100	90-100	75-95	43-66	21-39
Dx-------------- Dexter	0-6	Very fine sandy loam.	ML, SM, CL-ML, SC-SM	A-4	100	100	85-100	45-75	<25	NP-4
	6-34	Silty clay loam, clay loam, silt loam.	CL	A-6, A-4	100	100	90-100	70-90	28-40	8-18
	34-60	Sandy clay loam, sandy loam, loamy fine sand.	SC, SM, CL, ML	A-6, A-4, A-2-4	100	100	75-95	25-55	10-30	NP-15
Fk-------------- Fluker	0-4	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	70-95	<25	NP-7
	4-10	Silt loam--------	CL, CL-ML	A-4, A-6	100	100	95-100	80-95	17-30	6-19
	10-30	Silt loam, silty clay loam.	CL	A-6	100	100	95-100	80-95	20-40	10-20
	30-60	Loam, silt loam, fine sandy loam.	ML, CL, SC-SM, SC	A-4, A-6	100	100	70-90	36-75	16-30	3-14
Gb-------------- Gilbert	0-7	Silt loam--------	ML, CL-ML, CL	A-4	100	100	95-100	90-100	23-31	3-10
	7-30	Silty clay loam, silt loam.	CL	A-6, A-7-6	100	100	95-100	90-100	32-45	11-22
	30-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	100	100	90-100	90-100	25-45	5-22
Ge-------------- Gilbert	0-24	Silt loam--------	ML, CL-ML, CL	A-4	100	100	95-100	90-100	23-31	3-10
	24-42	Silty clay loam, silt loam.	CL	A-6, A-7-6	100	100	95-100	90-100	32-45	11-22
	42-60	Silty clay loam, silt loam, loam.	CL, CL-ML	A-6, A-7, A-4	100	100	90-100	90-100	25-45	5-22

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
Gt--------------- Guyton	0-23	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	65-90	<27	NP-7
	23-35	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	100	100	94-100	75-95	22-40	6-18
	35-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML, ML	A-6, A-4	100	100	95-100	50-95	<40	NP-18
Gy--------------- Guyton	0-19	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	65-90	<27	NP-7
	19-32	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	100	100	94-100	75-95	22-40	6-18
	32-60	Silt loam, silty clay loam, clay loam.	CL, CL-ML, ML	A-6, A-4	100	100	95-100	50-95	<40	NP-18
Ke--------------- Kenefick	0-5	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-4	100	100	75-100	40-60	<21	NP-6
	5-34	Sandy clay loam, clay loam, loam.	CL	A-6	100	100	80-100	55-85	29-38	10-15
	34-44	Fine sandy loam, sandy clay loam.	CL, SC, CL-ML	A-4, A-6	100	100	80-100	40-70	23-30	7-11
	44-60	Very fine sandy loam to sand.	SM, ML	A-2-4, A-4	95-100	80-100	70-100	25-60	<21	NP-4
Lt--------------- Lytle	0-6	Silt loam--------	ML, CL-ML	A-4	100	95-100	95-100	80-95	<30	NP-7
	6-24	Loam, silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	100	95-100	85-100	75-95	20-35	8-18
	24-60	Sandy clay loam, clay loam, sandy clay.	SC, CH, CL	A-6, A-7-6	100	95-100	50-70	20-40	30-60	12-40
Ly--------------- Lytle	0-5	Silt loam--------	ML, CL-ML	A-4	100	95-100	95-100	80-95	<30	NP-7
	5-30	Loam, silt loam, silty clay loam.	CL, CL-ML	A-4, A-6	100	95-100	85-100	75-95	20-35	8-18
	30-60	Sandy clay loam, clay loam, sandy clay.	SC, CH, CL	A-6, A-7-6	100	95-100	50-70	20-40	30-60	12-40
Mt--------------- Myatt	0-9	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2, A-4	95-100	95-100	60-90	30-70	<25	NP-5
	9-43	Loam, sandy clay loam, clay loam.	SM, SC, ML, CL	A-4	95-100	95-100	80-100	40-80	<30	NP-10
	43-60	Gravelly fine sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-6, A-4, A-2	75-100	60-90	60-80	30-70	15-40	5-20
My--------------- Myatt	0-14	Fine sandy loam	SM, SC-SM, ML, CL-ML	A-2, A-4	95-100	95-100	60-90	30-70	<25	NP-5
	14-40	Loam, sandy clay loam, clay loam.	SM, SC, ML, CL	A-4	95-100	95-100	80-100	40-80	<30	NP-10
	40-60	Gravelly fine sandy loam, sandy clay loam, clay loam.	SC-SM, SC, CL-ML, CL	A-6, A-4, A-2	75-100	60-90	60-80	30-70	15-40	5-20

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	4	10	40	200		
	In								Pct	
OG*:										
Ouachita	0-4	Silt loam	ML, CL-ML, CL	A-4	100	100	85-95	55-85	<30	2-10
	4-40	Silt loam, loam, very fine sandy loam.	ML, CL-ML, CL	A-4	100	100	85-95	55-85	<30	2-10
	40-60	Silt loam, loam, silty clay loam.	CL, CL-ML	A-4, A-6	100	100	85-95	55-90	25-40	5-15
Ochlockonee	0-5	Silt loam	ML, CL-ML	A-4	100	95-100	95-100	50-90	<30	NP-7
	5-60	Fine sandy loam, sandy loam, silt loam.	SM, ML, SC, CL	A-4	100	95-100	95-100	36-75	<32	NP-9
Guyton	0-18	Silt loam	ML, CL-ML	A-4	100	100	95-100	65-90	<27	NP-7
	18-32	Silt loam, silty clay loam, clay loam.	CL, CL-ML	A-6, A-4	100	100	94-100	75-95	22-40	6-18
	32-60	Silt loam, silty clay loam, sandy clay loam.	CL, CL-ML, ML	A-6, A-4	100	100	95-100	50-95	<40	NP-18
PA*. Pits-Arents										
Pr Prentiss	0-23	Fine sandy loam	SC, SC-SM, SM	A-4	100	100	65-85	36-50	<30	NP-10
	23-60	Loam, sandy loam, fine sandy loam.	CL-ML, CL, SC, SC-SM	A-6, A-4	100	100	70-100	40-75	20-35	4-12
Rn Ruston	0-9	Fine sandy loam	SM, ML	A-4, A-2-4	85-100	78-100	65-100	30-75	<20	NP-3
	9-40	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	40-50	Loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	50-60	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-42	11-20
RS*:										
Ruston	0-11	Fine sandy loam	SM, ML	A-4, A-2-4	85-100	78-100	65-100	30-75	<20	NP-3
	11-34	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-40	11-20
	34-48	Loam, sandy loam, loamy sand.	SM, ML, CL-ML, SC-SM	A-4, A-2-4	85-100	78-100	65-100	30-75	<27	NP-7
	48-60	Sandy clay loam, loam, clay loam.	SC, CL	A-6	85-100	78-100	70-100	36-75	30-42	11-20
Smithdale	0-11	Fine sandy loam	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	11-34	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	34-60	Loam, sandy loam, sandy clay loam.	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	0-18

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification Unified	Classification AASHTO	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In								Pct	
Sa--------------- Satsuma	0-4	Silt loam--------	ML	A-4	100	100	95-100	80-95	<30	NP-7
	4-13	Silt loam--------	CL-ML, CL	A-4, A-6	100	100	95-100	80-95	17-30	6-19
	13-33	Silty clay loam, silty clay.	CL, CH	A-6, A-7-6	100	100	95-100	80-95	35-55	20-35
	33-65	Silty clay loam, clay loam, loam.	CL	A-6	100	100	80-90	70-80	20-40	10-20
SM--------------- Smithdale	0-16	Fine sandy loam	SM, SC-SM	A-4, A-2	100	85-100	60-95	28-49	<20	NP-5
	16-50	Clay loam, sandy clay loam, loam.	SC-SM, SC, CL, CL-ML	A-6, A-4	100	85-100	80-96	45-75	23-38	7-16
	50-60	Loam, sandy loam, sandy clay loam.	SM, ML, CL, SC	A-4	100	85-100	65-95	36-70	<30	0-18
St--------------- Stough	0-5	Fine sandy loam	SC-SM, SM, ML, CL-ML	A-4	100	100	65-85	35-65	<25	NP-7
	5-12	Loam, fine sandy loam, sandy loam.	ML, CL, CL-ML	A-4	100	100	75-95	50-75	<25	NP-8
	12-60	Sandy loam, sandy clay loam, loam.	SC, CL	A-4, A-6	100	100	65-90	40-65	25-40	8-15
Ta--------------- Tangi	0-5	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	80-95	<30	NP-7
	5-28	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	95-100	80-95	20-35	8-18
	28-49	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-7-6	100	100	80-95	40-80	25-49	11-25
	49-60	Clay, clay loam, sandy clay.	CL, CH, SC	A-7-6, A-7-5	100	100	85-95	45-85	41-70	16-38
Tg--------------- Tangi	0-5	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	80-95	<30	NP-7
	5-19	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	95-100	80-95	20-35	8-18
	19-36	Clay loam, sandy clay loam, loam.	CL, SC	A-6, A-7-6	100	100	80-95	40-80	25-49	11-25
	36-60	Clay, clay loam, sandy clay.	CL, CH, SC	A-7-6, A-7-5	100	100	85-95	45-85	41-70	16-38
To--------------- Toula	0-5	Silt loam--------	ML, CL-ML	A-4	100	100	95-100	80-95	<30	NP-7
	5-21	Silt loam, silty clay loam.	CL	A-4, A-6	100	100	95-100	80-95	20-35	8-18
	21-31	Silt loam, silty clay loam.	CL	A-6	100	100	85-100	75-95	25-40	11-20
	31-44	Silt loam, silty clay loam, clay loam.	CL	A-6	100	100	80-100	65-80	25-40	11-20
	44-60	Silt loam, silty clay loam, clay loam.	CL	A-4, A-6	100	100	80-100	65-80	20-40	8-20

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	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/cc	In/hr	In/in	pH				Pct
Bd---------------	0-20	10-27	1.40-1.60	0.6-2.0	0.21-0.24	4.5-6.0	Low----------	0.49	3	.5-3
Bude	20-45	18-32	1.40-1.65	0.06-0.2	0.14-0.23	4.5-6.0	Moderate-----	0.43		
	45-60	16-32	1.40-1.65	0.06-0.2	0.11-0.23	4.5-6.0	Moderate-----	0.37		
Ch---------------	0-17	10-27	1.30-1.65	0.2-0.6	0.21-0.23	3.6-6.0	Low----------	0.49	5	.5-4
Calhoun	17-49	22-35	1.30-1.70	0.06-0.2	0.20-0.22	3.6-5.5	Moderate-----	0.43		
	49-60	10-30	1.40-1.70	0.2-0.6	0.21-0.23	3.6-7.8	Low----------	0.43		
Cn---------------	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
Calhoun	15-48	22-35	1.30-1.65	0.06-0.2	0.20-0.22	4.5-5.5	Moderate-----	0.43		
	48-60	10-30	1.30-1.65	0.2-0.6	0.21-0.23	4.5-7.8	Low----------	0.43		
Cy---------------	0-4	40-60	1.10-1.50	<0.06	0.12-0.20	3.6-5.0	Moderate-----	0.32	1	5-25
Cypress	4-60	35-60	1.10-1.50	<0.06	0.12-0.20	3.6-5.0	Moderate-----	0.32		
Dx---------------	0-6	10-20	1.30-1.70	0.6-2.0	0.15-0.24	4.5-7.3	Low----------	0.43	5	.5-4
Dexter	6-34	18-35	1.40-1.70	0.6-2.0	0.15-0.24	4.5-6.0	Low----------	0.32		
	34-60	10-30	1.30-1.70	0.6-6.0	0.08-0.18	4.5-6.0	Low----------	0.24		
Fk---------------	0-4	6-12	1.35-1.65	0.6-2.0	0.14-0.24	3.6-6.0	Low----------	0.49	3	.5-4
Fluker	4-10	6-18	1.35-1.65	0.6-2.0	0.20-0.24	3.6-6.0	Low----------	0.49		
	10-30	18-33	1.35-1.65	0.6-2.0	0.20-0.24	3.6-6.0	Low----------	0.43		
	30-60	6-22	1.45-1.90	0.06-0.2	0.01-0.10	3.6-6.0	Low----------	0.32		
Gb---------------	0-7	8-25	1.35-1.65	0.6-2.0	0.22-0.24	4.5-6.0	Low----------	0.43	4	.5-4
Gilbert	7-30	18-35	1.40-1.60	<0.06	0.14-0.23	4.5-6.0	Moderate-----	0.43		
	30-60	18-35	1.40-1.65	<0.06	0.14-0.23	5.8-9.0	Moderate-----	0.43		
Ge---------------	0-24	8-25	1.35-1.65	0.6-2.0	0.22-0.24	4.5-6.0	Low----------	0.43	4	.5-4
Gilbert	24-42	18-35	1.40-1.60	<0.06	0.14-0.23	4.5-6.0	Moderate-----	0.43		
	42-60	18-35	1.40-1.65	<0.06	0.14-0.23	5.8-9.0	Moderate-----	0.43		
Gt---------------	0-23	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low----------	0.43	5	.5-4
Guyton	23-35	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low----------	0.37		
	35-60	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-8.4	Low----------	0.37		
Gy---------------	0-19	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low----------	0.43	5	.5-4
Guyton	19-32	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.5	Low----------	0.37		
	32-60	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-8.4	Low----------	0.37		
Ke---------------	0-5	5-15	1.30-1.45	2.0-6.0	0.11-0.15	4.5-6.5	Low----------	0.24	5	<2
Kenefick	5-34	20-34	1.35-1.55	0.6-2.0	0.12-0.18	4.5-6.5	Moderate-----	0.32		
	34-44	10-24	1.50-1.65	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.37		
	44-60	5-15	1.50-1.69	2.0-6.0	0.06-0.14	4.5-6.5	Low----------	0.24		
Lt---------------	0-6	6-12	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.49	5	.5-4
Lytle	6-24	18-34	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.43		
	24-60	20-55	1.35-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Moderate-----	----		
Ly---------------	0-5	6-12	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.49	5	.5-4
Lytle	5-30	18-34	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.43		
	30-60	20-55	1.35-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Moderate-----	----		
Mt---------------	0-9	7-20	1.30-1.60	0.6-2.0	0.11-0.20	3.6-6.0	Low----------	0.28	5	.5-5
Myatt	9-43	18-35	1.30-1.50	0.2-2.0	0.12-0.20	3.6-5.5	Low----------	0.28		
	43-60	7-30	1.30-1.50	0.2-2.0	0.10-0.20	3.6-5.5	Low----------	0.24		

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	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/cc	In/hr	In/in	pH				Pct
My-------------- Myatt	0-14	7-20	1.30-1.60	0.6-2.0	0.11-0.20	3.6-6.0	Low----------	0.28	5	.5-5
	14-40	18-35	1.30-1.50	0.2-2.0	0.12-0.20	3.6-5.5	Low----------	0.28		
	40-60	7-30	1.30-1.50	0.2-2.0	0.10-0.20	3.6-5.5	Low----------	0.24		
OG*:										
Ouachita--------	0-4	8-25	1.35-1.60	0.6-2.0	0.15-0.22	4.5-6.0	Low----------	0.37	5	.5-4
	4-40	18-25	1.35-1.60	0.6-2.0	0.15-0.22	4.5-6.0	Low----------	0.37		
	40-60	18-35	1.35-1.60	0.2-0.6	0.15-0.22	4.5-5.5	Low----------	0.32		
Ochlockonee-----	0-5	7-22	1.40-1.60	2.0-6.0	0.10-0.20	3.6-5.5	Low----------	0.24	5	.5-4
	5-60	8-18	1.40-1.60	0.6-2.0	0.10-0.20	3.6-5.5	Low----------	0.20		
Guyton----------	0-18	7-25	1.35-1.65	0.6-2.0	0.20-0.23	3.6-6.0	Low----------	0.43	5	.5-4
	18-32	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-6.0	Low----------	0.37		
	32-60	20-35	1.35-1.70	0.06-0.2	0.15-0.22	3.6-8.4	Low----------	0.37		
PA*. Pits-Arents										
Pr-------------- Prentiss	0-23	5-18	1.50-1.60	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28	3	1-3
	23-60	10-20	1.65-1.75	0.2-0.6	0.06-0.09	4.5-5.5	Low----------	0.24		
Rn-------------- Ruston	0-9	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5	.5-4
	9-40	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
	40-50	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.32		
	50-60	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
RS*:										
Ruston----------	0-11	5-20	1.30-1.70	0.6-2.0	0.09-0.16	4.5-6.5	Low----------	0.28	5	.5-4
	11-34	18-35	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
	34-48	10-20	1.30-1.70	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.32		
	48-60	15-38	1.40-1.70	0.6-2.0	0.12-0.17	4.5-6.0	Low----------	0.28		
Smithdale-------	0-11	6-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-4
	11-34	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	34-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
Sa-------------- Satsuma	0-4	5-12	1.35-1.65	0.6-2.0	0.14-0.24	4.5-6.0	Low----------	0.49	5	.5-4
	4-13	6-18	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.49		
	13-33	27-45	1.35-1.65	0.06-0.2	0.15-0.18	4.5-6.0	Moderate-----	0.37		
	33-65	18-30	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.37		
SM-------------- Smithdale	0-16	5-15	1.40-1.50	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28	5	.5-4
	16-50	18-33	1.40-1.55	0.6-2.0	0.15-0.17	4.5-5.5	Low----------	0.24		
	50-60	12-27	1.40-1.55	2.0-6.0	0.14-0.16	4.5-5.5	Low----------	0.28		
St-------------- Stough	0-5	5-15	1.40-1.55	0.6-2.0	0.12-0.18	4.5-5.5	Low----------	0.28	3	1-4
	5-12	8-18	1.45-1.60	0.2-0.6	0.07-0.11	4.5-5.5	Low----------	0.37		
	12-60	5-27	1.55-1.65	0.2-0.6	0.07-0.11	4.5-5.5	Low----------	0.37		
Ta-------------- Tangi	0-5	5-12	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.49	3	.5-4
	5-28	18-30	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.43		
	28-49	20-35	1.45-1.85	0.06-0.2	0.08-0.14	4.5-6.0	Moderate-----	0.32		
	49-60	35-55	1.40-1.80	<0.06	0.08-0.14	4.5-6.0	Moderate-----	0.28		
Tg-------------- Tangi	0-5	5-12	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.49	3	.5-4
	5-19	18-30	1.35-1.65	0.6-2.0	0.20-0.24	4.5-6.0	Low----------	0.43		
	19-36	20-35	1.45-1.85	0.06-0.2	0.08-0.14	4.5-6.0	Moderate-----	0.32		
	36-60	35-55	1.40-1.80	<0.06	0.08-0.14	4.5-6.0	Moderate-----	0.28		

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	g/cc	In/hr	In/in	pH				Pct
To---------------- Toula	0-5	5-12	1.35-1.65	0.6-2.0	0.22-0.25	4.5-6.0	Low-----------	0.49	3	.5-4
	5-21	18-30	1.35-1.65	0.6-2.0	0.14-0.24	4.5-6.0	Low-----------	0.43		
	21-31	18-35	1.45-1.85	0.06-0.2	0.08-0.14	4.5-6.0	Low-----------	0.37		
	31-44	18-35	1.45-1.85	0.06-0.2	0.08-0.12	4.5-6.0	Low-----------	0.37		
	44-60	12-35	1.35-1.85	0.6-2.0	0.11-0.23	4.5-6.0	Low-----------	0.37		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Uncoated steel	Concrete
					Ft				
Bd: Bude	C	None	---	---	0.5-1.5	Perched	Jan-Apr	High	High.
Ch: Calhoun	D	None	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Cn: Calhoun	D	Occasional	Brief to long.	Dec-Jun	0-2.0	Perched	Dec-Apr	High	Moderate.
Cy: Cypress	D	Frequent	Very long	Jan-Dec	+4-1.0	Apparent	Jan-Dec	Moderate	High.
Dx: Dexter	B	None	---	---	>6.0	---	---	Moderate	Moderate.
Fk: Fluker	C	Rare	---	---	0.5-1.5	Perched	Dec-Apr	High	High.
Gb: Gilbert	D	Rare	---	---	0-1.5	Perched	Dec-Apr	High	Moderate.
Ge: Gilbert	D	Occasional	Brief to long.	Dec-May	0-1.5	Perched	Dec-Apr	High	Moderate.
Gt: Guyton	D	Rare	---	---	0-1.5	Perched	Dec-May	High	High.
Gy: Guyton	D	Occasional	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	High	High.
Ke: Kenefick	B	None	---	---	>6.0	---	---	Moderate	High.
Lt, Ly: Lytle	B	None	---	---	>6.0	---	---	Moderate	Moderate.
Mt: Myatt	D	Rare	---	---	0-1.0	Apparent	Nov-Apr	High	High.
My: Myatt	D	Occasional	Brief	Nov-Mar	0-1.0	Apparent	Nov-Apr	High	High.
OG*:									
Ouachita	C	Frequent	Very brief or brief.	Dec-May	>6.0	---	---	Moderate	Moderate.
Ochlockonee	B	Frequent	Very brief	Dec-Apr	3.0-5.0	Apparent	Dec-Apr	Low	High.
Guyton	D	Frequent	Very brief to long.	Jan-Dec	0-1.5	Perched	Dec-May	High	High.
PA*. Pits-Arents									
Pr: Prentiss	C	None	---	---	2.0-2.5	Perched	Jan-Mar	Moderate	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding: Frequency	Flooding: Duration	Flooding: Months	High water table: Depth	High water table: Kind	High water table: Months	Risk of corrosion: Uncoated steel	Risk of corrosion: Concrete
					Ft				
Rn---------------- Ruston	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.
RS*:									
Ruston-----------	B	None---------	---	---	>6.0	---	---	Moderate	Moderate.
Smithdale--------	B	None---------	---	---	>6.0	---	---	Low------	Moderate.
Sa---------------- Satsuma	C	Rare---------	---	---	1.5-3.0	Perched	Dec-Apr	High-----	Moderate.
SM---------------- Smithdale	B	None---------	---	---	>6.0	---	---	Low------	Moderate.
St---------------- Stough	C	Rare---------	---	---	1.0-1.5	Perched	Jan-Apr	Moderate	High.
Ta, Tg------------ Tangi	C	None---------	---	---	1.5-3.0	Perched	Dec-Apr	Moderate	Moderate.
To---------------- Toula	C	None---------	---	---	1.5-3.0	Perched	Dec-Apr	Moderate	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--FERTILITY TEST DATA FOR SELECTED SOILS

(Analyses by the Soil Fertility Laboratory, Louisiana Agricultural Experiment Station)

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Phosphorus	Exchangeable cations: Ca	Exchangeable cations: Mg	Exchangeable cations: K	Exchangeable cations: Na	Exchangeable cations: Al	Exchangeable cations: H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Saturation: Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Bude silt loam:[1] (S89LA-91-68)	A	0-4	2.31	5.3	31	1.6	0.4	0.1	0.0	0.2	1.0	10.2	12.3	3.3	17.1	0.0	6.1	4.0
	Bw1	4-13	1.03	5.2	19	0.5	0.2	0.0	0.0	1.6	0.2	7.2	7.9	2.5	8.9	0.0	64.0	2.5
	Bw2	13-20	0.14	5.3	17	0.2	0.3	0.0	0.1	1.6	2.2	10.6	11.2	4.4	5.4	0.9	36.4	0.7
	B/E	20-30	0.12	5.5	18	0.1	0.8	0.1	0.3	3.6	1.6	10.4	11.7	6.5	11.1	2.6	55.4	0.1
	Btx1	30-45	0.01	5.7	23	0.2	1.4	0.1	0.5	6.2	0.6	12.0	14.2	9.0	15.5	3.5	68.9	0.1
	2Btx2	45-60	0.05	5.7	28	0.3	1.8	0.1	0.7	5.4	0.6	10.2	13.1	8.9	22.1	5.3	60.7	0.2
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	38.9[2]	---	---	---
Calhoun silt loam:[1] (S89LA-91-71)	A	0-4	2.01	5.2	18	0.6	0.2	0.1	0.1	1.8	0.2	9.6	10.6	3.0	9.4	0.9	60.0	3.0
	Eg	4-15	0.31	5.1	9	0.2	0.2	0.0	0.1	3.2	0.0	7.8	8.3	3.7	6.0	1.2	86.5	1.0
	B/E	15-26	0.15	5.3	15	0.4	1.0	0.1	0.9	9.2	0.6	16.8	19.2	12.2	12.5	4.7	75.4	0.4
	Btg1	26-36	0.10	5.2	17	0.9	1.8	0.2	1.5	10.8	0.2	15.0	19.4	15.4	22.7	7.7	70.1	0.5
	Btg2	36-48	0.11	5.4	16	1.3	1.8	0.1	1.5	6.6	0.4	15.0	19.7	11.7	23.9	7.6	56.4	0.7
	BCg	48-60	0.07	5.5	15	1.5	1.7	0.1	1.2	4.2	0.0	11.4	15.9	8.7	28.3	7.5	48.3	0.9
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	51.1[2]	---	---	---
Calhoun silt loam:[3] (S89LA-91-65)	Ap	0-4	3.30	4.5	38	0.3	0.2	0.1	0.1	4.4	1.6	13.2	13.9	6.7	5.0	0.7	65.7	1.5
	Eg	4-17	0.66	4.6	28	0.2	0.1	0.0	0.0	3.0	1.4	6.6	6.9	4.7	4.3	0.0	63.8	2.0
	B/E	17-22	0.39	5.2	24	0.6	0.7	0.1	0.3	5.6	2.8	10.2	11.9	10.1	14.3	2.5	55.4	0.9
	Btg1	22-27	0.21	5.3	26	0.9	1.2	0.1	0.7	8.8	0.2	12.6	15.5	11.9	18.7	4.5	73.9	0.7
	Btg2	27-32	0.16	5.3	27	1.3	1.3	0.1	0.9	6.6	0.0	9.6	13.2	10.2	27.3	6.8	64.7	1.0
	BCg	32-49	0.18	5.2	27	2.1	1.8	0.1	1.4	4.4	0.4	9.0	14.4	10.2	37.5	9.7	43.1	1.2
	Cg	49-60	0.04	5.2	31	3.1	2.1	0.1	2.3	3.4	0.8	7.6	15.2	11.8	50.0	15.1	28.8	1.5
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	31.4[2]	---	---	---
Cypress mucky clay:[1] (S89LA-91-76)	A	0-4	20.92	4.4	90	1.8	0.7	0.3	0.1	11.0	0.6	36.0	38.9	14.5	7.5	0.3	75.9	2.6
	Cg1	4-20	1.90	4.6	30	2.5	0.8	0.1	0.2	10.6	0.0	27.0	30.6	14.2	11.8	0.7	74.6	3.1
	Cg2	20-32	0.75	4.8	35	5.1	1.6	0.2	0.2	7.6	0.6	20.4	27.5	15.3	25.8	0.7	49.7	3.2
	Cg3	32-40	0.58	4.7	41	8.3	2.6	0.3	0.3	8.0	0.4	20.3	31.8	19.9	36.2	0.9	40.2	3.2
	Cg4	40-60	0.40	5.0	66	11.5	3.6	0.3	0.5	4.8	0.4	18.0	33.9	21.1	46.9	1.5	22.7	3.2
Dexter silt loam:[1] (S89LA-91-29)	Ap	0-6	1.57	5.4	15	1.7	0.5	0.2	0.0	0.0	0.8	4.2	6.6	3.2	36.4	0.0	0.0	3.4
	Bt1	6-14	0.45	5.6	12	3.4	1.2	0.1	0.0	0.0	0.8	6.0	10.7	5.5	43.9	0.0	0.0	2.8
	Bt2	14-34	0.22	5.2	12	2.3	2.6	0.2	0.1	2.0	1.0	9.0	14.2	8.2	36.6	0.7	24.4	0.9
	2BC	34-42	0.12	5.1	13	0.7	2.2	0.1	0.1	2.8	0.4	6.6	9.7	6.3	32.0	1.0	44.4	0.3
	2C	42-60	0.07	5.0	13	0.3	1.2	0.1	0.0	1.0	1.0	5.6	7.2	3.6	22.2	0.0	27.8	0.3
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	12.7[2]	---	---	---

See footnotes at end of table.

TABLE 18.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Phosphorus	Exchangeable cations: Ca	Mg	K	Na	Al	H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Saturation: Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	----------Milliequivalents/100 grams of soil-------									Pct	Pct	Pct	
Fluker silt loam:[1] (S89LA-91-35)	A	0-4	2.40	4.6	13	0.4	0.2	0.1	0.1	2.8	0.4	10.2	11.0	4.0	7.3	0.9	70.0	2.0
	Bw	4-10	0.33	5.1	6	0.1	0.2	0.0	0.1	2.0	0.6	3.0	3.4	3.0	11.8	2.9	66.7	0.5
	Bt1	10-16	0.20	5.2	8	0.1	0.7	0.0	0.7	6.0	1.0	11.4	12.9	8.5	11.6	5.4	70.6	0.1
	Bt2	16-26	0.12	5.2	10	0.2	1.4	0.1	1.4	7.4	1.0	10.2	13.3	11.5	23.3	10.5	64.3	0.1
	B/E	26-30	0.14	5.2	9	0.1	1.6	0.1	1.7	5.0	0.6	7.8	11.3	9.1	31.0	15.0	54.9	0.1
	2Btx1	30-37	0.07	5.1	12	0.2	2.8	0.1	3.2	5.6	0.8	11.4	17.7	12.7	35.6	18.1	44.1	0.1
	2Btx2	37-42	0.03	5.1	14	0.2	2.7	0.1	3.8	5.0	0.6	6.6	13.4	12.4	50.7	28.4	40.3	0.1
	2BC	42-60	0.04	5.2	13	0.3	2.5	0.1	4.9	3.4	0.0	4.2	12.0	11.2	65.0	40.8	30.4	0.1
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	57.5[2]	---	---	---
Gilbert silt loam:[1] (S89LA-91-74)	A	0-5	2.11	4.8	30	1.3	0.7	0.1	0.1	1.6	0.2	12.0	14.2	4.0	15.5	0.7	40.0	1.9
	Eg	5-24	0.98	4.9	26	1.2	0.7	0.1	0.1	1.6	1.6	10.2	12.3	5.3	17.1	0.8	30.2	1.7
	B/E	24-31	0.25	5.0	17	1.0	2.8	0.1	1.1	2.6	0.4	9.6	14.6	8.0	34.2	7.5	32.5	0.4
	Btg	31-42	0.16	5.0	20	2.2	6.1	0.2	3.0	1.6	1.4	11.4	22.9	14.5	50.2	13.1	11.0	0.4
	Btng	42-48	0.02	5.8	21	3.2	6.9	0.2	3.4	0.6	0.4	9.0	22.7	14.7	60.4	15.0	4.1	0.5
	Btng	48-60	0.01	6.1	21	3.2	6.7	0.2	2.9	0.0	1.0	9.2	22.2	14.0	58.6[2]	13.1	0.0	0.5
Guyton silt loam:[1] (S89LA-91-56)	A	0-4	2.75	4.2	29	0.7	0.8	0.1	0.1	3.0	1.4	8.4	10.1	6.1	16.8	1.0	49.2	0.9
	Eg	4-18	1.48	4.3	23	0.4	0.7	0.1	0.2	3.6	0.8	7.8	9.2	5.8	15.2	2.2	62.1	0.6
	E/B	18-24	1.18	4.5	23	0.7	1.1	0.1	0.3	4.4	1.6	7.7	9.9	8.2	22.2	3.0	53.7	0.6
	B/E	24-32	0.78	4.6	21	1.6	3.0	0.1	1.2	4.8	0.8	10.2	16.1	11.5	36.6	7.5	41.7	0.5
	Btg1	32-42	0.30	4.5	17	1.9	3.9	0.1	1.9	4.6	0.6	9.0	16.8	13.0	46.4	11.3	35.4	0.5
	Btg2	42-53	0.23	4.6	10	2.1	4.4	0.2	2.5	4.3	0.4	8.8	18.0	13.9	51.1	13.9	30.9	0.5
	Cg	53-60	0.16	4.7	11	2.2	4.5	0.1	2.2	4.0	0.2	8.0	17.0	13.2	52.9	12.9	30.3	0.5
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	43.1[2]	---	---	---
Guyton silt loam:[4] (S89LA-91-50)	A	0-7	2.32	4.5	35	1.2	0.5	0.1	0.1	2.8	0.0	6.0	7.9	4.7	24.1	1.3	59.6	2.4
	Eg	7-19	0.45	4.4	12	0.5	0.4	0.0	0.1	4.2	0.2	8.6	9.6	5.4	10.4	1.0	77.8	1.3
	B/E	19-38	0.18	5.0	12	1.3	0.9	0.1	0.8	6.2	0.0	7.2	10.3	9.3	30.1	7.8	66.7	1.4
	Btg1	38-50	0.08	4.9	13	3.2	1.9	0.1	1.5	5.0	0.0	6.6	13.3	11.7	50.4	11.3	42.7	1.7
	Btg2	50-60	0.19	4.8	16	4.4	2.5	0.1	1.8	2.4	0.8	5.4	14.2	12.0	62.0	12.7	20.0	1.8
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	62.1[2]	---	---	---
Kenefick fine sandy loam:[1] (S89LA-91-62)	Ap	0-5	1.37	5.3	40	0.8	0.3	0.1	0.0	0.6	0.4	6.0	7.2	2.2	16.1	0.0	27.3	2.7
	Bt1	5-18	0.31	5.3	22	1.7	0.6	0.1	0.0	2.4	0.6	7.2	9.6	5.4	25.0	0.0	44.4	2.8
	Bt2	18-34	0.09	5.1	21	1.0	0.8	0.1	0.0	2.8	0.8	7.1	9.0	5.5	25.1	0.0	50.9	1.3
	BC	34-44	0.02	5.1	24	0.1	0.7	0.1	0.0	1.8	0.8	4.8	5.7	3.5	15.8	0.0	51.4	0.1
	C	44-60	0.01	5.1	18	0.1	0.3	0.0	0.0	1.0	0.0	4.4	4.8	1.4	8.3	0.0	71.4	0.3
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	52.9[2]	---	---	---

See footnotes at end of table.

TABLE 18.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Phosphorus	Exchangeable cations: Ca	Exchangeable cations: Mg	Exchangeable cations: K	Exchangeable cations: Na	Exchangeable cations: Al	Exchangeable cations: H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity effective	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Saturation: Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Lytle silt loam:[1] (S89LA-91-7)	A	0-5	2.61	5.3	426	3.0	1.3	0.2	0.0	0.0	0.8	5.4	9.9	5.3	45.5	0.0	0.0	2.3
	Bt1	5-20	0.55	4.9	281	1.5	1.4	0.2	0.0	2.0	1.4	6.0	9.1	6.5	34.1	0.0	30.8	1.1
	Bt2	20-30	0.16	4.9	345	0.7	2.6	0.3	0.1	4.0	0.8	10.2	13.9	8.5	26.6	0.7	47.1	0.3
	2Bt3	30-45	0.20	5.1	282	0.2	2.3	0.2	0.1	4.0	0.6	8.4	11.2	7.4	25.0	0.9	54.1	0.1
	2Bt4	45-60	0.20	5.2	287	0.2	2.1	0.2	0.1	3.6	0.4	7.2	9.8	6.6	26.5	1.0	54.5	0.1
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	29.3[2]	---	---	---
Lytle silt loam:[5] (S89LA-91-53)	Ap	0-3	2.81	4.7	17	1.1	0.4	0.1	0.1	1.4	0.8	8.4	10.1	3.9	16.8	1.0	35.9	2.8
	E	3-6	1.10	4.8	17	0.7	0.6	0.1	0.0	1.8	0.8	6.6	8.0	4.0	17.5	0.0	45.0	1.2
	Bt1	6-18	0.60	4.7	18	0.5	3.2	0.3	0.1	5.6	0.6	11.4	15.5	10.3	26.5	0.6	54.4	0.2
	Bt2	18-24	0.19	4.9	15	0.3	3.4	0.2	0.1	4.0	0.8	10.2	14.2	8.8	28.2	0.7	45.5	0.1
	2Bt3	24-38	0.16	5.1	15	0.2	2.4	0.1	0.1	2.4	0.6	6.0	8.8	5.8	31.8	1.1	41.4	0.1
	2Bt4	38-48	0.04	5.0	16	0.2	2.4	0.1	0.1	2.4	0.4	7.2	10.0	5.6	28.0	1.0	42.9	0.1
	2Bt5	48-60	0.14	4.9	14	0.2	3.0	0.1	0.2	2.6	0.6	7.1	10.6	6.7	33.0	1.9	38.8	0.1
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	34.0[2]	---	---	---
Myatt fine sandy loam:[1] (S89LA-91-18)	A	0-6	4.06	4.5	186	0.7	0.4	0.1	0.0	2.2	0.6	5.4	6.6	4.0	18.2	0.0	55.0	1.8
	Eg	6-14	1.00	4.4	126	0.1	0.1	0.0	0.0	2.6	0.6	6.0	6.2	3.4	3.2	0.0	76.5	1.0
	Btg	14-40	0.66	4.3	291	0.1	0.1	0.0	0.1	3.2	0.6	5.9	6.2	4.1	4.8	1.6	78.0	1.0
	BCg	40-60	0.10	4.8	180	2.1	1.8	0.1	0.8	5.0	0.6	10.8	15.6	10.4	30.8	5.1	48.1	1.2
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	40.0[2]	---	---	---
Ochlockonee silt loam:[1] (S89LA-91-21)	A	0-5	3.48	4.4	207	0.6	0.4	0.1	0.0	2.6	0.6	12.6	13.7	4.3	8.0	0.0	60.5	1.5
	C1	5-22	0.97	4.6	169	0.2	0.1	0.0	0.0	1.0	1.0	6.6	6.9	2.3	4.3	0.0	43.5	2.0
	C2	22-40	0.36	4.8	113	0.2	0.2	0.0	0.0	1.2	1.0	3.6	4.0	2.6	10.0	0.0	46.2	1.0
	C3	40-60	0.05	4.8	125	0.1	0.1	0.0	0.0	1.8	0.6	3.0	3.2	2.6	6.3	0.0	69.2	1.0
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	40.0[2]	---	---	---
Ouachita silt loam:[1] (S89LA-91-13)	Ap	0-4	3.22	4.9	356	2.4	1.0	0.1	0.0	0.0	1.0	8.4	11.9	4.5	29.4	0.0	0.0	2.4
	Bw1	4-21	0.83	5.0	136	0.9	0.5	0.0	0.0	1.0	0.8	4.8	6.2	3.2	22.6	0.0	31.3	1.8
	Bw2	21-40	0.60	4.9	296	1.4	0.5	0.1	0.0	0.6	0.8	7.2	9.2	3.4	21.7	0.0	17.6	2.8
	Bw3	40-60	0.19	4.8	368	0.8	0.7	0.1	0.0	1.8	0.8	6.6	8.2	4.2	19.5	0.0	42.9	1.1

See footnotes at end of table.

TABLE 18.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Phosphorus	Exchangeable cations: Ca	Exchangeable cations: Mg	Exchangeable cations: K	Exchangeable cations: Na	Exchangeable cations: Al	Exchangeable cations: H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity (effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Saturation: Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	----------Milliequivalents/100 grams of soil-------									Pct	Pct	Pct	
Prentiss fine sandy loam:[1] (S89LA-91-44)	Ap	0-4	1.97	4.8	61	1.5	0.4	0.2	0.1	1.6	0.2	5.4	7.6	4.0	28.9	1.3	40.0	3.8
	Bt1	4-18	0.31	4.9	9	0.9	0.6	0.1	0.1	3.8	0.0	4.2	5.9	5.5	28.8	1.7	69.1	1.5
	Bt2	18-23	0.24	4.8	11	1.0	1.9	0.1	0.1	5.2	0.0	9.6	12.7	8.3	24.4	0.8	62.7	0.5
	Btx1	23-36	0.10	4.9	10	0.9	2.1	0.1	0.1	4.0	0.0	7.8	11.0	7.2	29.1	0.9	55.6	0.4
	Btx2	36-48	0.08	4.9	10	0.7	1.8	0.1	0.1	4.4	0.0	5.6	8.3	7.1	32.5	1.2	62.0	0.4
	Btx3	48-60	0.02	5.1	6	0.1	0.8	0.0	0.1	3.8	0.0	5.6	6.6	4.8	15.2	1.5	79.2	0.1
Ruston fine sandy loam:[1] (S89LA-91-4)	A	0-4	2.45	5.0	192	1.9	0.3	0.0	0.0	0.0	0.8	4.8	7.0	3.0	31.0	0.0	0.0	6.3
	E	4-11	1.09	5.0	206	0.3	0.1	0.0	0.0	1.0	0.4	3.6	4.0	1.8	10.0	0.0	55.6	3.0
	Bt1	11-24	0.39	5.0	316	1.2	1.2	0.2	0.0	3.6	0.4	7.8	10.4	6.6	25.0	0.0	54.5	1.0
	Bt2	24-34	0.12	5.1	201	0.7	1.1	0.1	0.0	2.8	1.2	6.6	8.5	5.9	22.4	0.0	47.5	0.6
	B/E	34-48	0.08	5.1	75	0.2	0.8	0.1	0.0	2.2	0.8	4.2	5.3	4.1	20.8	0.0	53.7	0.3
	B't1	48-54	0.10	5.0	115	0.2	0.8	0.1	0.0	2.0	0.4	3.6	4.7	3.5	23.4	0.0	57.1	0.3
	B't2	54-60	0.14	4.9	148	0.2	0.8	0.1	0.0	2.0	0.8	4.8	5.8	3.8	17.2	0.0	52.6	0.3
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Ruston fine sandy loam:[6] (S89LA-91-23)	Ap	0-5	3.12	5.5	12	2.3	0.5	0.1	0.0	0.0	1.0	3.0	5.9	3.9	49.2	0.0	0.0	4.6
	E	5-9	0.57	5.4	8	1.0	0.4	0.0	0.0	0.0	0.8	4.2	5.6	2.2	25.0	0.0	0.0	2.5
	Bt1	9-36	0.34	5.0	10	0.8	2.1	0.2	0.0	3.4	1.2	6.0	9.1	7.7	34.1	0.0	44.2	0.4
	B/E	36-42	0.18	5.1	8	0.3	1.6	0.1	0.0	1.8	1.4	6.6	8.6	5.2	23.3	0.0	34.6	0.2
	2Bt2	42-52	0.08	5.0	7	0.3	1.1	0.1	0.0	1.6	0.8	4.8	6.3	3.9	23.8	0.0	41.0	0.3
	2Bt3	52-60	0.02	5.0	7	0.2	0.9	0.1	0.0	1.0	0.6	4.2	5.4	2.8	22.2	0.0	35.7	0.2
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Satsuma silt loam:[1] (S89LA-91-32)	Ap	0-4	1.90	4.6	13	1.1	0.4	0.1	0.0	2.0	1.6	16.8	18.4	5.2	8.7	0.0	38.5	2.8
	E	4-8	1.67	4.6	11	1.1	0.5	0.1	0.1	2.0	1.0	16.7	18.5	4.8	9.7	0.5	41.7	2.2
	EB	8-13	0.89	4.7	10	0.7	0.6	0.1	0.1	2.4	1.0	8.4	9.9	4.9	15.2	1.0	49.0	1.2
	Btn/E	13-18	0.15	5.2	11	0.2	3.9	0.2	1.8	8.0	0.6	10.8	16.9	14.7	36.1	10.7	54.4	0.1
	Btn1	18-33	0.28	5.3	12	0.2	4.6	0.2	2.1	7.2	0.8	12.6	19.7	15.1	36.0	10.7	47.7	0.0
	2Btn2	33-45	0.11	5.3	12	0.1	4.6	0.1	2.4	3.0	0.8	9.0	16.2	11.0	44.4	14.8	27.3	0.0
	2Btnx	45-57	0.01	5.4	12	0.2	4.1	0.1	2.5	1.2	0.8	4.2	11.1	8.9	62.2	22.5	13.5	0.0
	2BCn	57-65	0.02	5.4	8	0.1	2.6	0.0	2.0	0.8	0.6	4.1	8.8	6.1	53.4	22.7	13.1	0.0
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See footnotes at end of table.

TABLE 18.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Phosphorus	Exchangeable cations: Ca	Exchangeable cations: Mg	Exchangeable cations: K	Exchangeable cations: Na	Exchangeable cations: Al	Exchangeable cations: H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity effective)	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Saturation: Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
Smithdale fine sandy loam:[1] (S89LA-91-10)	A	0-8	2.14	5.1	211	1.0	0.3	0.0	0.0	0.4	0.8	6.6	7.9	2.5	16.5	0.0	16.0	3.3
	E	8-16	0.46	5.0	63	0.1	0.1	0.0	0.0	0.2	0.8	2.4	2.6	1.2	7.7	0.0	16.7	1.0
	Bt1	16-29	0.24	5.0	200	0.4	0.9	0.1	0.0	1.8	0.4	3.6	5.0	3.6	28.0	0.0	50.0	0.4
	Bt2	29-50	0.10	5.0	150	0.3	0.9	0.1	0.0	1.8	0.8	4.0	5.3	3.9	24.5	0.0	46.2	0.3
	Bt3	50-60	0.03	5.0	110	0.1	0.5	0.0	0.0	2.0	0.6	4.2	4.8	3.2	12.5	0.0	62.5	0.2
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14.3[2]	---	---	---
Smithdale fine sandy loam:[7] (S89LA-91-26)	A	0-5	3.40	4.8	15	2.5	0.6	0.1	0.0	0.6	0.8	11.4	14.6	4.6	21.9	0.0	13.0	4.2
	Bt1	5-26	0.75	4.7	10	0.5	0.5	0.1	0.0	3.2	0.6	8.4	9.5	4.9	11.6	0.0	65.3	1.0
	Bt2	26-37	0.29	4.9	8	0.5	1.0	0.1	0.0	3.0	0.4	7.2	8.8	5.0	18.2	0.0	60.0	0.5
	Bt3	37-52	0.02	5.1	7	0.1	0.4	0.0	0.0	2.0	1.0	6.0	6.5	3.5	7.7	0.0	57.1	0.3
	BC	52-60	0.02	5.0	6	0.2	0.4	0.0	0.0	2.8	0.6	6.6	7.2	4.0	18.3	0.0	70.0	0.5
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Tangi silt loam:[1] (S89LA-91-15)	Ap	0-5	3.97	4.5	341	0.7	0.2	0.0	0.1	2.6	1.0	12.0	13.0	4.6	7.7	0.8	56.5	3.5
	BE	5-9	0.97	4.7	223	0.3	0.2	0.0	0.0	2.0	0.8	6.6	7.1	3.3	7.0	0.0	60.5	1.5
	Bt1	9-18	0.28	4.9	173	0.2	1.2	0.1	0.1	2.4	0.8	6.3	7.9	4.8	20.3	1.3	50.0	0.2
	Bt2	18-28	0.41	5.1	240	0.2	1.2	0.1	0.1	3.6	0.8	9.0	10.6	6.0	15.1	0.9	60.0	0.2
	2Btx1	28-37	0.30	5.1	160	0.2	1.5	0.1	0.1	4.4	0.4	9.6	11.5	6.7	16.5	0.9	65.7	0.1
	2Btx2	37-49	0.21	5.4	317	0.2	2.7	0.1	0.3	4.4	0.0	9.5	12.8	7.7	25.8	2.3	57.1	0.1
	2Btx3	49-60	0.14	5.2	180	0.2	3.8	0.1	0.6	5.0	0.2	10.4	15.1	9.9	31.1	4.0	50.5	0.1
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	25.5[2]	---	---	---
Tangi silt loam:[8] (S89LA-91-41)	Ap	0-5	2.12	4.8	12	0.8	0.5	0.1	0.1	3.2	0.0	6.6	8.1	4.7	18.5	1.2	68.1	1.6
	Bw	5-10	1.10	4.8	9	0.6	0.4	0.0	0.1	3.2	0.0	4.2	5.3	4.3	20.8	1.9	74.4	1.5
	Bt	10-19	0.63	4.9	11	0.5	1.5	0.1	0.1	6.2	0.0	10.2	12.4	8.4	17.7	0.8	73.8	0.3
	2Btx1	19-27	0.22	5.1	10	0.2	1.8	0.1	0.1	5.2	0.2	8.4	10.6	7.6	20.8	0.9	68.4	0.1
	2Btx2	27-36	0.09	5.2	8	0.2	1.2	0.1	0.1	4.4	0.0	6.0	7.6	6.0	21.1	1.3	73.3	0.2
	2Btx3	36-60	0.08	5.3	7	0.1	1.8	0.1	0.2	6.2	0.0	10.2	12.4	8.4	17.7	1.6	61.5	0.1
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	20.0[2]	---	---	---
SND:[9] (S89LA-91-1)	A	0-6	2.61	4.9	220	0.9	0.5	0.1	0.1	1.6	0.4	9.6	11.2	3.6	14.3	0.9	44.4	1.8
	BE	6-13	1.02	4.8	207	0.4	0.3	0.0	0.1	1.6	0.8	8.4	9.2	3.2	8.7	1.1	50.0	1.3
	Bt1	13-25	0.54	5.1	191	0.3	1.2	0.1	0.2	4.6	1.0	10.2	12.0	7.4	15.0	1.7	62.2	0.3
	Bt2	25-36	0.36	5.2	355	0.8	2.5	0.1	0.5	6.0	0.8	13.2	17.1	10.7	22.8	2.9	56.1	0.3
	2Btxg1	36-40	0.12	5.4	286	0.7	2.1	0.0	0.4	2.0	0.4	5.4	8.6	5.6	37.2	4.7	35.7	0.3
	2Btxg2	40-54	0.10	5.5	294	1.0	2.5	0.0	0.5	1.0	0.6	5.3	9.3	5.6	43.0	5.4	17.9	0.4
	2Btxg3	54-60	0.15	5.6	287	1.7	3.0	0.0	0.9	0.0	1.0	6.0	11.6	6.6	48.3	7.8	0.0	0.6
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See footnotes at end of table.

TABLE 18.--FERTILITY TEST DATA FOR SELECTED SOILS--Continued

Soil name and sample number	Horizon	Depth	Organic matter content	pH 1:1 H_2O	Phosphorus	Exchangeable cations: Ca	Exchangeable cations: Mg	Exchangeable cations: K	Exchangeable cations: Na	Exchangeable cations: Al	Exchangeable cations: H	Total acidity	Cation-exchange capacity (sum)	Cation-exchange capacity effective	Base saturation (sum)	Saturation: Sum of cation-exchange capacity Na	Saturation: Effective cation-exchange capacity Al	Ca/Mg
		In	Pct		Ppm	Milliequivalents/100 grams of soil									Pct	Pct	Pct	
SND:[10]	A	0-5	1.75	4.3	14	0.2	0.1	0.0	0.1	4.0	1.2	7.2	7.6	5.6	5.3	1.3	71.4	2.0
(S89LA-91-38)	E	5-9	1.07	4.4	11	0.1	0.1	0.0	0.1	4.2	0.0	5.4	5.7	4.5	5.3	1.8	93.3	1.0
	Btg1	9-15	0.47	4.5	9	0.1	0.3	0.0	0.1	5.2	0.4	6.0	6.5	6.1	7.7	1.5	85.2	0.3
	Btg2	15-31	0.24	4.9	7	0.1	0.6	0.0	0.2	6.0	0.2	6.6	7.5	7.1	12.0	2.7	84.5	0.2
	BCg	31-43	0.26	4.9	8	0.2	1.2	0.0	0.5	8.4	0.0	8.8	10.7	10.3	17.8	4.7	81.6	0.2
	2Cg	43-60	0.02	4.4	6	0.3	1.0	0.0	1.3	1.8	0.8	3.2	5.8	5.2	44.8	22.4	34.6	0.3
	---	---	---	---	---	---	---	---	---	---	---	---	---	---	50.0[2]	---	---	---
SND:[11]	Ap	0-5	3.16	4.9	20	1.4	0.4	0.1	0.1	1.8	0.6	9.6	11.6	4.4	17.2	0.9	40.9	3.5
(S89LA-91-47)	Eg	5-23	0.49	5.1	9	0.5	0.2	0.0	0.1	3.6	0.0	4.8	5.6	4.4	14.3	1.8	81.8	2.5
	B/E	23-30	0.16	5.1	10	0.2	0.6	0.0	0.2	5.0	0.0	7.2	8.2	6.0	12.2	2.4	83.3	0.3
	Btg1	30-40	0.05	5.2	9	0.2	1.1	0.1	0.4	8.4	0.0	9.6	11.4	10.2	15.8	3.5	82.4	0.2
	Btg2	40-48	0.14	5.0	9	0.2	1.3	0.1	0.6	9.0	0.0	12.6	14.8	11.2	14.9	4.1	80.4	0.2
	BCg	48-60	0.02	5.1	7	0.2	0.9	0.1	0.5	5.0	0.0	7.2	8.9	6.7	19.1	5.6	74.6	0.2
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[1] Typical pedon for the survey area. For the description and location, see the section "Soil Series and Their Morphology."

[2] Base saturation at the critical depth for taxonomic placement at the order level.

[3] This Calhoun pedon is a taxadjunct to the Calhoun series because it is classified as Ultisols rather than Alfisols. The sample site is about 1,900 feet north of the southwest corner of Spanish Land Grant sec. 37, T. 3 S., R. 4 E., about 150 feet east of the center of a road.

[4] The sample site is about 90 feet east and 1,600 feet north of the southwest corner of Spanish Land Grant sec. 55, T. 4 S., R. 6 E.

[5] The sample site is about 110 feet southwest of the center of a deadend road, N1/2, sec. 11, T. 1 S., R. 5 E.

[6] The sample site is about 4.9 miles north of Chipola, 2.7 miles east of the Amite River, 200 feet west of Louisiana Highway 1044, sec. 74, T. 1 S., R. 4 E.

[7] The sample site is about 4.7 miles north of Chipola, 2.7 miles east of the Amite River, 600 feet west of Louisiana Highway 1044, Spanish Land Grant sec. 74, T. 1 S., R. 4 E.

[8] The sample site is about 4,500 feet southwest of Chipola, 1,100 feet east of Buck Creek, 200 feet south of a gravel road, Spanish Land Grant sec. 52, T. 1 S., R. 4 E.

[9] Series not designated. This pedon is classified as Alfisols. It is mapped as a similar soil in map unit To, Toula silt loam, 1 to 3 percent slopes. The sample site is about 200 feet north of the intersection of parish road 449 and an east-west road, 1,450 feet north of the southeast corner of sec. 1, T. 4 S., R. 4 E.

[10] Series not designated. This pedon is classified as Alfisols. It is mapped as a similar soil in map unit Mt, Myatt fine sandy loam. The sample site is about 0.9 mile northeast of Georgeville, 600 feet north of Livingston Parish line, 4,700 feet east of Louisiana Highway 43, sec. 33, T. 4 S., R. 6 E.

[11] Series not designated. This pedon is classified as Utisols. It is mapped as a similar soil in map unit Gt, Guyton silt loam. The sample site is about 325 feet west and 200 feet north of the southeast corner of Spanish Land Grant sec. 55, T. 4 S., R. 6 E.

TABLE 19.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series)

Soil name	Family or higher taxonomic class
Bude	Fine-silty, mixed, thermic Glossaquic Fragiudalfs
Calhoun	Fine-silty, mixed, thermic Typic Glossaqualfs
Cypress	Fine, mixed, acid, thermic Typic Fluvaquents
*Dexter	Fine-silty, mixed, thermic Ultic Hapludalfs
Fluker	Fine-silty, siliceous, thermic Glossaquic Fragiudalfs
Gilbert	Fine-silty, mixed, thermic Typic Glossaqualfs
Guyton	Fine-silty, siliceous, thermic Typic Glossaqualfs
Kenefick	Fine-loamy, siliceous, thermic Ultic Hapludalfs
Lytle	Fine-loamy, siliceous, thermic Typic Paleudults
*Myatt	Fine-loamy, siliceous, thermic Typic Ochraquults
Ochlockonee	Coarse-loamy, siliceous, acid, thermic Typic Udifluvents
Ouachita	Fine-silty, siliceous, thermic Fluventic Dystrochrepts
Prentiss	Coarse-loamy, siliceous, thermic Glossic Fragiudults
Ruston	Fine-loamy, siliceous, thermic Typic Paleudults
Satsuma	Fine-silty, siliceous, thermic Glossaquic Hapludalfs
Smithdale	Fine-loamy, siliceous, thermic Typic Hapludults
Stough	Coarse-loamy, siliceous, thermic Fragiaquic Paleudults
Tangi	Fine-silty, siliceous, thermic Typic Fragiudults
Toula	Fine-silty, siliceous, thermic Typic Fragiudults

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